COMPETENCIES AND SKILLS

REQUIRED FOR

TEACHER CERTIFICATION

IN FLORIDA

TWENTIETH EDITION

Florida Department of Education
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Competencies and Skills Required for Teacher Certification in Florida
Nineteenth Edition

Introduction

Effective July 1, 1988, the Florida Legislature expanded the Florida Teacher Certification Examination (FTCE) to include tests of subject matter knowledge in the certification areas (Section 1012.56, Florida Statutes).

On March 28, 1989, the State Board of Education amended Rule 6A-4.0021, Florida Administrative Code (FAC), to include revised competencies and skills for the professional skills part of the FTCE and new competencies and skills for the subject area examinations in the following certification areas:

- Biology 6–12
- Computer Science K–12
- Earth-Space Science 6–12
- Emotionally Handicapped K–12
- Geography 6–12
- Guidance and Counseling PK–12
- History 6–12
- Journalism 6–12
- Mentally Handicapped K–12
- Physical Education K–8
- Physical Education 6–12
- Physically Impaired K–12
- Political Science 6–12
- Reading K–12
- School Psychologist PK–12
- Specific Learning Disabilities K–12
- Speech-Language Impaired K–12
- Varying Exceptionalities K–12

This was printed as *Competencies and Skills Required for Teacher Certification in Florida.*

On March 13, 1990, the State Board of Education amended the rule to include competencies and skills in the following additional certification areas:

- Art K–12
- Chemistry 6–12
- Drama 6–12
- Economics 6–12
- Educational Media Specialist PK–12
- Elementary Education 1–6
- English 6–12
- French K–12
- German K–12
- Health K–12
- Hearing Impaired K–12
- Latin K–12
- Mathematics 6–12
- Middle Grades English 5–9
- Middle Grades General Science 5–9
- Middle Grades Mathematics 5–9
- Middle Grades Social Science 5–9
- Music K–12
- Physics 6–12
- Primary Education K–3
- Social Science 6–12
- Spanish K–12
- Speech 6–12

This was printed as *Competencies and Skills Required for Teacher Certification in Florida, Second Edition.*

On March 26, 1991, the State Board of Education amended the rule to include competencies and skills in the following additional certification areas:

Business Education 6–12
Home Economics 6–12
Humanities K–12
Occupational Specialist
Preschool Education N–PK
Psychology 6–12
Sociology 6–12
Visually Impaired K–12

This was printed as *Competencies and Skills Required for Teacher Certification in Florida, Third Edition*.

On October 26, 1993, the State Board of Education amended the rule to include competencies and skills in the following additional certification areas:

English to Speakers of Other Languages K–12
Prekindergarten/Primary PK–3
Preschool Education (Birth–Age 4) (a revision of the previous Preschool Education N–PK)

This was printed as *Competencies and Skills Required for Teacher Certification in Florida, Fourth Edition*.

On March 16, 1995, the State Board of Education amended the rule to include competencies and skills in the following certification areas:

Agriculture 6–12
Industrial Arts-Technology Education 6–12
Marketing 6–12

This was printed as *Competencies and Skills Required for Teacher Certification in Florida, Fifth Edition*.

On August 12, 1999, the State Board of Education amended the rule to include revisions to the competencies and skills in the following areas:

Professional Education
Biology 6–12
Computer Science K–12
Educational Media Specialist PK–12
Emotionally Handicapped K–12
English 6–12
Guidance and Counseling PK–12
Mathematics 6–12
Mentally Handicapped K–12
Middle Grades English 5–9
Middle Grades Math 5–9
Music K–12
Reading K–12
Spanish K–12
Specific Learning Disabilities K–12
Varying Exceptionalities K–12

This was printed as *Competencies and Skills Required for Teacher Certification in Florida, Sixth Edition*.

On January 29, 2002, the State Board of Education amended the rule to include revisions to the competencies and skills in the following areas:

- Business Education 6–12
- English to Speakers of Other Languages K–12
- French K–12
- Health K–12
- Hearing Impaired K–12
- History 6–12
- Home Economics 6–12
- Middle Grades General Science 5–9
- Middle Grades Social Science 5–9
- Physical Education K–8
- Physical Education 6–12
- Social Science 6–12

Through the same rule amendment, the State Board of Education adopted competencies and skills in the following new examination areas:

- Exceptional Student Education K–12
- General Knowledge
- Kindergarten–Grade 6 (containing subtests in the following areas: Language Arts; Mathematics; Music, Visual Arts, Physical Education, and Health; Science and Technology; and Social Science)

This was printed as *Competencies and Skills Required for Teacher Certification in Florida, Seventh Edition*.

On February 18, 2003, the State Board of Education amended the rule to include revisions to the competencies and skills in Professional Education. Through the same rule amendment, the Florida Board of Education adopted competencies and skills in the following new examination areas:

- Middle Grades Integrated Curriculum 5–9
- Physical Education K–12

Additionally, the subject area Home Economics has been renamed Family and Consumer Science. The competencies and skills pertaining to Home Economics remained the same under Family and Consumer Science. This was printed as *Competencies and Skills Required for Teacher Certification in Florida, Eighth Edition*.

On November 18, 2003, the State Board of Education amended the rule to include revisions to the competencies and skills in the following areas:

- Computer Science K–12
- Drama 6–12
- English 6–12
- Mathematics 6–12
- Music K–12
- Reading K–12
- Prekindergarten/Primary PK–3
- Social Science 6–12

This was printed as *Competencies and Skills Required for Teacher Certification in Florida, Ninth Edition*.

Examinations in the following subject areas were no longer administered after June 30, 2004:

- Elementary Education 1–6
- Emotionally Handicapped K–12
- Mentally Handicapped K–12
- Physically Impaired K–12
- Primary Education K–3
- Specific Learning Disabilities K–12
- Varying Exceptionalities K–12

On April 19, 2005, the State Board of Education amended the rule to include revisions to the competencies and skills in the following areas:

- Art K–12
- Biology 6–12
- Chemistry 6–12
- Earth-Space Science 6–12
- French K–12
- German K–12
- Health K–12
- Physics 6–12
- Preschool Education Birth–Age 4
- Spanish K–12

Examinations in the following subject areas were no longer administered after June 30, 2005:

- Economics 6–12
- Geography 6–12
- History 6–12
- Physical Education K–8
- Physical Education 6–12
- Political Science 6–12
- Psychology 6–12
- Sociology 6–12

The discontinued Physical Education tests were replaced by the **Physical Education K–12** test, which is required for certification in this subject area. Additionally, the subject area **Kindergarten–Grade 6** was renamed **Elementary Education K–6.** The competencies and skills pertaining to Kindergarten–Grade 6 remained the same under Elementary Education K–6. These changes were printed as *Competencies and Skills for Teacher Certification in Florida, Tenth Edition*.

On April 18, 2006, the State Board of Education amended the rule to include revisions to the competencies and skills in the following areas:

- Agriculture 6–12
- Elementary Education K–6
- English to Speakers of Other Languages K–12
- Middle Grades English 5–9
- Middle Grades General Science 5–9
- Middle Grades Mathematics 5–9
- Middle Grades Social Science 5–9
- Prekindergarten/Primary PK–3
- Professional Education
- Reading K–12
- Technology Education 6–12*
- School Psychologist PK–12
- Speech 6–12
- Speech Language Impaired K–12

These changes were printed as *Competencies and Skills Required for Teacher Certification in Florida, Eleventh Edition*.

*The State Board of Education approved a name change for this test from **Industrial Arts-Technology Education** to **Technology Education 6–12** in spring 2006.

On April 17, 2007, the State Board of Education amended Rule 6A-4.0021, FAC, to include revisions to the competencies and skills in the following certification subject areas:

- Computer Science K–12
- Educational Media Specialist PK–12
- Hearing Impaired K–12
- Humanities K–12
- Journalism 6–12
- Latin K–12
- Visually Impaired K–12

These changes were printed as *Competencies and Skills Required for Teacher Certification in Florida, Twelfth Edition*.

On June 17, 2008, the State Board of Education amended Rule 6A-4.0021, FAC, to include revisions to the competencies and skills in the following certification subject areas:

English to Speakers of Other Languages K–12
Marketing 6–12
Reading K–12

These changes were printed as *Competencies and Skills Required for Teacher Certification in Florida, Thirteenth Edition*.

On May 19, 2009, the State Board of Education amended Rule 6A-4.0021, FAC, to include revisions to the competencies and skills in the following certification subject areas:

Biology 6–12
Chemistry 6–12
Earth-Space Science 6–12
Educational Media Specialist PK–12
Elementary Education K–6
Exceptional Student Education K–12
Middle Grades General Science 5–9
Middle Grades Integrated Curriculum 5–9
Middle Grades Social Science 5–9
Physics 6–12
Prekindergarten/Primary PK–3
Social Science 6–12

These changes were printed as *Competencies and Skills Required for Teacher Certification in Florida, Fourteenth Edition*.

On May 18, 2010, the State Board of Education amended Rule 6A-4.0021, FAC, to include revisions to the competencies and skills in the following certification subject areas:

Guidance and Counseling PK–12
School Psychologist PK–12

These changes were printed as *Competencies and Skills Required for Teacher Certification in Florida, Fifteenth Edition*.

On May 17, 2011, the State Board of Education amended Rule 6A-4.0021, FAC, to include revisions to the competencies and skills in the following certification subject areas:

Health K–12
Physical Education K–12

These changes were printed as *Competencies and Skills Required for Teacher Certification in Florida, Sixteenth Edition*.

On October 18, 2011, the State Board of Education amended Rule 6A-4.0021, FAC, to include revisions to the competencies and skills in the following certification subject areas:

English for Speakers of Other Languages K–12
Mathematics 6–12
Middle Grades Mathematics 5–9
Professional Education

Additionally, the subject area English to Speakers of Other Languages K–12 has been renamed English for Speakers of Other Languages K–12. These changes were printed as *Competencies and Skills Required for Teacher Certification in Florida, Seventeenth Edition*.

On July 17, 2012, the State Board of Education amended Rule 6A-4.0021, FAC, to include revisions to the competencies and skills in the following certification subject area:

Prekindergarten/Primary PK–3

These changes were printed as *Competencies and Skills Required for Teacher Certification in Florida, Eighteenth Edition*.

As part of the State Board of Education's approval of the revisions to the Prekindergarten/Primary PK–3 competencies and skills, the State Board of Education also approved changes to the structure of the Prekindergarten/Primary PK–3 examination. The previous structure of one test consisting of 120 multiple-choice questions has become four subtests comprised of 60 multiple-choice items on each subtest.

On April 16, 2013, the State Board of Education amended Rule 6A-4.0021, FAC, to include revisions to the competencies and skills in the following certification subject areas:

General Knowledge
Elementary Education K–6
English 6–12
Middle Grades English 5–9

These changes were printed as *Competencies and Skills Required for Teacher Certification in Florida, Nineteenth Edition*.

On January 21, 2014, the State Board of Education amended Rule 6A-4.0021, FAC, to include revisions to the competencies and skills in the following certification subject areas:

Computer Science K–12
Technology Education 6–12

These changes were printed as *Competencies and Skills Required for Teacher Certification in Florida, Twentieth Edition*.

As part of the State Board of Education's approval of the revisions to the Elementary Education K–6 competencies and skills, the State Board of Education also approved changes to the structure of the Elementary Education K–6 examination. The previous structure of a composite test consisting of 225 multiple-choice questions has now become four subtests ranging from 50 to 60 multiple-choice items per subtest.

CONTENTS
Twentieth Edition

Subject Area/Section* **Page**

General Knowledge (82) 1
Professional Education (00) 9
Agriculture 6–12 (54) 14
Art K–12 (01) 20
Biology 6–12 (02) 26
Business Education 6–12 (51) 34
Chemistry 6–12 (03) 39
Computer Science K–12 (05) 45
Drama 6–12 (06) 49
Earth-Space Science 6–12 (08) 53
Educational Media Specialist PK–12 (10) 59
Elementary Education K–6 (60) 67
English 6–12 (13) 80
English for Speakers of Other Languages (ESOL) K–12 (47) 84
Exceptional Student Education K–12 (61) 90
Family and Consumer Science 6–12 (52) 95
French K–12 (15) 105
German K–12 (17) 108
Guidance and Counseling PK–12 (18) 113
Health K–12 (19) 118
Hearing Impaired K–12 (20) 124
Humanities K–12 (22) 131
Journalism 6–12 (23) 134
Latin K–12 (24) 139
Marketing 6–12 (57) 144

* Each subject area is assigned a section number (i.e., test code) for test administrations.

Mathematics 6–12 (26) 151
Middle Grades English 5–9 (14) 157
Middle Grades General Science 5–9 (04) 161
Middle Grades Integrated Curriculum 5–9 (62) 168
Middle Grades Mathematics 5–9 (25) 179
Middle Grades Social Science 5–9 (38) 185
Music K–12 (28) 189
Physical Education K–12 (63) 193
Physics 6–12 (32) 198
Prekindergarten/Primary PK–3 (53) 204
Preschool Education (Birth–Age 4) (07) 218
Reading K–12 (35) 224
School Psychologist PK–12 (36) 229
Social Science 6–12 (37) 234
Spanish K–12 (39) 239
Speech 6–12 (41) 243
Speech-Language Impaired K–12 (42) 248
Technology Education 6–12 (55) 251
Visually Impaired K–12 (44) 256

General Knowledge Test

Subtests in the Following Areas:

English Language Skills and Essay
Mathematics
Reading

Section 82

General Knowledge Test
English Language Skills

1 Knowledge of language structure

1. Evaluate correct placement of modifiers.
2. Apply knowledge of parallelism, including parallel expressions for parallel ideas.
3. Apply knowledge of a variety of effective structures (e.g., recognizing fragments, comma splices, run-on sentences, syntax errors).
4. Determine patterns of organization in a written passage (i.e., modes of rhetoric).

2 Knowledge of vocabulary application

1. Determine the meaning of unknown words, multiple-meaning words, and phrases in context.
2. Determine and select the correct use of commonly confused words, misused words, and phrases.
3. Determine diction and tone appropriate to a given audience.

3 Knowledge of standard English conventions

1. Determine and select standard verb forms.
2. Determine and select inappropriate shifts in verb tense.
3. Determine and select agreement between subject and verb.
4. Determine and select agreement between pronoun and antecedent.
5. Determine and select inappropriate pronoun shifts.
6. Determine and select clear pronoun references.
7. Determine and select pronoun case forms (e.g., subjective, objective, possessive).
8. Evaluate the correct use of adjectives and adverbs.
9. Determine and select appropriate comparative and superlative degree forms.
10. Demonstrate command of standard spelling conventions.

11. Demonstrate command of standard punctuation.

12. Demonstrate command of standard capitalization.

General Knowledge Test
Essay

1 Knowledge of formal college-level writing

- Determine the purpose of writing to task and audience.
- Provide a section that effectively introduces the topic.
- Formulate a relevant thesis or claim.
- Organize ideas and details effectively.
- Provide adequate, relevant support by citing ample textual evidence; response may also include anecdotal experience for added support.
- Use a variety of transitional devices effectively throughout and within a written text.
- Demonstrate proficient use of college-level, standard written English (e.g., varied word choice, syntax, language conventions, semantics).
- Provide a concluding statement or section that follows from, or supports, the argument or information presented.
- Use a variety of sentence patterns effectively.
- Maintain consistent point of view.
- Apply the conventions of standard English (e.g., avoid inappropriate use of slang, jargon, clichés).

General Knowledge Test
Mathematics

1 Knowledge of number sense, concepts, and operations

1. Compare real numbers and identify their location on a number line.
2. Solve real-world problems involving the four operations with rational numbers.
3. Evaluate expressions involving order of operations.

2 Knowledge of geometry and measurement

1. Identify and classify simple two- and three-dimensional figures according to their mathematical properties.
2. Solve problems involving ratio and proportion (e.g., scaled drawings, models, real-world scenarios).
3. Determine an appropriate measurement unit and form (e.g., scientific notation) for real-world problems involving length, area, volume, or mass.
4. Solve real-world measurement problems including fundamental units (e.g., length, mass, time), derived units (e.g., miles per hour, dollars per gallon), and unit conversions.

3 Knowledge of algebraic thinking and the coordinate plane

1. Determine whether two algebraic expressions are equivalent by applying properties of operations or equality.
2. Identify an algebraic expression, equation, or inequality that models a real-world situation.
3. Solve equations and inequalities (e.g., linear, quadratic) graphically or algebraically.
4. Determine and solve equations or inequalities, graphically or algebraically, in real-world problems.
5. Graph and interpret a linear equation in real-world problems (e.g., use data to plot points, explain slope and y-intercept, determine additional solutions).
6. Identify relations that satisfy the definition of a function.
7. Compare the slopes of two linear functions represented algebraically and graphically.

4 Knowledge of probability, statistics, and data interpretation

1. Analyze data presented in various forms (e.g., histograms, bar graphs, circle graphs, pictographs, line plots, tables) to solve problems.

2. Analyze and evaluate how the presentation of data can lead to different or inappropriate interpretations in the context of a real-world situation.

3. Calculate range, mean, median, and mode of data sets.

4. Interpret the meaning of measures of central tendency (i.e., mean, median, mode) and dispersion (i.e., range, standard deviation) in the context of a real-world situation.

5. Analyze and evaluate how the selection of statistics (e.g., mean, median, mode) can lead to different or inappropriate interpretations in the context of a real-world situation.

6. Solve and interpret real-world problems involving probability using counting procedures, tables, and tree diagrams.

7. Infer and analyze conclusions from sample surveys, experiments, and observational studies.

General Knowledge Test
Reading

1 Knowledge of key ideas and details based on text selections

1. Identify textual evidence to support conclusions drawn from text.
2. Identify explicit meaning and details within text.
3. Determine inferences and conclusions based on textual evidence.
4. Discriminate among inferences, conclusions, and assumptions based on textual evidence.
5. Determine and analyze the development of central ideas or themes from one or more texts.
6. Summarize one or more texts using key supporting ideas and details.
7. Determine how and why specific individuals, events, and ideas develop based on textual evidence.
8. Determine the cause and effect relationship(s) among individuals, events, and ideas based on textual evidence.

2 Knowledge of craft and structure based on text selections

1. Interpret the meaning of words and phrases as used in text (e.g., figurative language, connotative language, technical meanings).
2. Analyze how specific word choices shape meaning or tone.
3. Analyze how the author uses organization and text structure(s) to convey meaning.
4. Contrast the point of view of two or more authors on the same topic by analyzing their claims, reasoning, and evidence.
5. Analyze how point of view and purpose shape the content and style of text.

3 Knowledge of the integration of information and ideas based on text selections

1. Evaluate and relate content presented in diverse formats.
2. Evaluate specific claims in text based on relevancy, sufficiency, and validity of reasoning.

3. Synthesize information from a range of texts to develop a coherent explanation of a process, phenomenon, concept, or theme.

4. Analyze multiple texts to differentiate approaches authors take to develop similar themes (e.g., mode, author's craft, genre, point of view).

Professional Education

Section 00

Professional Education

1 Knowledge of instructional design and planning

1. Choose appropriate methods, strategies, and evaluation instruments (e.g., formative assessment, summative assessment) for assessing and monitoring student performance levels, needs, and learning.

2. Select a variety of instructional practices, materials, and technologies that foster critical, creative, and reflective thinking aligned with state-adopted standards at the appropriate level of rigor.

3. Determine and apply learning experiences and activities that require students to demonstrate a variety of applicable skills and competencies.

4. Identify instructional resources based on measurable objectives, individual student learning needs, and performance levels.

5. Apply learning theories to instructional design and planning.

6. Determine long-term instructional goals and short-term objectives appropriate to student learning needs and performance levels aligned with state-adopted standards at the appropriate level of rigor.

7. Select and use culturally (i.e., regional, socio-economic, home language) responsive instructional materials and practices in planning.

8. Select lessons and concepts that are sequenced to activate prior knowledge and ensure coherence among the lessons.

9. Identify patterns of physical, social, and academic development to differentiate instructional design for student mastery.

10. Determine and apply appropriate intervention strategies based on individual student needs and data.

2 Knowledge of appropriate student-centered learning environments

1. Select and use appropriate techniques for organizing, allocating, and managing the resources of time, space, and attention in a variety of learning environments (e.g., face-to-face, virtual).

2. Apply appropriate strategies and procedures to manage individual student behaviors and group dynamics.

3. Use effective techniques for communicating high expectations to all students.

4. Evaluate and adapt the learning environment to accommodate the needs and backgrounds (i.e., cultural, home language, family) of all students.

5. Apply relevant techniques for modeling appropriate oral and written communication skills.

6. Determine skills and practices that encourage innovation and foster a safe climate of openness, inquiry, equity, and support for all students.

7. Apply information and communication technologies to maintain a student-centered learning environment.

8. Identify assistive technologies that enable all students to effectively communicate and achieve their educational goals.

3 Knowledge of instructional delivery and facilitation through a comprehensive understanding of subject matter

1. Use motivational strategies to engage and challenge all students.

2. Apply appropriate instructional practices for developing content area literacy.

3. Analyze gaps in students' subject matter knowledge in order to improve instructional delivery.

4. Assess and adapt instruction to address preconceptions and misconceptions of subject matter.

5. Relate subject matter to life experiences and across disciplines.

6. Apply techniques for developing higher-order critical thinking skills.

7. Select varied strategies, resources, and appropriate technology for relevant and comprehensible instruction.

8. Identify differentiated instructional practices based on assessment of learning needs, individual differences, and continuous student feedback.

9. Determine and apply techniques to provide feedback in order to promote student achievement.

10. Apply appropriate subject area activities to accommodate learning needs, developmental levels, and experiential backgrounds of all students.

4 Knowledge of various types of assessment strategies for determining impact on student learning

1. Analyze assessment data from multiple sources to guide instructional decisions.

2. Select formative and summative assessments that match learning objectives leading to student mastery.

3. Use a variety of assessment tools to monitor student progress, achievement, and learning gains.

4. Determine appropriate assessments and testing conditions to accommodate learning styles and varying knowledge levels of students.

5. Identify ways to share the importance and outcomes of student assessment data with students and stakeholders.

6. Use technology to organize and integrate assessment data.

5 Knowledge of relevant continuous professional improvement

1. Determine relevant and measureable professional development goals to strengthen the effectiveness of instruction based on educator and students' needs.

2. Analyze and apply data-informed research to improve instruction and student achievement.

3. Use a variety of data, independently and in collaboration with colleagues, to evaluate learning outcomes, adjust planning, and continuously improve and reflect upon the effectiveness of lessons and practices.

4. Identify ways to collaborate with home, school, and other stakeholders to foster communication and obtain resources in order to support diverse student learning and continuous improvement.

5. Select and determine appropriate professional growth opportunities and reflective practices to improve teacher performance and impact student learning.

6. Analyze the implementation of professional development experiences and application to the teaching and learning process.

7. Choose appropriate professional growth opportunities in technology for the design and delivery of instruction to impact student learning.

6 Knowledge of the Code of Ethics and Principles of Professional Conduct of the Education Profession in Florida

1. Apply the Code of Ethics and Principles of Professional Conduct to professional and personal situations.

2. Identify statutory grounds and procedures for disciplinary action, the penalties that can be imposed by the Educational Practices Commission against a certificate holder, and the appeals process available to the individual.

3. Apply knowledge of rights, legal responsibilities, and procedures for reporting incidences of abuse, neglect, or other signs of distress.

4. Identify and apply policies and procedures for the safe, appropriate, and ethical use of technologies.

5. Determine and apply the appropriate use and maintenance of students' information and records.

7 Knowledge of research-based practices appropriate for teaching English Language Learners (ELLs)

1. Relate the nature and role of culture, cultural groups, and individual cultural identities into learning experiences for all students.

2. Analyze student developmental characteristics in relation to first and second language literacy acquisition stages to design instruction for students.

3. Interpret the Consent Decree to integrate teaching approaches, methods, strategies, and communication with stakeholders in order to improve learning for ELLs.

4. Evaluate and differentiate standards-based curriculum, materials, resources, and technology for ELLs based on multicultural, multi-level learning environments.

5. Analyze assessment issues as they affect ELLs and determine appropriate accommodations according to ELLs' varying English proficiency levels and academic levels.

8 Knowledge of effective literacy strategies that can be applied across the curriculum to impact student learning

1. Apply effective instructional practices to develop text reading skills in the appropriate content area.

2. Select instructional practices for developing and using content area vocabulary.

3. Determine instructional practices to facilitate students' reading comprehension through content areas.

4. Apply appropriate literacy strategies for developing higher-order critical thinking skills.

5. Select appropriate resources for the subject matter and students' literacy levels.

6. Differentiate instructional practices based on literacy data for all students.

Agriculture
6–12

Section 54

Agriculture 6–12

1 Knowledge of leadership, career opportunities, and employability skills

1. Identify the National FFA organization mission, program of activities, career development events, awards, and degree programs.
2. Identify important events in the history of the FFA.
3. Identify the organizational structure of the FFA.
4. Identify responsibilities of FFA chapter officers and committee chairpersons.
5. Identify public speaking skills.
6. Identify the rules of parliamentary procedure.
7. Identify career opportunities in agriculture.
8. Identify skills for obtaining and maintaining employment.

2 Knowledge of animal science

1. Identify livestock and companion animal terminology.
2. Identify desirable characteristics of livestock and companion animals.
3. Identify animal production systems and reproduction practices.
4. Identify animal nutrition, feedstuffs, and feeding practices.
5. Identify components of animal health, including diseases, health and sanitation practices, and veterinary terminology.
6. Identify safety practices related to animal handling.
7. Identify principles and methods of marketing animals and animal products.
8. Identify appropriate procedures for animal exhibition.
9. Identify animal anatomy and physiology.
10. Identify practices in aquatic animal production.
11. Identify practices that promote animal welfare.

3 Knowledge of soil science

1. Evaluate the suitability of different types of soil for the production of various crops.
2. Identify soil formations and the classifications of soil.
3. Identify methods and procedures for soil testing.
4. Identify formulations and use of different types of fertilizer.
5. Identify methods and techniques of soil preparation, water management, and rotation in the production of crops.
6. Identify types of soil erosion and conservation practices.

4 Knowledge of plant science

1. Apply basic principles of taxonomy to plant classification.
2. Identify distinguishing features of major plant groups.
3. Identify requirements for plant growth and development.
4. Identify parts of plants and their functions.
5. Identify the physiological processes in plants.
6. Identify the effects of different environmental factors on plant growth and development.
7. Identify sexual and asexual plant reproduction processes.
8. Identify basic principles of plant genetics and their application to agriculture.
9. Identify types, varieties, characteristics, and uses of economically important crops and ornamentals grown in Florida.
10. Identify procedures and techniques for selecting, planting, caring for, harvesting, and handling food crops.
11. Identify the effects of pests and nutrient deficiencies on crops, turf, and ornamentals.
12. Identify proper procedures and practices for greenhouse management.
13. Identify procedures and techniques for preparing and using different types of plant media.
14. Identify procedures and techniques for selecting and caring for ornamental crops.
15. Identify basic principles and techniques of landscape design and construction.
16. Identify proper handling and application of chemicals.

5 Knowledge of agricultural systems technology

1. Identify safety practices used in an agriculture laboratory.
2. Identify common hand and power tools and their proper uses.
3. Identify the proper use of oxyacetylene welding, cutting, and metal fabrication equipment.
4. Use measurement and mathematics in agriculture applications.
5. Identify basic agricultural equipment safety practices.
6. Identify procedures for maintaining tools and equipment.
7. Identify basic principles of gas and diesel engine operation.
8. Identify facility construction and building maintenance practices.
9. Identify principles of electric controls, motors, and electricity.
10. Identify principles in managing plumbing and irrigation systems.
11. Apply principles of physics to agricultural systems.
12. Identify uses of computer technology in agriculture.

6 Knowledge of environmental sciences and natural resources

1. Identify conservation practices related to renewable and nonrenewable resources.
2. Identify the hydrologic cycle in Florida.
3. Identify governmental agencies that regulate environmental and natural resources.
4. Identify the relationships within Florida ecosystems.
5. Identify positive and negative impacts of agriculture on the environment.

7 Knowledge of agricultural business management, economics, and marketing

1. Identify the role and importance of the agribusiness sector in economic development.
2. Identify the input, production, and marketing sectors of the agribusiness system.
3. Identify methods of planning and organizing agribusiness enterprises.
4. Use record keeping, budgeting, and financial statements in making budgetary decisions.

5. Identify sources and uses of credit in agriculture.

6. Identify the principles of supply and demand and the economics of resource use for agricultural commodities.

7. Identify practices used in agricultural marketing and international trade.

8. Identify the roles of government agencies that serve agriculture.

9. Identify the types of supervised agriculture experience (SAE) programs and their benefits.

8 Knowledge of agricultural department management and professional development

1. Identify professional publications and organizations for agricultural education.

2. Identify strategies in agricultural curriculum planning, curriculum development, and evaluation of instructional resource materials.

3. Identify the functions of agricultural education advisory committees, alumni, and community support groups.

4. Identify important legislation affecting the development of agricultural education.

5. Identify the roles of FFA, SAE, and classroom instruction in an agriculture program.

6. Identify principles of agricultural classroom and laboratory management.

9 Knowledge of biotechnology

1. Identify historical milestones, advantages, and disadvantages in biotechnology.

2. Identify the parts of a cell structure and their functions.

3. Predict the characteristics and performance of offspring based upon the genetic makeup of the parents.

10 Knowledge of food science and systems

1. Identify major food commodities.

2. Identify food safety issues on local, state, national, and international levels.

3. Identify beneficial microorganisms involved in the food industry.

4. Identify appropriate food-handling procedures.

5. Identify emerging techniques in food processing and preservation.

6. Identify important historical events and developments in food production.

7. Identify differences in agricultural practices employed in various regions of the world.

Art
K–12

Section 01

Art K–12

1 Knowledge of the processes of drawing

1. Identify and demonstrate knowledge of drawing materials, tools, processes, and visual characteristics.

2. Demonstrate an understanding of the organization of visual elements and the selection of media for visual effect.

3. Identify materials, terminology, techniques, and methods appropriate for K–12 instruction.

2 Knowledge of the processes of painting

1. Identify and demonstrate knowledge of painting materials, tools, processes, and visual characteristics.

2. Demonstrate an understanding of the organization of visual elements and the selection of media for visual effect.

3. Identify materials, terminology, techniques, and methods appropriate for K–12 instruction.

3 Knowledge of the processes of sculpture

1. Identify and demonstrate knowledge of sculptural materials, equipment, tools, processes, and visual characteristics.

2. Demonstrate an understanding of the organization of visual elements and the selection of media for visual effect.

3. Identify materials, equipment, terminology, techniques, and methods appropriate for K–12 instruction.

4 Knowledge of the processes of printmaking

1. Identify and demonstrate knowledge of printmaking materials, equipment, tools, processes, and visual characteristics.

2. Demonstrate an understanding of the organization of visual elements and the selection of media for visual effect.

3. Identify materials, equipment, terminology, techniques, and methods appropriate for K–12 instruction.

5 Knowledge of the processes of ceramics

1. Identify and demonstrate knowledge of materials, equipment, tools, processes, and visual characteristics used in ceramic production.

2. Demonstrate an understanding of the organization of visual elements and the selection of media for visual effect.

3. Identify materials, equipment, terminology, techniques, and methods appropriate for K–12 instruction.

6 Knowledge of the processes of fine crafts

1. Identify and demonstrate knowledge of materials, equipment, tools, processes, and visual characteristics of fine crafts (e.g., wood, metal, glass, fibers).

2. Demonstrate an understanding of the organization of visual elements and the selection of media for visual effect.

3. Identify materials, equipment, terminology, techniques, and methods appropriate for K–12 instruction.

7 Knowledge of the processes of graphic design

1. Identify and demonstrate knowledge of graphic design purposes, processes, tools, equipment, and materials.

2. Demonstrate an understanding of the organization of visual elements and the selection of media for visual effect.

3. Identify materials, equipment, terminology, techniques, and methods appropriate for K–12 instruction.

8 Knowledge of the processes of photography

1. Identify and demonstrate knowledge of materials, tools, equipment, processes, and visual characteristics used in photography.

2. Demonstrate an understanding of the organization of visual elements and the selection of media for visual effect.

3. Identify materials, equipment, terminology, techniques, and methods appropriate for K–12 instruction.

9 Knowledge of computer technology and processes in art

1. Identify and demonstrate knowledge of computer-based processes, equipment, technology, and materials used for visual learning or for computer-generated imagery.

2. Demonstrate an understanding of the organization of visual and audio elements and the selection of media for expressive effect.

3. Identify materials, equipment, terminology, techniques, and methods appropriate for K–12 instruction.

10 Knowledge of equipment maintenance, hazardous substances, and safety procedures

1. Identify hazardous substances that are commonly used in art procedures.

2. Apply knowledge of hazardous substances and safety procedures in an art class.

3. Identify procedures required for maintenance of basic tools and equipment used in art production.

11 Knowledge of the sources for forming ideas in art

1. Identify natural and manmade environments as starting points for making art.

2. Identify inner feelings and imagination as starting points for making art.

3. Identify universal themes and socially constructed environments as starting points for making art.

4. Identify existing art as a starting point for making art.

12 Knowledge of major artists and their works

1. Identify artists associated with major and diverse schools and art movements.

2. Identify social, historical, and cultural influences on major artists and their works.

3. Identify visual characteristics in works by artists that represent a departure from other works in a given period.

4. Compare the visual characteristics of past and present artists.

13 Knowledge of art styles, developments, and movements

1. Distinguish styles of art related to various social, cultural, and historical contexts.
2. Identify components in a work of art that characterize a specific style.
3. Analyze a work of art on the basis of its style.
4. Determine art developments and movements in chronological order.

14 Knowledge of social, cultural, and historical influences

1. Identify social, cultural, and historical influences that shape particular art practices.
2. Apply knowledge of social, cultural, and historical influences as they affect interpretation and artistic experience.
3. Identify terminology, equipment, tools, materials, techniques, and technology used in the production of art forms of specific cultures.

15 Knowledge of art criticism processes

1. Identify the use of media and techniques in a work of art.
2. Identify sensory materials (i.e., elements of art) in a work of art.
3. Identify compositional devices (i.e., principles of art) in a work of art.
4. Identify theme, subject matter, or emotional impact in a work of art.
5. Judge the relative merit of an art work based on established criteria.

16 Knowledge of aesthetic philosophies and theories

1. Identify major philosophies that affect aesthetic theories.
2. Apply major philosophies and aesthetic theories to art.

17 Knowledge of major theories of learning in art

1. Identify events and persons instrumental in the historical development of art education.
2. Identify the social and philosophical foundations of art education.
3. Apply theories of child development to curriculum and instruction.

18 Knowledge of research, professional organizations, and journals

1. Identify issues and trends in current art research.
2. Identify activities in professional art and art education organizations.
3. Identify purposes of current professional art and art education journals.
4. Identify and interpret resources that can be used to address a range of educational objectives.

19 Knowledge of equity, fairness, and diversity in art education

1. Identify modifications and accommodations specific to the instruction of art to meet individual needs of students.
2. Apply instructional strategies to meet the diverse needs and varying exceptionalities of art students.
3. Identify curricula to include various cultural and ethnic groups.

20 Knowledge of assessment and evaluation in art education

1. Identify formative and summative methods for evaluation of student learning.
2. Apply evaluative and diagnostic processes to individual works of students.
3. Identify a student's progress in art learning over time.

21 Knowledge of connections between visual arts, other disciplines, and real-world applications

1. Identify art skills related to the world of work.
2. Determine art resources and activities within the community.
3. Determine the relationship of art to other disciplines.
4. Identify the roles of visual images in contemporary culture.

Biology
6–12

Section 02

Biology 6–12

1 Knowledge of the investigative processes of science

1. Identify components, proper use, and care of light microscopes.

2. Distinguish between the types of microscopy (e.g., scanning electron microscopy, transmission electron microscopy, phase contrast) and their applications.

3. Identify proper techniques for common laboratory procedures (e.g., dissecting; preserving, staining, and mounting microscope specimens; preparing laboratory solutions; using chromatography; performing gel electrophoresis).

4. Identify proper techniques for field studies (e.g., site selection, sampling, transects, collecting techniques, environmental measurements).

5. Select appropriate uses of common laboratory procedures (e.g., polymerase chain reaction, chromatography, spectrophotometry, centrifugation, gel electrophoresis).

6. Calculate measurements in the appropriate metric units.

7. Differentiate between assumptions, inferences, observations, hypotheses, conclusions, theories, and laws.

8. Interpret empirical data (e.g., charts, graphs, tables, diagrams).

9. Differentiate the characteristics and methodologies of scientific and nonscientific knowledge.

10. Identify relationships between the variables and possible outcomes of a specific experiment.

11. Relate the validity and reliability of scientific knowledge to reproducibility, statistical significance, technological limitations, bias, and types of error.

12. Identify the development of biological theories and knowledge through important historical events, creative endeavors of diverse individuals, and experimental evidence.

13. Differentiate between qualitative and quantitative data in experimental, observational, and modeling methods of research.

14. Determine the elements of a well-designed and controlled experiment.

15. Identify evidence of the dynamic nature of science in the face of new scientific information.

16. Identify patterns (e.g., circadian rhythms, migration, succession, cycles) at the level of organisms, populations, or ecosystems that govern the occurrence of natural events.

2 Knowledge of the interactions between science, technology, and society

1. Analyze the ethical, legal, economic, and social implications of current scientific research and practices (e.g., reproductive and life-sustaining technologies, genetic basis for behavior, population growth and control, government and business influences on biotechnology, cloning, genomics, genetic engineering).

2. Analyze environmental challenges (e.g., ozone depletion, pollution, climate change, health effects) that may result from scientific and technological advances.

3. Analyze the effects (e.g., multidrug resistance, rapid transmission across international boundaries) of globalization on the spread and treatment of pathogens and invasive species.

4. Identify pertinent legislation and national guidelines (e.g., National Association of Biology Teachers, International Society of Environmental Forensics, Occupational Safety and Health Administration chemical safety guidelines, material safety data sheets) regarding laboratory safety, hazardous materials, experimentation, and the use and handling of organisms in the classroom.

3 Knowledge of the chemical processes of living things

1. Identify the structures, functions, and importance of inorganic and organic compounds (e.g., water, mineral salts, carbohydrates, lipids, proteins, nucleic acids) in cells.

2. Apply the laws of thermodynamics to living systems, including the role of enzymes in biological reactions.

3. Predict the effects of changes in pH, temperature, substrate concentration, and enzyme concentration on reaction rate.

4. Identify substrates, products, and relationships in aerobic respiration (e.g., glycolysis, the Krebs cycle, electron transport), including metabolism of carbohydrates, fats, and amino acids, and in anaerobic respiration (e.g., alcoholic fermentation, lactic acid fermentation).

5. Compare end products and energy yields of anaerobic and aerobic respiration.

6. Identify the raw materials and products of C_3 photosynthesis, as well as factors that affect the rate of light-dependent reactions and the Calvin cycle.

7. Identify key differences between C_3, C_4, and CAM photosynthesis, and the evolutionary and ecological significance of these pathways.

8. Analyze the role of chemiosmosis in photosynthesis and respiration.

9. Compare heterotrophy and autotrophy and the roles of these processes in the environment.

10. Evaluate the components and roles of the antigen-antibody reaction.

11. Compare active and passive immunity.

12. Evaluate the roles of cell recognition (e.g., cell-to-cell signaling, autoimmune diseases, tissue rejection, cancer, pollen or stigma-style interaction) in normal and abnormal cell activity.

13. Identify the effect of environmental factors on the biochemistry of living things (e.g., ultraviolet light effects on melanin and vitamin D production).

14. Identify the roles of ATP and ADP in cellular processes.

15. Compare chemosynthetic and photosynthetic processes and the roles of organisms using these processes in the ecosystem.

16. Identify cell-to-cell communication (e.g., electrical, chemical) in living things.

17. Identify specific and nonspecific immune responses to vaccines and inoculations.

4 Knowledge of the interactions between cell structure and cell function

1. Identify the major scientists and events that contributed to the development of the cell theory.

2. Distinguish between the major structural characteristics of prokaryotic and eukaryotic cells.

3. Relate the structure of cell organelles to their functions.

4. Differentiate the events of each phase of the cell cycle (e.g., G_1, S, G_2, M) and the regulatory mechanisms of the cycle.

5. Compare the mechanisms and results of nuclear division (i.e., karyokinesis) and cell division (i.e., cytokinesis) in plant and animal cells.

6. Compare characteristics of the major taxa (e.g., domains, kingdoms, phyla), including cellular characteristics.

7. Evaluate the relationships between the structures and functions of cell membrane components.

8. Compare active and passive cellular transport mechanisms.

5 Knowledge of genetic principles, processes, and applications

1. Evaluate the relationships between structure and function in nucleic acids.

2. Sequence the principal events of DNA replication.

3. Sequence the principal events of protein synthesis.

4. Distinguish between the functions of DNA and RNA.

5. Distinguish between the regulatory systems for prokaryotic and eukaryotic protein synthesis.

6. Identify proper techniques for recombinant DNA technology (e.g., Southern blotting, creation of transgenic organisms, gene splicing, mitochondrial DNA isolation).

7. Evaluate possible effects of environmental and genetic influences (e.g., viruses, oncogenes, carcinogenic agents, mutagenic agents, epigenetic factors) on gene structure and expression.

8. Analyze the processes and products of meiosis in plants, animals, and fungi.

9. Identify Mendelian laws of inheritance, their relationship to chromosomes, and related terminology.

10. Analyze applications of probability and statistical analysis (e.g., chi-square, Punnett square) in genetics.

11. Analyze various patterns of inheritance (e.g., sex-linked, sex-influenced, sex-limited, incomplete dominance, codominance, autosomal linkage, multiple alleles, polygenic inheritance).

12. Identify the causes of genetic disorders (e.g., point mutation, nondisjunction, aneuploidy, translocation, deletion, insertion, inversion, duplication).

13. Identify the effect of a mutation in a DNA sequence on the products of protein synthesis.

6 Knowledge of the structural and functional diversity of viruses and prokaryotic organisms

1. Distinguish the structure and function of viruses and prokaryotic organisms.

2. Identify the effects of viruses (e.g., AIDS, influenza, measles, feline leukemia, some human cancers) and prokaryotes (e.g., tuberculosis, bubonic plague, cholera) on organisms.

3. Relate the structures and functions (e.g., morphology, motility, reproduction and growth, metabolic diversity) of prokaryotes to their behavior and identification.

4. Differentiate the major types of bacterial genetic recombination (i.e., transduction, transformation, conjugation).

5. Relate microbial processes and products to their uses in biotechnology.

7 Knowledge of the structural and functional diversity of protists, fungi, and plants

1. Identify major types of protists, fungi, and plants.

2. Identify the positive and negative effects of protists, fungi, and plants on other living things.

3. Relate the structures of specialized plant tissues to their functions.

4. Relate the characteristics of vascular and nonvascular plants to adaptations allowing these organisms to broaden their ecological niches.

5. Identify the functions of the major organs of angiosperms and gymnosperms and the survival advantages associated with those organs.

6. Compare the structures of monocots and dicots (e.g., seeds, vascular bundles, venation, flower parts).

7. Relate the major mechanisms (e.g., transport, storage, water conservation, reproduction, transpiration) in plants to environmental stimuli.

8. Analyze the role of major plant growth regulators (e.g., auxins, gibberellins, ethylene).

9. Identify methods of reproduction in plants.

10. Analyze patterns of alternation of generations in plants, fungi, and algae.

8 Knowledge of the structural and functional diversity of animals

1. Relate the structures of animal tissue types (e.g., epithelial, connective, muscle, nervous) to their functions.

2. Characterize major animal body plans (e.g., symmetry, coelomic character, embryonic origin).

3. Identify the stages, sequence, and processes of differentiation in embryological development for representative animal phyla.

4. Relate the structures of circulatory and lymphatic systems to their functions.

5. Relate the structures of excretory and digestive systems to their functions.

6. Relate the structures of endocrine and nervous systems to their functions.

7. Relate the structures of integumentary and musculoskeletal systems to their functions.

8. Relate the structures of reproductive systems to their functions.

9. Relate the structures of respiratory systems to their functions.

10. Analyze how body systems contribute to the human immune response.

11. Analyze the interconnectedness of animal organ systems.

12. Analyze the effects of positive and negative feedback loops in human systems (e.g., vertebrate hormones, fight or flight).

13. Identify aspects of animal social behavior (e.g., communication and signals, dominance hierarchy, territoriality, aggression, courtship, innate and learned behavior).

9 Knowledge of ecological principles and processes

1. Distinguish between individuals, populations, communities, ecosystems, biomes, and the biosphere.

2. Analyze the relationship between organisms (e.g., producers, consumers, decomposers) and their trophic levels.

3. Identify processes, components, and roles of organisms in the hydrologic, carbon, nitrogen, and phosphorous cycles.

4. Analyze patterns of energy flow in an ecosystem.

5. Evaluate factors that affect population composition, growth, size, and geographic distribution.

6. Classify examples of species interactions (e.g., competition, predation, parasitism, mutualism, commensalism).

7. Distinguish between primary and secondary succession in biotic communities.

8. Analyze the costs and benefits of managing renewable and nonrenewable resources.

9. Evaluate the effects of human population size, resource use, and technology on environmental quality.

10. Evaluate the consequences of loss of biodiversity.

11. Characterize the biotic and abiotic components that define Florida's ecosystems (e.g., freshwater, marine, estuary, terrestrial).

10 Knowledge of evolutionary mechanisms

1. Compare the current theory of evolution by natural selection with previous scientific theories of evolution (e.g., Lamarck, Darwin).

2. Analyze exceptions to and limitations of the biological species concept.

3. Compare systems of classification (e.g., classical taxonomy, phenetics, cladistics).

4. Apply a taxonomic (e.g., dichotomous) key to a set of objects.

5. Analyze variation within a species along an environmental cline.

6. Identify factors affecting speciation (e.g., mutation, recombination, types of isolation, sexual reproduction and selection, genetic drift, plate tectonics, geographic distribution).

7. Evaluate the roles of mutation, recombination, isolation, sexual reproduction and selection, genetic drift, plate tectonics, and geographic distribution in evolution.

8. Compare the concepts of punctuated equilibrium and gradualism.

9. Interpret examples of evidence for evolutionary theory (e.g., molecular, morphological, embryological, paleontological).

10. Analyze aspects of modern scientific theories (e.g., primitive precell, endosymbiotic) on the origin and early evolution of life on Earth.

11. Differentiate patterns of evolutionary change (e.g., coevolution, convergent evolution, divergent evolution, parallel evolution) as they relate to major taxa.

12. Apply the Hardy-Weinberg equilibrium, using the formula and assumptions, to predict changes in genotypic frequencies in a population.

13. Identify basic trends in hominid evolution from early ancestors to modern humans.

Business Education
6–12

Section 51

Business Education 6–12

1 Knowledge of information and technological systems

1. Identify touch keyboarding techniques.
2. Identify standard formats for business documents.
3. Identify the purposes, functions, terminology, and common features of word processing, spreadsheet, database, digital publishing, presentation, multimedia software, and communication software.
4. Identify the types of networks and their features and uses.
5. Identify hardware and software problems.
6. Identify telecommunications terminology, processes, and procedures.
7. Demonstrate knowledge of legal and ethical practices as they relate to information and technological systems.
8. Identify current programming languages.
9. Select application software appropriate for specific tasks.

2 Knowledge of business communications

1. Identify resources used for researching business information.
2. Identify the rules for standard grammar and punctuation usage.
3. Select and organize the content of business documents.
4. Demonstrate knowledge of verbal and nonverbal communications.
5. Demonstrate knowledge of effective internal and external communications.

3 Knowledge of administrative office systems

1. Identify rules and procedures of records management.
2. Identify appropriate mail-handling procedures.
3. Identify reprographics terminology and processes.
4. Identify health and safety issues in the workplace.

5. Identify characteristics of professional business behavior.

6. Select appropriate administrative office procedures.

4 Knowledge of accounting

1. Identify accounting concepts, terminology, and procedures.

2. Interpret and use financial data.

3. Solve business mathematics problems.

4. Distinguish between manual and computerized accounting.

5 Knowledge of business management

1. Identify management theories, functions, and procedures.

2. Identify leadership and management styles.

3. Determine organizational structure, functions, and responsibilities.

4. Identify strategies to address workplace issues.

5. Identify human resource management approaches.

6. Analyze the impact of government regulations.

7. Analyze financial data to make short-term and long-term decisions.

8. Distinguish among various marketing strategies.

9. Differentiate among the types of business ownership.

10. Identify the characteristics of entrepreneurship.

11. Identify the process of starting and maintaining a business.

6 Knowledge of financial management

1. Identify money management strategies.

2. Identify the role of credit in the U. S. economy.

3. Identify financial services and institutions.

4. Identify the impact of customer service on business.

5. Apply problem-solving skills and pertinent knowledge to consumer decisions.

7 Knowledge of business law

1. Identify and interpret common legal processes, procedures, and documents.

2. Identify the major types of laws and distinguish among them.

3. Demonstrate knowledge of federal, state, and local statutes.

4. Assess organized labor strategies and the legal impact of organized labor.

8 Knowledge of foundations, teaching methods, and professional development

1. Demonstrate knowledge of trends and issues affecting business technology education.

2. Demonstrate knowledge of curriculum planning and development in business technology education.

3. Demonstrate knowledge of strategies for developing and cultivating business partnerships.

4. Demonstrate knowledge of instructional and interpersonal skills that assist students in interacting constructively with others.

5. Demonstrate knowledge of effective lesson presentation and assessment techniques.

6. Identify professional publications and organizations.

7. Demonstrate knowledge of business technology education student organizations.

8. Demonstrate knowledge of online and off-line support and resources.

9. Distinguish among types of ancillary materials and relate each to specific teaching goals.

10. Identify criteria for evaluating resource materials such as software, textbooks, and audio-visuals.

9 Knowledge of international business

1. Apply communication strategies for international business relations.

2. Identify the role and impact of international business activities on local economies.

3. Identify the social, cultural, political, legal, and economic factors that shape and impact the international business environment.

4. Analyze the consequences of international government regulations.

5. Identify issues in the international financial arena.

6. Distinguish among various international marketing strategies.

10 Knowledge of career development

1. Identify personal career management strategies and employability skills on a national and international level.

2. Demonstrate knowledge of workplace trends and issues.

Chemistry
6–12

Section 03

Chemistry 6–12

1 Knowledge of the nature of matter

1. Differentiate between pure substances, homogeneous mixtures, and heterogeneous mixtures.

2. Determine the effects of changes in temperature, volume, pressure, or quantity on an ideal gas.

3. Apply units of mass, volume, and moles to determine concentrations and dilutions of solutions.

4. Analyze the effects of physical variables (e.g., pressure, temperature) on solubility and the dissolving process.

5. Analyze problems relating colligative properties to molar mass and solution concentrations.

6. Analyze the effects of forces between chemical species on physical properties (e.g., melting point, boiling point, vapor pressure, solubility, conductivity) of matter.

7. Solve problems involving an intensive property (e.g., density, specific heat) of matter.

8. Differentiate between various physical methods (e.g., chromatography, distillation, filtration) for separating the components of mixtures.

9. Identify the unique physical and chemical properties of water.

10. Differentiate between physical and chemical properties and physical and chemical changes of matter.

2 Knowledge of energy and its interaction with matter

1. Distinguish between different forms of energy (e.g., thermal, electrical, nuclear).

2. Relate temperature and heat to the motion of particles (e.g., atoms, molecules) using the kinetic molecular theory.

3. Interpret a phase diagram of a pure substance.

4. Interpret a heating and cooling curve of a substance.

5. Calculate thermal changes associated with chemical reactions, such as heats of reaction, heats of formation, and heats of combustion, from thermochemical data.

6. Analyze entropy changes during solution formation, phase changes, and chemical reactions.

7. Predict spontaneity of a chemical process given either initial and final values of Gibbs free energy or temperature, enthalpy, and entropy.

8. Relate regions of the electromagnetic spectrum to the energy, wavelength, and frequency of photons.

9. Identify the effects of various types of electromagnetic radiation (e.g., ultraviolet, infrared) on the chemical or physical properties of matter.

10. Recognize that energy can be transformed from one form to others and that the total energy in a closed system is conserved.

11. Distinguish between the characteristics of endothermic and exothermic reactions.

3 Knowledge of bonding and molecular structure

1. Identify the basic theory and applications of spectroscopy (e.g., infrared, mass spectrometry, nuclear magnetic resonance, ultraviolet, x-ray).

2. Identify types or examples of bonds (e.g., metallic, ionic, polar covalent, nonpolar covalent).

3. Relate electronegativity differences to bond type.

4. Identify properties of simple organic compounds.

5. Given the structural formula for a simple covalent compound, identify the hybridization of the atoms.

6. Identify sigma and pi bonds in a molecule.

7. Interpret the information derived from the following models: Lewis electron dot structures, valence shell electron pair repulsion (VSEPR) theory, and molecular orbital (M/O) theory involving diatomic molecules.

8. Select the most probable Lewis electron dot structure for an ionic or covalent formula (e.g., CO_2, Na_2CO_3) that follows the octet rule.

9. Predict the geometry (e.g., bent, linear, tetrahedral, trigonal bipyramidal) of simple molecules.

10. Predict the polarity of simple molecules.

11. Predict physical or chemical properties based on the type of bonding involved.

12. Identify the formula for an inorganic chemical compound (e.g., ionic, molecular, acid), given its name.

13. Identify the name of an inorganic chemical compound (e.g., ionic, molecular, acid), given its formula.

14. Identify proper names and formulas for simple organic compounds containing one functional group.

15. Identify common functional groups in an organic molecule.

16. Differentiate between the chemical structures of common biochemical compounds (e.g., lipids, amino acids, peptides, sugars, carbohydrates, nucleic acids).

4 Knowledge of chemical reactions and stoichiometry

1. Balance chemical equations.

2. Given common chemical reactants and reaction conditions, predict probable products.

3. Solve mass-mass stoichiometry problems.

4. Solve mass-gas volume stoichiometry problems.

5. Solve solution stoichiometry problems.

6. Solve stoichiometry problems with limiting reactants.

7. Determine empirical and molecular formulas from experimental data.

8. Analyze the effects of concentration, temperature, pressure, surface area, and the presence or absence of catalysts on reaction rate.

9. Predict the effect of a change in concentration, temperature, or pressure on the state of a system initially at equilibrium by applying Le Châtelier's principle.

10. Determine rate laws from concentrations, rate data, or graphs.

11. Determine either the equilibrium constant, *K*, or the concentration of a reaction species at equilibrium.

12. Identify the characteristics of a chemical system in dynamic equilibrium.

13. Identify major characteristics of strong and weak acids or bases.

14. Evaluate the characteristics of buffer systems.

15. Interpret graphical and numerical titration data.

16. Identify oxidation-reduction processes.

17. Balance redox equations in acidic or basic solutions.

18. Determine the spontaneity of a chemical reaction using standard reduction potentials.

19. Identify the characteristics of combustion reactions of simple organic compounds (e.g., sugars, alcohols, simple fossil fuels).

20. Solve problems related to pH or pOH of strong acids or bases.

21. Analyze electrolytic and voltaic cells.

22. Given a balanced chemical equation, identify the common reaction type.

5 Knowledge of atomic theory and structure

1. Using the periodic table, determine the number of protons, neutrons, and electrons in an atom or ion of a specific isotope.

2. Using the periodic table, analyze periodic trends in physical properties (e.g., ionic size, atomic size, boiling point, melting point) of the representative elements.

3. Using the periodic table, analyze periodic trends in chemical properties (e.g., electron affinity, ionization energy, electronegativity) of the representative elements.

4. Using the periodic table, determine electron configurations and orbital filling diagrams for elements with atomic numbers 1–56 and their ions.

5. Relate an element's chemical reactivity to its valence-shell electron configuration.

6. Identify the major characteristics of waves and particles, as well as the dual nature of matter.

7. Identify characteristics of unstable nuclei, including the particles and electromagnetic radiation they emit.

8. Given measurable quantities, solve problems involving radioactive decay.

9. Balance simple nuclear equations.

10. Identify the main characteristics of nuclear fission and fusion.

11. Identify electron density distribution diagrams and characteristics for *s*, *p*, and *d* orbitals (e.g., nodes, shapes).

12. Predict the effects of energy quantization at the atomic level.

6 Knowledge of the nature of science

1. Identify the characteristics and components of scientific inquiry and how it differs from other areas of learning.

2. Analyze the characteristics (e.g., independent, dependent, and controlled variables; bias; control groups) of a given experimental design.

3. Interpret empirical and graphical data to draw valid conclusions.

4. Analyze the relationship of experimental observations to experimental design, including underlying assumptions, hypotheses, conclusions, models, or theories.

5. Differentiate between the uses of qualitative and quantitative data.

6. Identify how the progressive development of basic science affects applied science, technology, the economy, and society.

7. Identify evidence of the progressive historical development of science.

7 Knowledge of measurement

1. Convert between units for one-, two-, and three-dimensional quantities.

2. Determine the units of a given mathematical expression.

3. Apply prefixes (e.g., kilo-, milli-, nano-) used in scientific measurements.

4. Distinguish between accuracy and precision and between systematic and random error.

5. Apply the correct number of significant figures in measurements or calculations.

6. Relate the Celsius, Fahrenheit, and Kelvin temperature scales, including the boiling point and melting point of water.

7. Use scientific notation (e.g., convert between decimal and scientific notation, perform mathematical calculations with numbers written in scientific notation).

8. Solve a multistep problem involving dimensional analysis (e.g., kinetics, solution preparation, thermochemistry).

8 Knowledge of appropriate laboratory use and procedures

1. Identify appropriate chemistry laboratory procedures for the safe storage, use, and disposal of materials and equipment.

2. Choose the correct laboratory equipment for a particular procedure.

3. Identify emergency procedures and safety equipment needed in the chemistry laboratory and classroom.

4. Identify the areas of teacher liability and responsibility in chemistry-related activities.

5. Relate knowledge of pertinent guidelines (e.g., from American Chemical Society, Environmental Protection Agency, material safety data sheets, National Science Teachers Association, Americans with Disabilities Act) to laboratory safety, hazardous materials, experimentation, and accommodations for students with special needs.

Computer Science
K–12

Section 05

Computer Science K–12

1 Knowledge of computational thinking and problem solving

1. Analyze a problem and apply appropriate solution strategies.
2. Apply the steps of algorithmic problem solving when designing solutions to problems.
3. Apply the stages of the software development life cycle (i.e., problem definition, analysis, design, testing, implementation, maintenance).
4. Determine and select an appropriate algorithm for a given problem.
5. Predict outputs of algorithms for a given input.
6. Identify an appropriate set of data necessary for testing a computer solution.

2 Knowledge of data types and structures

1. Distinguish between constants and variables and between local and global identifiers.
2. Distinguish between integer, real number, character, string, Boolean, and object data types.
3. Recognize and convert between binary, decimal, and hexadecimal number systems.
4. Identify characteristics and uses of data structures, including arrays, linked lists, stacks, queues, and sets.
5. Distinguish between instance, class, and local variables in an object-oriented design.
6. Identify components of class declarations for an object-oriented program and distinguish between public and private access specifiers.

3 Knowledge of programming logic

1. Distinguish between error types (e.g., syntax, runtime, logic) and apply principles of debugging.
2. Identify principles, characteristics, and uses of internal and external program documentation.
3. Analyze the characteristics and functions of object-oriented and procedural languages.
4. Select the appropriate algorithmic sequence, conditional, iteration, and recursive constructs for a given purpose.

5. Analyze characteristics and applications of searching (i.e., sequential, binary) and sorting (i.e., selection, insertion, merge) algorithms.

6. Analyze the characteristics and applications of propositional logic (e.g., De Morgan's laws).

4 Knowledge of programming languages

1. Identify characteristics and apply concepts of the Scratch™ programming language learning environment from the MIT Media Library.

2. Analyze segments of Java® code containing sequential, conditional, or iteration statements.

3. Analyze segments of Java® code involving methods, interacting objects, or passing parameters.

4. Apply principles of data types and data manipulation (e.g., string methods, arithmetic operations) in the Java® programming language.

5. Apply principles of abstraction, encapsulation, inheritance, and polymorphism in the Java® programming language.

5 Knowledge of computer hardware, software, and networking

1. Identify the hardware components of a computer system and their functions (e.g., input, output, processing, storage).

2. Analyze the advantages, disadvantages, or both of various data storage technologies.

3. Identify the characteristics and uses of various types of software (e.g., system, application).

4. Apply features and functions of application and productivity software (e.g., word processing, spreadsheet, database, multimedia authoring, Web development software).

5. Identify concepts and terminology related to networks (e.g., network protocols, Open Systems Interconnection model, client-server, cloud computing).

6. Identify characteristics and uses of network devices (e.g., servers, routers, switches, access points, workstations).

6 Knowledge of the historical aspects and social issues related to computer technologies

1. Identify examples of appropriate use (e.g., software license types, archival copying, fair use of copyrighted materials) and misuse (e.g., plagiarism, music and video piracy) of intellectual property.

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2. Identify milestones in the historical development of computer technology and important contributions of individuals or groups to the development of computer technology.

3. Analyze cultural, legal, and ethical issues and responsibilities of digital citizens, organizations, and government entities (e.g., privacy issues related to Internet use, data protection).

4. Analyze issues related to malicious software, social engineering, and security awareness.

5. Identify concepts and terminology related to security countermeasures (e.g., firewalls, antivirus programs, filtering software, encryption) that prevent, detect, and correct breaches.

6. Analyze security issues related to maintaining the confidentiality, integrity, and availability of information.

7 Knowledge of computer science pedagogy

1. Apply appropriate and effective classroom management strategies for teaching computer science (e.g., laboratory work, cooperative learning, electronic communications).

2. Apply appropriate and effective instructional strategies for teaching computer science (e.g., independent learning, case studies, role-playing, manipulatives, visualizations, simulations, modeling, team software development).

3. Apply appropriate and effective formative and summative assessment strategies for teaching computer science (e.g., rubrics, portfolios).

4. Apply appropriate and effective accommodations, adaptations, and strategies that ensure the equitable use of technology for diverse student populations (e.g., students with exceptionalities, English language learners, students from various socioeconomic levels).

5. Determine characteristics and apply uses of instructional technologies (e.g., collaborative online tools, social networking, computer-based learning, mobile devices).

6. Recognize opportunities, skills, and paths related to college and career readiness in the field of computer science.

7. Apply practices for planning and developing curricula that meet state and national standards and recognize resources for ongoing professional support and development.

Drama
6–12

Section 06

Drama 6–12

1 Knowledge of acting

1. Identify basic physiological processes of voice production.
2. Identify methods and purposes of physical and vocal warm-ups.
3. Identify common acting terms.
4. Identify various methods and approaches to actor training.
5. Identify the techniques for developing characterization.
6. Identify basic principles of stage movement and stage combat.
7. Identify basic techniques of pantomime.
8. Assess applications of improvisation techniques.
9. Differentiate between acting for multimedia and acting for the stage.

2 Knowledge of creative dramatics

1. Identify the objectives and fundamental processes of creative dramatics.
2. Identify methods and approaches to using creative dramatics in the classroom.

3 Knowledge of theatre production and design

1. Identify theatre safety practices.
2. Identify theatre production terminology.
3. Interpret basic ground/floor plans and elevations.
4. Identify basic elements of set construction and materials.
5. Identify basic elements and techniques of scene design and scene painting.
6. Identify basic elements and techniques of property design, materials, and construction.
7. Identify basic lighting design, techniques, and equipment.
8. Identify basic sound design, techniques, and equipment.
9. Identify basic elements of costume design and construction.

10. Identify basic makeup design, techniques, and materials.

11. Analyze solutions to facility problems.

12. Identify stage management responsibilities.

13. Identify theatre management responsibilities.

14. Identify production staff and basic crew responsibilities.

15. Identify ways of using computers in theatre production, management, and design.

16. Differentiate between production and design techniques for multimedia and the stage.

4 Knowledge of dramatic literature and criticism

1. Identify basic theatre styles and genres.

2. Identify and apply elements of plot structure and play analysis.

3. Identify the influences of major theorists and their works.

4. Identify cultural, political, and historical influences on dramatic literature.

5. Identify significant classical and contemporary contributions from diverse cultures.

6. Identify elements of assessment and critical reviewing for performance and production.

7. Identify the role and responsibilities of the dramaturg.

5 Knowledge of theatre history

1. Identify major periods in world theatre history.

2. Identify the influence of the major periods of world theatre on the design of the performance space.

3. Identify major theatre artists (e.g., playwrights, directors, designers, choreographers, performers) and their contributions.

4. Identify major periods in American theatre.

5. Identify significant dramatic works from the major periods of world theatre.

6. Identify contributors to and major developments in musical theatre.

6 Knowledge of directing

1. Identify criteria for script selection and procedures for securing scripts and production rights.
2. Analyze a script as it pertains to production elements.
3. Identify and interpret staging techniques.
4. Identify sources for researching a production.
5. Identify elements of the casting procedure and audition process.
6. Identify elements of the directing process.
7. Identify elements of the rehearsal process.
8. Identify the legal responsibilities of the director.
9. Identify the basics of directing a musical production.

7 Knowledge of playwriting

1. Identify the elements of dramatic form (e.g., plot, character, conflict, resolution, setting, dialogue, theme) as they apply to playwriting.
2. Differentiate between writing for multimedia and writing for the stage.

8 Knowledge of career opportunities

1. Identify career opportunities in theatre and the entertainment industry.
2. Identify advanced educational opportunities.
3. Identify professional theatre organizations and their functions.
4. Identify professional theatre and trade publications.

Earth-Space Science
6–12

Section 08

Earth-Space Science 6–12

1 Knowledge of the nature of science

1. Analyze processes of scientific inquiry.

2. Evaluate models used in science to explain patterns observed in nature (e.g., rock cycle, heliocentric, geocentric, nitrogen cycle, water cycle).

3. Identify the influences of science and society on each other.

4. Analyze the synergistic relationships between basic and applied research, technology, the economy, and the public good.

5. Evaluate the appropriate use of inferences, assumptions, observations, hypotheses, conclusions, laws, and theories.

6. Analyze scientific data presented in tables, graphs, and diagrams.

7. Differentiate between qualitative and quantitative data in experimental, observational, and modeling methods of research.

8. Apply state statutes and national guidelines regarding laboratory safety, hazardous materials, experimentation, and the use of organisms in the classroom.

9. Differentiate between the various roles of communication in the development of scientific ideas (e.g., collaboration, peer review, scientific debate).

10. Distinguish between accuracy, precision, systematic error, and random error, using significant figures appropriately.

11. Evaluate variables and affected outcomes for appropriate experimental designs with minimum bias.

12. Identify the equipment Earth and space scientists use to gather, analyze, and interpret data in field and laboratory investigations.

2 Knowledge of the composition, characteristics, and structure of Earth

1. Identify the characteristics of Earth's layers and the methods used to investigate Earth's interior.

2. Identify common rocks and minerals based on their physical and chemical properties.

3. Distinguish between igneous, metamorphic, and sedimentary rocks.

4. Identify processes and products within the rock cycle.

3 Knowledge of plate tectonics and related processes

1. Identify the historical development and supporting evidence that has led to the theory of plate tectonics.

2. Analyze the geologic processes involved in the movement of tectonic plates and the landforms produced by their movements.

3. Differentiate between the physical and chemical characteristics of oceanic crust and continental crust.

4. Identify the types, causes, and effects of volcanoes.

5. Identify the causes and effects of earthquakes.

6. Distinguish between the characteristics of seismic waves.

7. Identify how the movement of tectonic plates has influenced climate (e.g., hydrosphere, geosphere, biosphere).

4 Knowledge of Earth's surface processes

1. Compare physical and chemical weathering and their effects on landforms.

2. Analyze the principles and processes of sedimentation (i.e., erosion, deposition).

3. Identify the properties of aquifers and the movement of groundwater through sediments and rock formations.

4. Analyze the movement of water through the hydrologic cycle, including energy changes that occur as water changes phase.

5. Evaluate the origin and distribution of freshwater resources in Florida.

6. Discriminate between landforms and sedimentary deposits created by water, wind, and ice.

7. Identify the geologic features of Florida and the processes that produced them.

5 Knowledge of mapping and remote sensing

1. Identify surface features from topographic maps, photographs, and satellite images.

2. Interpret topographic and oceanographic maps.

3. Compare landforms illustrated on maps and imagery to geologic processes.

4. Evaluate the function and benefits of Earth-observing systems (e.g., Landsat, Topex, aircraft, balloons).

5. Identify the applications of remote sensing technologies used on Earth and in space science (e.g., magnetometry, seismic survey, ground-penetrating radar, high-resolution photography).

6 Knowledge of the scope and measurement of geologic time

1. Identify appropriate methods of absolute and relative dating for given situations.

2. Apply the law of original horizontality, the principle of superposition, and the principle of cross-cutting relationships to interpret geologic cross sections.

3. Identify major events in Earth's history (e.g., mass extinctions, evolution of plants, development of an oxygen-rich atmosphere).

4. Identify major events in Florida's geologic history, including sea-level changes.

5. Interpret fossils and geologic evidence to reconstruct Earth's history.

7 Knowledge of the characteristics and management of Earth's resources

1. Identify characteristics of renewable and nonrenewable resources.

2. Evaluate management strategies for renewable and nonrenewable resources.

3. Assess the use and management of Florida's geologic, marine, and environmental resources.

4. Compare various energy production technologies (e.g., fossil fuels, nuclear, solar) and their past, present, and future consequences to the environment.

5. Identify the impact of humans on Earth (e.g., deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water).

8 Knowledge of oceans and coastal processes

1. Identify the characteristics of ocean basins, continental shelves, and coral reefs.

2. Identify the geologic features of coastal geomorphic structures (e.g., barrier islands, estuaries, sandbars, capes, deltas, coral reefs).

3. Analyze the movement of water through waves, tides, and currents.

4. Identify the chemical, physical, and biological characteristics of seawater.

5. Determine the causes and effects of surface currents, coastal upwelling, and density-driven (i.e., thermohaline) circulation.

6. Identify the effects of human activity on the coastal and marine environment.

9 Knowledge of factors that influence atmospheric conditions and weather

1. Analyze the composition and structure of the atmosphere and how it protects life and insulates the planet.

2. Differentiate between the sources, characteristics, and movement of air masses (e.g., maritime, continental, polar, tropical).

3. Identify characteristics of high and low pressure systems, including the formation of fronts and severe weather systems.

4. Identify factors that cause local winds (i.e., land and sea breezes) and global winds (e.g., pressure belts, Coriolis effect).

5. Determine how the transfer of energy throughout the atmosphere influences weather conditions (e.g., hydrologic cycle).

6. Interpret weather maps and the indicated atmospheric conditions.

7. Evaluate how local weather is affected by geographic features (e.g., proximity to bodies of water, urban versus rural settings, unequal heating of land and water).

8. Identify characteristics of weather systems that affect Florida.

9. Identify how global climate influences, such as jet streams and ocean currents, affect weather (e.g., El Niño).

10 Knowledge of Earth's climate patterns

1. Identify the factors that contribute to the climate of a geographic area.

2. Identify the causes and effects of climate changes throughout Earth's history.

3. Assess how the cycling of carbon, energy, and water between the geosphere, hydrosphere, and atmosphere affects climate.

4. Determine the effects of climate phenomena (e.g., monsoons, jet streams, El Niño).

5. Identify how climate changes may affect Florida's surface features, weather patterns, and biological diversity.

11 Knowledge of astronomical objects and processes

1. Identify the characteristics (e.g., mass, composition, location) of the major and minor objects in the solar system.

2. Identify types and characteristics of deep space objects (e.g., quasars, galaxies, pulsars, black holes).

3. Interpret the Hertzsprung-Russell diagram with regard to stellar evolution and star characteristics.

4. Interpret the sequences and forces involved in the origin and evolution of the solar system.

5. Identify the causes and effects of the cycles of the Earth-Moon-Sun system (e.g., seasons, tides, eclipses, precession, moon phases).

6. Identify the physical properties of the Sun, its dynamic nature, and its effects on Earth systems.

7. Identify the matter and forces involved in the evolution of the universe (e.g., big bang theory).

12 Knowledge of space exploration

1. Compare relative and absolute methods for measurement of astronomical distances.

2. Evaluate functions and benefits of the different types of ground- and space-based astronomical instruments (e.g., x-ray, optical, infrared, radio telescopes, spectrometers).

3. Interpret electromagnetic spectra and radiation intensity data from astronomical objects.

4. Identify significant manned and unmanned space exploration events, programs, and objectives.

5. Identify the historical development of astronomy based on the contributions of Aristotle, Ptolemy, Copernicus, Brahe, Kepler, Galileo, Newton, Einstein, and Hubble.

6. Evaluate the cultural and economic effects of the space program in Florida.

Educational Media Specialist
PK–12

Section 10

Educational Media Specialist PK–12

1 Knowledge of professional organizations, resources, and national and state guidelines and standards for the school library media specialist

1. Identify state and national school library media professional associations and professional resources.
2. Identify the major concepts of the national guidelines and their effects on the roles of the school library media specialist.
3. Identify state and national guidelines for information and media literacy skills.

2 Knowledge of teaching and learning principles of the school library media specialist

1. Identify best practices for working with diverse learning styles to meet specific learning and information needs.
2. Select the most appropriate media formats to meet a specific learning need.
3. Differentiate among resources that reflect multiple literacies.

3 Knowledge of the instructional partner responsibilities of the school library media specialist

1. Identify collaborative opportunities for curricular and instructional planning.
2. Identify methods for keeping abreast of changes in curriculum.
3. Identify the components of an instructional planning process.
4. Identify the school library media specialist's role on the instructional planning team.

4 Knowledge of teaching methods for implementing multiple literacies

1. Identify strategies for developing students' multiple literacies.
2. Identify activities for developing students' ability to inquire, think critically, and gain knowledge.
3. Identify activities whereby students can draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge.
4. Assess the effectiveness of teaching methods used to implement national and state standards for multiple literacies.

5. Identify activities that assist students in analyzing, evaluating, and ethically using information.

6. Identify ways for encouraging students to develop the habit of using resources and information agencies for personal and aesthetic growth.

7. Identify strategies that promote safe and ethical behaviors in personal electronic communication and interaction.

8. Identify components of research process models.

5 Knowledge of methods for teaching and assisting the school learning community in design and production of various types of media

1. Identify when it is appropriate to design and produce various types of media.

2. Determine what media should be produced to meet a specific instructional need.

3. Identify techniques for planning, designing, and evaluating media products.

4. Identify basic methods for producing resources and presentations, using all available technologies.

6 Knowledge of design and delivery of staff development

1. Identify the elements of effective staff development.

2. Identify methods for teaching staff how to use equipment and technologies.

3. Identify methods for teaching staff how to select, use, evaluate, and produce media.

4. Identify methods for assisting staff in the application of new and emerging technologies to meet varied learning needs.

5. Determine the relevance of topics for staff development.

7 Knowledge of the information specialist responsibilities of the school library media specialist

1. Identify effective methods for selecting resources that meet the information needs of the learning community.

2. Identify the characteristics of an effective system for organizing information resources to meet the needs of students and staff.

3. Identify factors that influence access to information.

4. Identify relevant information agencies and resources outside the school.

5. Identify considerations for participation in resource sharing.

6. Identify strategies for providing specific information in response to reference requests.

7. Identify the most appropriate resources for responding to a specific information need.

8 Knowledge of resources in all formats for the learning community

1. Identify resources that are recognized as outstanding in their medium.

2. Identify authors who are recognized as outstanding in their genre.

3. Identify illustrators who are recognized as outstanding in their medium.

9 Knowledge of the foundations, designing, planning, and development of a school library media program

1. Identify the effects of societal changes on the evolution of school library media program standards and guidelines.

2. Identify the contributions of notable school library leaders.

3. Identify school and student characteristics that influence the mission of the school library media program.

4. Identify components of strategic planning for a school library media program.

5. Identify ways the school library media program can support school improvement.

10 Knowledge of procedures to assess and evaluate the effectiveness of a school library media program

1. Identify components, participants, and strategies for a comprehensive evaluation of the school library media program.

2. Identify strategies for collecting information to determine the impact of the school library media program.

3. Identify methods and strategies for analyzing and evaluating data to plan and implement modifications to the school library media program.

11 Comprehension of skills required to plan, prepare, advocate, and administer a budget

1. Identify methods for effectively planning, preparing, and administering a school library media budget based on both the needs of the learning community and the program's short- and long-term goals.

2. Identify funding sources that support school library media programs.

3. Identify strategies for effectively communicating budget needs.

12 Knowledge of supervision of staff and volunteers for the school library media program

1. Distinguish between professional responsibilities and paraprofessional activities.

2. Identify appropriate methods for instructing, supervising, and evaluating school library media staff, student assistants, and volunteers.

13 Knowledge of policies and procedures used in the school library media program

1. Distinguish between a policy and a procedure.

2. Identify the rationale for and components of a school library media policies and procedures document.

14 Knowledge of methods for creating an active learning environment

1. Identify the elements of an effective school library media facility that is compliant with the Americans with Disabilities Act.

2. Identify factors that affect the school library media center climate.

3. Identify strategies for extending the school library media program beyond the walls of the school library media center.

15 Knowledge of methods for advocating an effective school library media program

1. Select methods for identifying users and nonusers of the school library media program.

2. Identify techniques to attract and retain school library media users.

3. Identify strategies for promoting and eliciting support for the school library media program.

4. Identify strategies for the dissemination of research findings about the relationship between effective school library media programs and student achievement.

16 Knowledge of policies and procedures for collection development

1. Identify the elements of a collection development policy.

2. Identify criteria for evaluating, selecting, and weeding all forms of media and technology.

3. Identify selection tools and reviewing sources for a specific need.

4. Apply selection criteria to determine whether a given resource should be included in a collection.

5. Identify methods for communicating policies and procedures for collection development and for ensuring that the collection meets the current needs of the instructional program and learning community.

6. Identify components and terminology of the acquisitions process.

7. Identify the characteristics of a collection development plan.

17 Knowledge of policies and processes for managing, cataloging, organizing, circulating, and maintaining resources

1. Identify the components of a circulation policy that ensures accessibility to resources.

2. Identify the elements of an automated library management system.

3. Identify methods for analyzing and using data provided by the library management system.

4. Apply standardized techniques to maintain bibliographic integrity.

5. Identify the basic resources used in original cataloging.

6. Identify the fields of a bibliographic record.

7. Identify purposes of and procedures for conducting a school library media collection inventory.

18 Comprehension of leadership and interpersonal skills for the school library media specialist

1. Identify ways to promote collaborative relationships between school library media staff and the learning community.

2. Identify leadership opportunities and strategies for a school library media specialist's involvement in the school program and the community.

3. Identify leadership opportunities and strategies for a school library media specialist's involvement in the profession.

19 Knowledge of state and national legislation and their effects on the school library media program

1. Identify the effects of state legislation on school library media programs.

2. Identify the effects of national legislation on school library media programs.

20 Knowledge of current professional trends and issues of the school library media program

1. Identify the implications of various scheduling models.
2. Identify the implications of shared resources on the school library media program.
3. Identify resources that indicate trends in teaching and learning.
4. Identify the impact of standards-based testing on the school library media program.
5. Identify research findings on motivating school learners to use the school library media center.

21 Knowledge of research related to the school library media program

1. Identify cornerstone research pertaining to the school library media program and its relationship to student achievement.
2. Interpret research data.
3. Identify ways research can be applied to the school library media program.
4. Analyze problems using action research.

22 Knowledge of professional ethics for the school library media specialist

1. Identify an ethical course of action for a copyright or plagiarism issue.
2. Identify an ethical course of action related to the principles of intellectual freedom.
3. Identify an ethical course of action for a privacy or confidentiality issue.
4. Identify the impact of court cases pertaining to copyright.

23 Knowledge of methods for providing equity, diversity, and global perspectives in the school library media program

1. Identify appropriate resources for multicultural and multilingual populations.
2. Identify resources that meet the needs of students with various learning styles, abilities, and disabilities.
3. Identify strategies for providing equitable access to school library media resources and services.
4. Identify strategies for helping students develop diverse and global perspectives.

24 Knowledge of methods for integrating technology into the instructional program

1. Identify strategies for assessing technology competency.

2. Identify appropriate digital resources for completing a variety of information and media literacy tasks.

3. Identify appropriate digital resources and technologies for presenting and sharing information.

4. Identify adaptive or assistive technology for providing learning opportunities for students with various abilities.

5. Identify ways to use technology to communicate with the school learning community.

6. Apply strategies that integrate appropriate technology into the instructional program.

25 Knowledge of reading research and strategies

1. Identify reading promotion activities that support the instructional program, encourage reading for pleasure, and meet individual student interests and needs.

2. Identify various methods for assessing student reading levels.

3. Identify methods for differentiating instruction based on student reading data.

4. Identify ways to incorporate the five scientifically based reading research principles into the school library media program.

5. Identify strategies for integrating literature into the instructional program.

6. Identify effective instructional methods for developing students' reading skills.

7. Identify instructional methods and strategies for facilitating students' development and use of content area vocabulary.

8. Identify instructional methods for facilitating students' reading comprehension.

Elementary Education
K–6

Subtests in the Following Areas:

Language Arts and Reading
Social Science
Science
Mathematics

Section 60

Elementary Education K–6
Language Arts and Reading

1 Knowledge of the reading process

1. Identify the content of emergent literacy (e.g., oral language development, phonological awareness, alphabet knowledge, decoding, concepts of print, motivation, text structures, written language development).

2. Identify the processes, skills, and stages of word recognition that lead to effective decoding (e.g., pre-alphabetic, partial-alphabetic, full-alphabetic, graphophonemic, morphemic).

3. Select and apply instructional methods for the development of decoding skills (e.g., continuous blending, chunking).

4. Distinguish among the components of reading fluency (e.g., accuracy, automaticity, rate, prosody).

5. Choose and apply instructional methods for developing reading fluency (e.g., practice with high-frequency words, readers theatre, repeated readings).

6. Identify and differentiate instructional methods and strategies for increasing vocabulary acquisition across the content areas (e.g., word analysis, author's word choice, context clues, multiple exposures).

7. Identify and evaluate instructional methods and strategies for facilitating students' reading comprehension (e.g., summarizing, self-monitoring, questioning, use of graphic and semantic organizers, think alouds, recognizing story structure).

8. Identify essential comprehension skills (e.g., main idea, supporting details and facts, author's purpose, point of view, inference, conclusion).

9. Determine appropriate uses of multiple representations of information for a variety of purposes (e.g., charts, tables, graphs, pictures, print and nonprint media).

10. Determine and analyze strategies for developing critical-thinking skills such as analysis, synthesis, and evaluation (e.g., making connections and predictions, questioning, summarizing, question generating).

11. Evaluate and select appropriate instructional strategies for teaching a variety of informational and literary text.

2 Knowledge of literary analysis and genres

1. Differentiate among characteristics and elements of a variety of literary genres (e.g., realistic fiction, fantasy, poetry, informational texts).

2. Identify and analyze terminology and intentional use of literary devices (e.g., simile, metaphor, personification, onomatopoeia, hyperbole).

3. Evaluate and select appropriate multicultural texts based on purpose, relevance, cultural sensitivity, and developmental appropriateness.

4. Identify and evaluate appropriate techniques for varying student response to texts (e.g., think-pair-share, reading response journals, evidence-based discussion).

3 Knowledge of language and the writing process

1. Identify and evaluate the developmental stages of writing (e.g., drawing, dictating, writing).

2. Differentiate stages of the writing process (i.e., prewriting, drafting, revising, editing, publishing).

3. Distinguish among the modes of writing (e.g., narrative, informative/explanatory, argument).

4. Select the appropriate mode of writing for a variety of occasions, purposes, and audiences.

5. Identify and apply instructional methods for teaching writing conventions (e.g., spelling, punctuation, capitalization, syntax, word usage).

6. Apply instructional methods for teaching writer's craft across genres (e.g., precise language, figurative language, linking words, temporal words, dialogue, sentence variety).

4 Knowledge of literacy instruction and assessments

1. Distinguish among different types of assessments (e.g., norm-referenced, criterion-referenced, diagnostic, curriculum-based) and their purposes and characteristics.

2. Select and apply oral and written methods for assessing student progress (e.g., informal reading inventories, fluency checks, rubrics, story retelling, portfolios).

3. Analyze assessment data (e.g., screening, progress monitoring, diagnostic) to guide instructional decisions and differentiate instruction.

4. Analyze and interpret students' formal and informal assessment results to inform students and stakeholders.

5. Evaluate the appropriateness of assessment instruments and practices.

6. Select appropriate classroom organizational formats (e.g., literature circles, small groups, individuals, workshops, reading centers, multiage groups) for specific instructional objectives.

7. Evaluate methods for the diagnosis, prevention, and intervention of common emergent literacy difficulties.

5 Knowledge of communication and media literacy

1. Identify characteristics of penmanship (e.g., legibility, letter formation, spacing).

2. Distinguish among listening and speaking strategies (e.g., questioning, paraphrasing, eye contact, voice, gestures).

3. Identify and apply instructional methods (e.g., collaborative conversation, collaborative discussion, presentation) for developing listening and speaking skills.

4. Select and evaluate a wide array of resources (e.g., Internet, printed material, artifacts, visual media, primary sources) for research and presentation.

5. Determine and apply the ethical process (e.g., citation, paraphrasing) for collecting and presenting authentic information while avoiding plagiarism.

6. Identify and evaluate current technology for use in educational settings.

Elementary Education K–6
Social Science

1 Knowledge of effective instructional practice and assessment of the social sciences

1. Select appropriate resources for instructional delivery of social science concepts, including complex informational text.
2. Identify appropriate resources for planning for instruction of social science concepts.
3. Choose appropriate methods for assessing social science concepts.
4. Determine appropriate learning environments for social science lessons.

2 Knowledge of time, continuity, and change (i.e., history)

1. Identify and analyze historical events that are related by cause and effect.
2. Analyze the sequential nature of historical events using timelines.
3. Analyze examples of primary and secondary source documents for historical perspective.
4. Analyze the impacts of the cultural contributions and technological developments of Africa; the Americas; Asia, including the Middle East; and Europe.
5. Identify the significant historical leaders and events that have influenced Eastern and Western civilizations.
6. Determine the causes and consequences of exploration, settlement, and growth on various cultures.
7. Interpret the ways that individuals and events have influenced economic, social, and political institutions in the world, nation, or state.
8. Analyze immigration and settlement patterns that have shaped the history of the United States.
9. Identify how various cultures contributed to the unique social, cultural, economic, and political features of Florida.
10. Identify the significant contributions of the early and classical civilizations.

3 Knowledge of people, places, and environment (i.e., geography)

1. Identify and apply the six essential elements of geography (i.e., the world in spatial terms, places and regions, physical systems, human systems, environment and society, uses of geography), including the specific terms for each element.

2. Analyze and interpret maps and other graphic representations of physical and human systems.

3. Identify and evaluate tools and technologies (e.g., maps, globe, GPS, satellite imagery) used to acquire, process, and report information from a spatial perspective.

4. Interpret statistics that show how places differ in their human and physical characteristics.

5. Analyze ways in which people adapt to an environment through the production and use of clothing, food, and shelter.

6. Determine the ways tools and technological advances affect the environment.

7. Identify and analyze physical, cultural, economic, and political reasons for the movement of people in the world, nation, or state.

8. Evaluate the impact of transportation and communication networks on the economic development in different regions.

9. Compare and contrast major regions of the world, nation, or state.

4 Knowledge of government and the citizen (i.e., government and civics)

1. Distinguish between the structure, functions, and purposes of federal, state, and local government.

2. Compare and contrast the rights and responsibilities of a citizen in the world, nation, state, and community.

3. Identify and interpret major concepts of the U.S. Constitution and other historical documents.

4. Compare and contrast the ways the legislative, executive, and judicial branches share powers and responsibility.

5. Analyze the U.S. electoral system and the election process.

6. Identify and analyze the relationships between social, economic, and political rights and the historical documents that secure these rights in the United States.

7. Identify and analyze the processes of the U.S. legal system.

5 Knowledge of production, distribution, and consumption (i.e., economics)

1. Determine ways that scarcity affects the choices made by governments and individuals.

2. Compare and contrast the characteristics and importance of currency.

3. Identify and analyze the role of markets from production through distribution to consumption.

4. Identify and analyze factors to consider when making consumer decisions.

5. Analyze the economic interdependence between nations (e.g., trade, finance, movement of labor).

6. Identify human, natural, and capital resources and evaluate how these resources are used in the production of goods and services.

Elementary Education K–6
Science

1 Knowledge of effective science instruction

1. Analyze and apply developmentally appropriate researched-based strategies for teaching science practices.

2. Select and apply safe and effective instructional strategies to utilize manipulatives, models, scientific equipment, real-world examples, and print and digital representations to support and enhance science instruction.

3. Identify and analyze strategies for formal and informal learning experiences to provide a science curriculum that promotes students' innate curiosity and active inquiry (e.g., hands-on experiences, active engagement in the natural world, student interaction).

4. Select and analyze collaborative strategies to help students explain concepts, to introduce and clarify formal science terms, and to identify misconceptions.

5. Identify and apply appropriate reading strategies, mathematical practices, and science-content materials to enhance science instruction for learners at all levels.

6. Apply differentiated strategies in science instruction and assessments based on student needs.

7. Identify and apply ways to organize and manage a classroom for safe, effective science teaching that reflect state safety procedures and restrictions (e.g., procedures, equipment, disposal of chemicals, classroom layout, use of living organisms).

8. Select and apply appropriate technology, science tools and measurement units for students' use in data collection and the pursuit of science.

9. Select and analyze developmentally appropriate diagnostic, formative and summative assessments to evaluate prior knowledge, guide instruction, and evaluate student achievement.

10. Choose scientifically and professionally responsible content and activities that are socially and culturally sensitive.

2 Knowledge of the nature of science

1. Analyze the dynamic nature of science models, laws, mechanisms, and theories that explain natural phenomena (e.g., durability, tentativeness, replication, reliance on evidence).

2. Identify and apply science and engineering practices through integrated process skills (e.g., observing, classifying, predicting, hypothesizing, designing and carrying out investigations, developing and using models, constructing and communicating explanations).

3. Differentiate between the characteristics of experiments (e.g., multiple trials, control groups, variables) and other types of scientific investigations (e.g., observations, surveys).

4. Identify and analyze attitudes and dispositions underlying scientific thinking (e.g., curiosity, openness to new ideas, appropriate skepticism, cooperation).

5. Identify and select appropriate tools, including digital technologies, and units of measurement for various science tasks.

6. Evaluate and interpret pictorial representations, charts, tables, and graphs of authentic data from scientific investigations to make predictions, construct explanations, and support conclusions.

7. Identify and analyze ways in which science is an interdisciplinary process and interconnected to STEM disciplines (i.e., science, technology, engineering, mathematics).

8. Analyze the interactions of science and technology with society including cultural, ethical, economic, political, and global factors.

3 Knowledge of physical sciences

1. Identify and differentiate among the physical properties of matter (e.g., mass, volume, texture, hardness, freezing point).

2. Identify and differentiate between physical and chemical changes (e.g., tearing, burning, rusting).

3. Compare the properties of matter during phase changes through the addition and/or removal of energy (e.g., boiling, condensation, evaporation).

4. Differentiate between the properties of homogeneous mixtures (i.e., solutions) and heterogeneous mixtures.

5. Identify examples of and relationships among atoms, elements, molecules, and compounds.

6. Identify and compare potential and kinetic energy.

7. Differentiate among forms of energy, transformations of energy, and their real-world applications (e.g., chemical, electrical, mechanical, heat, light, sound).

8. Distinguish among temperature, heat, and forms of heat transfer (e.g., conduction, convection, radiation).

9. Analyze the functionality of an electrical circuit based on its conductors, insulators, and components.

10. Identify and apply the characteristics of contact forces (e.g., push, pull, friction), at-a-distance forces (e.g., magnetic, gravitational, electrostatic), and their effects on matter (e.g., motion, speed).

4 Knowledge of Earth and space

1. Identify characteristics of geologic formations (e.g., volcanoes, canyons, mountains) and the mechanisms by which they are changed (e.g., physical and chemical weathering, erosion deposition).

2. Identify and distinguish among major groups and properties of rocks and minerals and the processes of their formations.

3. Identify and analyze the characteristics of soil, its components and profile, and the process of soil formation.

4. Identify and analyze processes by which energy from the Sun is transferred (e.g., radiation, conduction, convection) through Earth's systems (e.g., biosphere, hydrosphere, geosphere, atmosphere, cryosphere).

5. Identify and analyze the causes and effects of atmospheric processes and conditions (e.g., water cycle, weather, climate).

6. Identify and analyze various conservation methods and their effectiveness in relation to renewable and nonrenewable natural resources.

7. Analyze the Sun-Earth-Moon system in order to explain repeated patterns such as day and night, phases of the Moon, tides, and seasons.

8. Compare and differentiate the composition and various relationships among the objects of our Solar System (e.g., Sun, planets, moons, asteroids, comets).

9. Identify major events in the history of space exploration and their effects on society.

5 Knowledge of life science

1. Identify and compare the characteristics of living and nonliving things.

2. Analyze the cell theory as it relates to the functional and structural hierarchy of all living things.

3. Identify and compare the structures and functions of plant and animal cells.

4. Classify living things into major groups (i.e., Linnaean system) and compare according to characteristics (e.g., physical features, behaviors, development).

5. Compare and contrast the structures, functions, and interactions of human and other animal organ systems (e.g., respiration, reproduction, digestion).

6. Distinguish among infectious agents (e.g., viruses, bacteria, fungi, parasites), their transmission, and their effects on the human body.

7. Identify and analyze the processes of heredity and natural selection and the scientific theory of evolution.

8. Analyze the interdependence of living things with each other and with their environment (e.g., food webs, ecosystems, pollution).

9. Identify and analyze plant structures and the processes of photosynthesis, transpiration, and reproduction (i.e., sexual, asexual).

10. Predict the responses of plants to various stimuli (e.g., heat, light, gravity).

11. Identify and compare the life cycles and predictable ways plants and animals change as they grow, develop, and age.

Elementary Education K–6
Mathematics

1 Knowledge of student thinking and instructional practices

1. Analyze and apply appropriate mathematical concepts, procedures, and professional vocabulary (e.g., subitize, transitivity, iteration, tiling) to evaluate student solutions.

2. Analyze and discriminate among various problem structures with unknowns in all positions in order to develop student understanding of operations (e.g., put-together/take-apart, arrays/area).

3. Analyze and evaluate the validity of a student's mathematical model or argument (e.g., inventive strategies, standard algorithms) used for problem solving.

4. Interpret individual student mathematics assessment data (e.g., diagnostic, formative, progress monitoring) to guide instructional decisions and differentiate instruction.

5. Select and analyze structured experiences for small and large groups of students according to the cognitive complexity of the task.

6. Analyze learning progressions to show how students' mathematical knowledge, skills, and understanding develop over time.

7. Distinguish among the components of math fluency (i.e., accuracy, automaticity, rate, flexibility).

2 Knowledge of operations, algebraic thinking, counting and number in base ten

1. Interpret and extend multiple representations of patterns and functional relationships by using tables, graphs, equations, expressions, and verbal descriptions.

2. Select the representation of an algebraic expression, equation, or inequality that models a real-world situation.

3. Analyze and apply the properties of equality and operations in the context of interpreting solutions.

4. Determine whether two algebraic expressions are equivalent by applying properties of operations or equality.

5. Evaluate expressions with parentheses, brackets, and braces.

6. Analyze and apply strategies (e.g., models, estimation, reasonableness) to solve multistep word problems.

7. Apply number theory concepts (e.g., primes, composites, multiples, factors, parity, rules of divisibility).

8. Identify strategies (e.g., compensation, combining tens and ones) based on place value to perform multidigit arithmetic.

3 Knowledge of fractions, ratios, and integers

1. Compare fractions, integers, and integers with integer exponents and place them on a number line.

2. Convert among standard measurement units within and between measurement systems (e.g., metric, U.S. customary) in the context of multistep, real-world problems.

3. Solve problems involving addition, subtraction, multiplication, and division of fractions, including mixing whole numbers and fractions, decimals and percents by using visual models and equations to represent the problems and their solutions.

4. Select the representation (e.g., linear, area, set model) that best represents the problem and solution, given a word problem or equation involving fractions.

5. Solve real-world problems involving ratios and proportions.

4 Knowledge of measurement, data analysis, and statistics

1. Calculate and interpret statistics of variability (e.g., range, mean absolute deviation) and central tendency (e.g., mean, median).

2. Analyze and interpret data through the use of frequency tables and graphs.

3. Select appropriate measurement units to solve problems involving estimates and measurements.

4. Evaluate the choice of measures of center and variability, with respect to the shape of the data distribution and the context in which the data were gathered.

5. Solve problems involving distance, time, liquid volume, mass, and money, which may include units expressed as fractions or decimals.

5 Knowledge of geometric concepts

1. Apply geometric properties and relationships to solve problems involving perimeter, area, surface area, and volume.

2. Identify and locate ordered pairs in all four quadrants of a rectangular coordinate system.

3. Identify and analyze properties of three-dimensional shapes using formal mathematical terms such as volume, faces, edges, and vertices.

4. Classify two-dimensional figures in a hierarchy based on mathematical properties

English
6–12

Section 13

English 6–12

1 Knowledge of the effective use of the English language at the postsecondary level

1. Identify and analyze influences on language (e.g., social, cultural, ethnic, religious, historical, regional, and gender).
2. Identify and apply standard English grammar and usage with proficiency.
3. Identify and apply the conventions of English capitalization, punctuation, and spelling with proficiency.
4. Identify and distinguish the effective use of sentence variety.
5. Identify and select appropriate reference materials to determine the meaning of a word, its pronunciation (e.g., homonyms, homophones), part of speech, synonyms and antonyms, and etymology.
6. Determine and apply the connotation and denotation of key words.
7. Identify and analyze the structure and meaning of words according to their word parts (i.e., prefixes, root words, and suffixes).
8. Identify and interpret figurative language (e.g., idioms, figures of speech).
9. Identify and use general academic and domain-specific language.
10. Identify and apply methods of effectively assessing language skills.
11. Select appropriate instructional strategies (e.g., collaborative learning, interdisciplinary activities) and technologies to teach language skills.

2 Knowledge of effective writing skills

1. Differentiate among various forms of writing (e.g., expository, narrative, persuasive, argumentative) in various texts.
2. Analyze arguments for evidence of logical reasoning and applicable, adequate support.
3. Identify and analyze effective organizational and stylistic choices in various forms of writing.
4. Identify and apply knowledge of the writing process (i.e., prewriting, drafting, revising, editing, proofreading, publishing).
5. Differentiate and select appropriate forms of technology to enhance the writing process.
6. Identify and assess meaningful feedback to student writing.

7. Identify and apply strategies to instruct students in the selection and evaluation of relevant and reliable information from various resources.

8. Identify and apply knowledge of the research process (e.g., gathering relevant information, synthesizing, paraphrasing, citing information, avoiding plagiarism).

9. Identify audience and purpose and differentiate how they impact language and writing.

10. Identify and apply methods of effectively assessing writing skills.

11. Select appropriate instructional strategies (e.g., collaborative learning, interdisciplinary activities) and technologies to teach writing skills.

3 Knowledge of literacy processes across genres

1. Analyze and apply techniques to understand levels of text complexity.

2. Evaluate effective strategies to teach analysis of texts (e.g. imagery, semantic and syntactic structures, diction).

3. Select effective strategies to construct meaning from texts.

4. Analyze and apply techniques to understand levels of text readability (e.g. quantitative and qualitative methods).

5. Determine the meaning of a word, phrase, paragraph, or text based on its context.

6. Identify and apply appropriate strategies (e.g., choral reading, readers' theater) to promote fluency (e.g., accuracy, prosody).

7. Identify and determine how text structure (e.g., compare-contrast, cause and effect, chronological) impacts comprehension.

8. Analyze reading performance to determine where a student falls on the reading continuum (i.e., frustration, instructional, independent).

9. Identify and apply methods of effectively assessing literacy processes.

10. Select appropriate instructional strategies (e.g., collaborative learning, interdisciplinary activities) and technologies to teach literacy processes.

4 Knowledge of a wide range of fiction, nonfiction, and informational texts

1. Analyze various literary and rhetorical devices (e.g., symbolism, style, allusion, irony, foreshadowing, tone, figurative language, syntax).

2. Evaluate the characteristics of various genres (e.g., drama, biography, speeches).

3. Evaluate the characteristics of various texts within and across literary movements.

4. Select a variety of methods for assessing the understanding of fiction, nonfiction, and informational texts.

5. Evaluate various texts using a range of critical approaches (e.g., gender, sociological).

6. Evaluate the characteristics of various texts within and across historical time periods.

7. Identify and differentiate among a range of historical and contemporary authors and speakers (e.g., American, Latin American, Asian, African, British) within and across time periods and genres.

8. Select appropriate instructional strategies (e.g., collaborative learning, interdisciplinary activities) and technologies to teach fiction, nonfiction, and informational texts.

5 Knowledge of critical responses to media

1. Identify and apply effective techniques and technologies for listening, viewing, speaking, and presenting.

2. Analyze media to evaluate meaning, intent, effect, and technique.

3. Select appropriate instructional strategies (e.g., collaborative learning, interdisciplinary activities) and technologies to teach listening, viewing, speaking, and presenting.

4. Identify and apply methods of effectively assessing listening, viewing, speaking, and presenting.

6 Demonstration of the ability to respond critically through an analysis of a literary selection

1. Demonstrate the ability to organize ideas around a clear and coherent thesis statement.

2. Incorporate relevant details and ample textual evidence to support the thesis statement.

3. Demonstrate proficient use of postsecondary level standard written English (e.g., varied word choice and syntax, semantics, language conventions).

4. Use appropriate style to enhance the reader's interest and understanding.

English for Speakers of Other Languages (ESOL) K–12

Section 47

ESOL K–12

1 Knowledge of culture as a factor in English language learners' (ELLs') learning

1. Analyze elements of culture and their impact on the instruction of ELLs.
2. Identify ways that student participation, learning, and behavior can be affected by cultural differences (e.g., religious, economic, social, family).
3. Identify phases and distinguish among characteristics of cultural adaptation (e.g., assimilation, acculturation) in order to better understand ELLs.
4. Select a variety of resources to obtain information about the cultural background and experiences of ELLs and their families to guide curriculum development and instruction.
5. Select strategies to promote multicultural sensitivity and diversity in the classroom.
6. Identify ways that home/school connections build partnerships with ELLs' families (e.g., Parent Leadership Councils).
7. Analyze social issues and trends (e.g., immigration) that affect the education of ELLs.

2 Knowledge of language as a system

1. Identify how the universal principles of language (e.g., systematic, rule-governed, arbitrary) guide ELL instruction.
2. Apply principles of phonology to facilitate ELLs' English language acquisition.
3. Apply principles of morphology to facilitate ELLs' English language acquisition.
4. Apply principles of semantics to facilitate ELLs' English language acquisition.
5. Apply principles of pragmatics to facilitate ELLs' English language acquisition.
6. Apply principles of syntax to facilitate ELLs' English language acquisition.
7. Apply principles of discourse (i.e., written and oral) to facilitate ELLs' English language acquisition.
8. Identify and apply appropriate forms of the English language for different purposes.
9. Identify phonological, morphological, semantic, pragmatic, syntactic, and discourse differences between English and other languages.

3 Knowledge of language acquisition and development

1. Identify the major theories of first and second language acquisition that inform classroom practices.

2. Identify and compare first and second language acquisition processes that affect student learning.

3. Use research-based models of instruction including bilingual, sheltered, and/or inclusion.

4. Determine characteristics of bilingualism.

5. Determine factors that influence the development of bilingualism.

6. Identify how ELLs' use of home language serves as a foundation for learning English.

7. Determine factors that affect ELLs' learning of English, including psychological, social, cultural, and political factors.

8. Apply individual learner variables to guide the process of learning English as a second language.

9. Distinguish characteristics of social language (e.g., basic interpersonal communication skills [BICS]) and academic language (e.g., cognitive academic language proficiency [CALP]).

10. Identify sources of ELLs' errors (e.g., interlanguage) to guide effective instruction.

11. Identify language functions (e.g., communicating needs, purpose, desires) of spoken and written English to facilitate English language acquisition.

4 Knowledge of second language literacy development

1. Determine and apply current theories of second language reading development for ELLs at varying English proficiency levels.

2. Determine and apply current theories of second language writing development for ELLs at varying English proficiency levels.

3. Identify how ELLs' L1 oral language influences the use of oral and written English in the classroom.

4. Identify how ELLs' home literacy practices (e.g., oral, written) influence the development of oral and written English.

5. Select methods to incorporate students' L1 literacy into English language literacy development (e.g., transfer).

5 Knowledge of ESL/ESOL research, history, public policy, and current practices

1. Identify past and present approaches to ESOL instruction (e.g., grammar-translation, audio-lingual, Communicative Language Teaching, Natural Approach, TPR, CALLA, SIOP).

2. Identify major researchers and how their contributions have affected the field of second language teaching and learning.

3. Relate current research to best practices in second language and literacy instruction.

4. Evaluate appropriate research-based models of instruction for ELLs.

5. Identify major federal and state court decisions, laws, and policies that have affected the education of ELLs.

6. Apply the sections and requirements of the League of United Latin American Citizens (LULAC) et al. v. State Board of Education Consent Decree, 1990 (e.g., 1990 Florida Consent Decree) to specific situations.

6 Knowledge of standards-based ESOL and content instruction

1. Select methods to improve ELLs' English listening skills for a variety of academic and social purposes.

2. Select methods to improve ELLs' English speaking skills for a variety of academic and social purposes.

3. Apply standards-based instruction that develops ELLs' oral English in order to support learning in reading and writing English.

4. Apply appropriate standards-based reading instruction for ELLs at varying English proficiency levels.

5. Apply appropriate standards-based writing instruction for ELLs at varying English proficiency levels.

6. Select methods to develop ELLs' writing through a range of activities from sentence formation to extended writing (e.g., expository, narrative, persuasive).

7. Select activities, tasks, and assignments that develop authentic uses (e.g., real-world, contextualized) of English language and literacy to assist ELLs in learning academic language and content-area material.

8. Select instruction that effectively integrates listening, speaking, reading, and writing for ELLs at varying English proficiency levels.

9. Identify appropriate adaptations of curricular materials and modification of instruction according to an ELL's level of English proficiency and prior knowledge.

7 Knowledge of resources and technologies

1. Evaluate and select culturally responsive, age-appropriate, and linguistically accessible materials for ELLs at varying English proficiency levels.

2. Evaluate and select a variety of materials and other resources, including L1 resources, appropriate to ELLs' English language and literacy development.

3. Apply technological resources (e.g., Internet, software, computers, related media) to enhance language and content area instruction for ELLs at varying English proficiency levels.

4. Identify effective means of collaboration with school-based, district, and community resources to advocate for equitable access for ELLs.

5. Identify major professional organizations, publications, and resources that support continuing education for teachers.

8 Knowledge of planning standards-based instruction of ELLs

1. Apply appropriate language objectives and state-approved content-based standards to plan instruction for ELLs at varying English proficiency levels.

2. Identify the characteristics of engaging, challenging, and collaborative student-centered classroom environments for diverse learners.

3. Choose appropriate differentiated learning experiences for lesson planning based on students' English proficiency level.

4. Choose appropriate learning tasks for students with limited L1 literacy and/or limited formal schooling.

5. Identify methods of scaffolding and providing context for ELLs' learning.

6. Identify situations in which reteaching is necessary and appropriate for ELLs.

9 Knowledge of assessment issues for ELLs

1. Identify factors such as cultural and linguistic bias that affect the assessment of ELLs.

2. Evaluate formal and informal assessments to measure oral language, literacy, and academic achievement.

3. Determine appropriate accommodations during formal and informal assessments of ELLs at varying English language proficiency levels.

4. Identify characteristics of ELLs with special needs (i.e., speech-language impaired, intellectual disabilities, specific learning disabilities).

5. Distinguish between the characteristics of ELLs in the natural process of acquiring English and ELLs with specific learning disabilities.

6. Identify characteristics of ELLs who are gifted and talented.

10 Knowledge of language proficiency assessment

1. Identify the district, state, and federal requirements for identification, reclassification, and exit of ELLs from ESOL programs.

2. Interpret assessment data from multiple sources to guide instruction for ELLs at varying English proficiency levels.

3. Identify effective ways to communicate with stakeholders (e.g., primary caregivers, school and district staff, community members) about assessment outcomes that guide policy and instructional practice.

11 Knowledge of classroom-based assessment for ELLs

1. Identify appropriate use of alternative assessments (e.g., authentic, performance-based, peer- and self-assessments) to evaluate content area learning for ELLs at varying English proficiency levels.

2. Identify appropriate measurement concepts (e.g., reliability, validity), test characteristics, and uses of norm-referenced and criterion-referenced assessments in evaluating ELLs.

3. Use a variety of instruments (e.g., portfolios, checklists, rubrics, anecdotal records) to assess students as they perform authentic tasks (e.g., real-world, contextualized).

4. Identify appropriate test-taking skills and strategies needed by ELLs.

5. Determine appropriate modifications of classroom tests, including test items and tasks, for ELLs at varying English proficiency levels.

Exceptional Student Education K–12

Section 61

Exceptional Student Education K–12

1 Knowledge of foundations of exceptional student education

1. Identify state and federal legislation and case law that have affected the education of students with disabilities.

2. Identify appropriate practices based on legal and ethical standards (e.g., due process, procedural safeguards, confidentiality, access to general education, least restrictive environment, transition planning, free appropriate public education).

3. Demonstrate knowledge of the required policies and processes for developing individual education plans (IEPs), individualized family service plans (IFSPs), and transition IEPs.

4. Identify the classification systems and eligibility criteria under the current Individuals with Disabilities Education Improvement Act.

5. Compare the development and characteristics (e.g., language, cognitive-academic, social-emotional, sensory, physical-motor) of children with disabilities to the development and characteristics of children without disabilities.

6. Interpret curriculum information and assessment data for IEP and child study team members.

7. Identify models of support for assisting students with disabilities in accessing the general education curricula.

8. Identify the purposes and functions of professional and advocacy organizations relevant to educating students with disabilities.

2 Knowledge of assessment and evaluation

1. Identify the purposes of assessment (e.g., early identification, screening, interventions, eligibility, diagnosis, identification of relevant instructional content, monitoring the effectiveness of instruction) across disciplines.

2. Identify the legal requirements and ethical principles regarding the assessment of students with disabilities (e.g., confidentiality, adherence to test protocols, appropriateness of assessment for student needs).

3. Identify measurement concepts, characteristics, and uses of norm-referenced, criterion-referenced, and performance-based assessments for students with disabilities.

4. Interpret, analyze, and apply the results of norm-referenced, criterion-referenced, and performance-based assessments for students with disabilities.

5. Identify alternative assessment strategies and procedures (e.g., observations, performance-based assessments, ecological assessments, interviews, portfolios) and their appropriate use.

6. Identify the factors (e.g., curriculum alignment, cultural bias) that influence disproportionate representation of students from diverse cultural, linguistic, and socioeconomic backgrounds in programs for students with disabilities and recognize the implications for assessment.

7. Identify and analyze reliable and valid progress-monitoring methods for assessing individual student progress (e.g., curriculum-based assessments, fluency checks, rubrics, story retelling, informal reading inventories, portfolios).

3 Knowledge of instructional practices in exceptional student education

1. Analyze assessment information to identify a student's educational needs and instructional levels in order to select appropriate specialized instructional techniques, strategies, and materials.

2. Identify characteristics of reliable sources of scientifically based research related to instructional practices.

3. Identify instructional strategies for acquisition, generalization, and maintenance of skills (e.g., functional and applied academic skills, workplace and career skills, independent living skills) across school, home, work, and community settings.

4. Select relevant general education and alternate standards and curricula appropriate for a student's age, instructional needs, and functional performance across settings.

5. Identify methods for differentiating, accommodating, and modifying assessment, instruction, and materials in order to meet individual student needs (e.g., related to age, gender, cultural and linguistic background, preferred communication mode).

6. Identify effective methods of communication, consultation, and collaboration with students, families, parents, guardians, administrators, general education teachers, paraprofessionals, and other professionals, including students, families, and team members from culturally and linguistically diverse backgrounds, as equal members of the educational team.

7. Identify effective classroom management and flexible grouping strategies for specific instructional activities.

8. Identify effective instructional methods (e.g., explicit and systematic instruction, scaffolding, modeling) for integrating reading, writing, speaking, listening, viewing, researching, and presenting across the curricula.

9. Identify instructional strategies that help students comprehend and apply knowledge of informational text structure (e.g., cause and effect, chronological order, compare and contrast) and text features (e.g., index, glossary, subheading).

10. Identify criteria for selecting and evaluating both print and nonprint media (e.g., Internet, software, trade books, textbooks, DVDs, videos) for instructional use to match student needs and interests.

11. Identify effective instructional methods and supports (e.g., direct instruction, visual supports, manipulatives) for teaching mathematics and integrating mathematics across the curricula.

4 Knowledge of assessing, designing, and implementing positive behavioral supports

1. Analyze the legal and ethical issues pertaining to positive behavior-management strategies and disciplinary actions.

2. Identify data collection strategies for assessing student behavior.

3. Analyze individual and group data to select and evaluate proactive interventions that foster appropriate behavior.

4. Identify and interpret the essential elements of a functional behavior assessment and a behavior intervention plan.

5. Recognize the various concepts and models of positive behavior management.

5 Knowledge of language development, reading, and communication skills

1. Identify the sequence of expressive and receptive language development and the components of language structure.

2. Identify communication deficits and select appropriate interventions.

3. Select strategies for integrating communication instruction to meet individual student needs across educational settings.

4. Select appropriate assistive technology and alternative communication systems to facilitate communication.

5. Identify the sequence of typical reading development (e.g., prereading level, learning to read, reading to learn) and the critical components of reading development (e.g., phonological awareness, phonics, fluency, vocabulary, comprehension).

6. Identify the terminology and concepts of literacy development (e.g., oral language, phonological awareness, concepts about print, alphabet knowledge, decoding, vocabulary, text structures, written language, motivation).

7. Identify the characteristics and purposes of various reading programs (e.g., core reading program, supplemental reading program, intensive intervention program).

8. Identify characteristics of reading difficulties.

9. Identify and select prevention and intervention methods for addressing reading difficulties.

10. Identify the early phases of word recognition within the decoding process (e.g., pre-alphabetic, partial-alphabetic, full-alphabetic, consolidated-alphabetic).

11. Identify explicit and systematic instructional methods for promoting the development of phonological and phonemic awareness.

12. Identify the processes and skills (e.g., graphophonemic, morphemic, syntactic, semantic) that effective readers use for word recognition.

13. Identify explicit and systematic instructional methods for developing reading fluency (e.g., practice with high-frequency words, timed readings, repeated readings, read alouds, choral reading, recorded books).

14. Identify explicit and systematic instructional methods and strategies for increasing vocabulary acquisition (e.g., appropriate choice of words for instruction; multiple exposures; teaching word learning strategies, such as word analysis and contextual analysis).

15. Identify explicit and systematic instructional methods and strategies for facilitating students' reading-comprehension and critical-thinking skills (e.g., use of graphic and semantic organizers; use of multiple strategy instruction; teaching summarizing, monitoring comprehension, question answering, question generating, and recognizing story structure as comprehension strategies).

16. Identify explicit and systematic instructional methods for developing phonics skills.

6 Knowledge of skills related to teaching interpersonal interactions and participation

1. Select appropriate instructional procedures for teaching adaptive life skills based on observations, ecological assessments, family interviews, and other student information.

2. Identify methods for evaluating and documenting student progress in acquiring, generalizing, and maintaining skills related to interpersonal interactions and participation in activities across settings (e.g., at school, at home, in the community).

3. Identify skills necessary for students with disabilities to engage in self-determination and self-advocacy.

7 Knowledge of the transition process

1. Identify activities relevant to the four stages of career development (i.e., awareness, exploration, preparation, and placement).

2. Identify the essential domains of transition planning (e.g., personal-social, general community functioning, employment, leisure-recreational) for students with disabilities.

3. Demonstrate knowledge of transition planning using student and family characteristics (e.g., socioeconomic status, gender, cultural and linguistic background) to develop desired postschool outcomes.

4. Identify resources and strategies for assisting students in functioning in a variety of environments to which they will be transitioning.

Family and Consumer Science
6–12

Section 52

Family and Consumer Science 6–12

1 Knowledge of families

1. Recognize types and functions of family and household units.
2. Identify cultural influences on family life.
3. Identify stages and characteristics of the family life cycle, including changes in roles and responsibilities during each stage of the cycle.
4. Differentiate the strengths and weaknesses of diverse family structures.
5. Analyze factors that influence the quality of family relationships.
6. Identify effective communication skills.
7. Recognize the needs of and care requirements for elderly family members.

2 Knowledge of personality development

1. Identify hereditary and environmental factors that affect individual growth and development.
2. Recognize theories of personality development.
3. Identify the components of self-esteem and self-concept and strategies for building self-esteem.
4. Analyze factors that contribute to a person's understanding of his or her sexuality.
5. Recognize the influence of gender and its effect on personality development.

3 Knowledge of decision making and problem solving

1. Apply the decision-making process.
2. Analyze the relationship between values, goals, and decision making.
3. Identify joint decision-making skills as applied to families and groups.
4. Identify the steps in conflict resolution.

4 Knowledge of marriage

1. Identify principles and factors, including marriage laws and customs, involved in preparation for marriage.
2. Assess the effects of multiple roles on marital relationships.
3. Determine factors affecting marital relationships.
4. Analyze consequences of divorce and remarriage.

5 Knowledge of preparation for parenthood

1. Identify factors that determine readiness for parenthood.
2. Analyze economic, physical, genetic, and psychological consequences of deciding whether or not to become parents.
3. Identify the process of conception, including functions of the male and female reproductive systems.
4. Evaluate economic, social, and cultural factors as related to family planning.
5. Identify procedures, cost, effectiveness, and side effects of various methods of birth control.
6. Identify alternatives for dealing with infertility.

6 Knowledge of prenatal care, fetal development, and childbirth

1. Identify terms related to pregnancy.
2. Identify factors affecting the development of the fetus.
3. Identify elements of a plan for adequate prenatal care that includes the physical and nutritional needs of the expectant mother.
4. Identify possible complications of pregnancy, including those associated with adolescents and women over age 40.
5. Identify stages of labor and methods of childbirth.
6. Recognize the characteristics of a healthy newborn baby.
7. Identify the aspects of postnatal care for both mother and child.
8. Relate common birth defects to their causes.

7 Knowledge of social, emotional, physical, and intellectual development

1. Identify the stages and characteristics of the physical development and motor control of infants.

2. Identify the stages and characteristics of brain development in infants.

3. Identify the stages and characteristics of social and emotional development of infants.

4. Identify the physical development and motor control of toddlers, including activities appropriate for their developmental levels.

5. Identify the stages and characteristics of cognitive development of toddlers and activities for promoting intellectual development.

6. Identify the stages and characteristics of social and emotional development of toddlers and methods of promoting social and emotional development.

7. Analyze techniques for specific aspects of toddler care, such as feeding, toileting, disciplining, and safety.

8. Identify the stages and characteristics of the physical development and motor control of preschoolers and activities appropriate to their developmental levels.

9. Identify the stages and characteristics of cognitive development of preschoolers and activities for promoting intellectual development.

10. Identify the stages and characteristics of social and emotional development of preschoolers and methods of promoting social and emotional development.

11. Analyze techniques for specific aspects of preschooler care, such as guidance and safety.

12. Identify the stages and characteristics of the physical development and motor control of school-aged children and activities appropriate to their developmental levels.

13. Identify stages and characteristics of cognitive development of school-aged children and activities for promoting intellectual development.

14. Identify the stages and characteristics of the social and emotional development of school-aged children.

15. Assess techniques for the care, guidance, and safety of school-aged children.

16. Recognize the stages and characteristics of the physical, emotional, social, and intellectual development of adolescents.

17. Assess the interpersonal relationships of adolescents, including dating, friendships, and family.

8 Knowledge of parenting

1. Identify various parenting styles and their effects on the growth and development of the child.
2. Differentiate the roles and responsibilities of one- and two-parent families.
3. Identify characteristics of a quality childcare facility.
4. Identify communication patterns that affect parent-child relationships.
5. Analyze techniques promoting social competence in children.
6. Identify appropriate methods of recognizing and working with children who have special needs.

9 Knowledge of stress and crises

1. Identify types of family crises brought about by events such as birth, aging, long-term illness, and death.
2. Interpret consequences of various crises.
3. Recognize coping skills in dealing with crises.
4. Identify causes and consequences of substance abuse.
5. Recognize types and causes of family violence.
6. Identify signs of suicidal behavior and preventative techniques.
7. Identify support systems and agencies for crisis assistance.
8. Apply stress management techniques.

10 Knowledge of clothing selection

1. Identify cultural, social, and economic factors that influence the selection of clothing.
2. Apply the principles of design to garment and textile selection.
3. Analyze the psychological effects of color, design, and other factors on the selection of clothing and accessories.

11 Knowledge of clothing, textiles, and technology

1. Evaluate properties and characteristics of textiles in relation to use and care.
2. Identify the effects of different types of fibers, yarns, construction, and finishes on fabrics.
3. Interpret labels on clothing and textile products.
4. Identify federal laws regarding clothing and textile products.
5. Identify guidelines for the selection, use, and care of sewing equipment.
6. Identify factors to consider when selecting patterns and fabrics.
7. Analyze techniques of pattern alteration, fabric preparation, layout, cutting, marking, construction, and pressing compatible with fabric and garment design.
8. Assess methods for care, repair, and storage of garments.
9. Evaluate garments according to standards of construction.

12 Knowledge of the American economic system

1. Analyze the American economic system as it relates to the consumer.
2. Identify factors that influence pricing, including the costs of production, distribution, and selling of goods and services.
3. Identify the purposes and sources of taxation.

13 Knowledge of money and resource management

1. Identify the elements of budgeting, including factors in estimating income and expenses.
2. Identify sources and procedures for establishing, using, and protecting credit.
3. Compare services provided by financial institutions.
4. Identify types of insurance coverage, benefits, and retirement programs.
5. Identify resource management principles, techniques, and processes appropriate to various stages of the life cycle.
6. Analyze the use of computers in money and resource management.

14 Knowledge of consumerism

1. Compare consumer purchasing practices for stores, catalogs, multimedia, and the Internet.
2. Evaluate products according to quality standards.
3. Identify sources of consumer information.
4. Identify guidelines for consumer shopping.
5. Identify consumer rights and responsibilities, including ecological practices.
6. Identify laws, issues, and regulations protecting the consumer.
7. Identify issues resulting from increased technology.

15 Knowledge of factors affecting housing selection

1. Analyze trends in housing affected by needs and desires of the population.
2. Identify government regulations that influence housing.
3. Identify characteristics of various types of housing.
4. Analyze factors affecting housing selections.
5. Define basic terms of standard lease and mortgage sales contracts.
6. Compare renting and buying.
7. Analyze the cost of providing for housing needs.

16 Knowledge of home design features

1. Evaluate home construction features in terms of traffic patterns, room arrangements, storage facilities, kitchen work areas, and the impact of the family life cycle.
2. Analyze home energy usage and methods for conserving energy.
3. Evaluate home construction features in terms of maintenance, repair, aesthetics and family needs.
4. Analyze interior spaces using the basic elements and principles of design.
5. Identify factors in the selection of appropriate wall, window, and floor treatments.
6. Evaluate room arrangements for efficient and effective use of furniture, architectural features, traffic paths, and focal points.

7. Select furniture styles according to design, scale, proportion, and family needs.

8. Evaluate home furnishings according to materials, workmanship, care, and family needs.

9. Identify the use of emerging technology in home design.

17 Knowledge of nutrition and wellness

1. Analyze the relationship of diet, exercise, and wellness.

2. Analyze nutritional information based on the *Food Guide Pyramid* and the *Dietary Guidelines for Americans*.

3. Identify the nutrients, their primary functions, and major food sources.

4. Compare effects of age, gender, physical activity, and stress on nutritional needs.

5. Select appropriate diets for infants, young children, the middle-aged, the elderly, pregnant women, athletes, and individuals with special health problems.

6. Identify eating disorders and their effects on mental and physical health.

7. Identify nutritional deficiencies and excesses and symptoms of each.

8. Analyze the effect of addictive behaviors (e.g., smoking, alcohol, drugs) on diet and wellness.

18 Knowledge of meal planning and service

1. Analyze influences of life cycle, multicultural, socioeconomic, and geographic factors on food choices.

2. Identify factors contributing to aesthetically pleasing meals.

3. Apply the principles of the *Food Guide Pyramid* and the *Dietary Guidelines for Americans* to meal planning.

4. Analyze budget and management factors to consider in planning the purchase and preparation of food.

5. Determine appropriate table settings and table services.

6. Identify appropriate mealtime etiquette.

19 Knowledge of principles of food selection, safety, and storage

1. Evaluate food items using the food labeling system.
2. Interpret information conveyed in unit pricing and dating of products.
3. Identify government grades and policies as set by the U.S. Department of Agriculture (USDA), the Food and Drug Administration (FDA), and other recognized agencies.
4. Identify safety and sanitation procedures in the production, processing, handling, and storage of food.
5. Identify safety and sanitation procedures in the use of food preparation utensils and equipment.
6. Identify various food-borne illnesses and their causes.
7. Evaluate food quality in terms of product standards.
8. Identify technology used to preserve, alter, or enhance food products.
9. Analyze the effects of physical processes (such as heating, cooling, dehydrating, and crystallizing) and storage on food quality.
10. Identify the purposes, functions, and physiological effects of food additives.

20 Knowledge of food preparation

1. Identify principles to consider in selection, use, and care of kitchen utensils and equipment in the home and workplace.
2. Recognize principles of organization and management in the arrangement and use of kitchen facilities and equipment.
3. Relate the physical and chemical composition of food to food preparation techniques.
4. Analyze variations in quality of finished food products.
5. Identify terms, techniques, and preparation tasks for food preparation.
6. Identify the use of emerging technology in food preparation.
7. Identify food preparation techniques for each group in the *Food Guide Pyramid*.

21 Knowledge of the profession

1. Identify the integrative nature of the Home Economics field and how the areas of specialization fit together.

2. Identify career opportunities and determine effective job search strategies, such as writing résumés, writing cover letters, and interviewing.

3. Identify exploratory, practical arts, and job-preparatory courses/programs.

4. Demonstrate knowledge of national vocational legislation that has affected the development of Home Economics.

5. Recognize the significance of ethics, public policy, and cultural and global diversity for the Home Economics professional.

6. Identify student organizations and strategies for including their activities in the curriculum.

7. Identify professional organizations, journals, and publications for Home Economics.

French
K–12

Section 15

French K–12

1 Knowledge of communication (performance)

1. Demonstrate proficiency in speaking French by orally responding to a speaker, providing and requesting information, and expressing feelings, emotions, and opinions.

2. Demonstrate proficiency in speaking French by orally presenting cultural information, concepts, and ideas on a variety of topics.

3. Demonstrate proficiency in writing French by presenting, in a written form, concepts, ideas, opinions, and cultural information on a variety of topics.

2 Knowledge of communication

1. Demonstrate proficiency in listening by understanding and interpreting spoken French (e.g., political speech, radio interview, conversation, recitation, lecture) on a variety of topics.

2. Demonstrate proficiency in reading by understanding and interpreting written French on a variety of topics.

3 Knowledge of cultures

1. Identify elements of contemporary cultures in the Francophone world.

2. Identify major figures and ideas and their significance in the visual and performing arts, literature, and music of the Francophone world.

3. Identify major historical, geographic, social, governmental, and economic features of Francophone societies.

4. Identify various viewpoints related to other disciplines as expressed in Francophone media.

4 Knowledge of sociolinguistic patterns through comparisons of English and French

1. Identify various sociolinguistic patterns.

2. Identify cultural differences or similarities in language usage.

5 Knowledge of linguistic patterns

1. Identify the meaning of idioms, cognates, word roots, and derivatives.

2. Identify linguistic features (e.g., spelling, capitalization, punctuation, accent marks).

3. Identify the correct use of linguistic structures.

6 Knowledge of pedagogy

1. Select appropriate methods and materials for teaching listening to, speaking, reading, and writing French.

2. Select appropriate assessment instruments to evaluate proficiency in listening to, speaking, reading, and writing French.

3. Select appropriate methods for teaching the cultures of the Francophone world.

4. Select appropriate assessment instruments to evaluate knowledge of Francophone cultures.

5. Select appropriate strategies and materials for teaching the French language and the literatures and cultures of the Francophone world to diverse populations with a wide range of learning styles and abilities.

6. Select appropriate assessment instruments to evaluate knowledge of the French language and the literatures and cultures of the Francophone world taught to diverse populations with a wide range of learning styles and abilities.

7. Select appropriate strategies for incorporating technology in teaching the French language and the literatures and cultures of the Francophone world.

German
K–12

Section 17

German K–12

1 Ability to converse in German at an intermediate-high level (Speaking)

1. Converse on topics of general interest and daily routine, so that errors in pronunciation and structures do not impede successful communication.

2 Comprehension at an advanced level of spoken German passages on topics of general interest

1. Identify the main idea of a spoken passage or an appropriate summary of a spoken passage.
2. Identify details pertinent to the main idea of a spoken passage.
3. Identify the best response to a question or statement based on a spoken passage.
4. Identify and interpret basic sentence and intonation patterns.

3 Ability to write German at an intermediate-high level on topics of general interest and/or dealing with daily routine

1. Write short passages that express personal preferences, needs, and observations, so that errors in orthography and structure do not impede communication.

4 Ability to read at an advanced level German passages on a variety of personal, social, and general topics

1. Identify the main idea or an appropriate summary of a written passage.
2. Identify details pertinent to the main idea of a written passage.
3. Identify the best response to a question or statement based on a written passage.

5 Knowledge of German vocabulary in areas of general interest and application of vocabulary skills

1. Apply context clues to define words.
2. Apply dictionary skills.
3. Choose the most appropriate translation.

6 Knowledge of German grammar and syntax in context

1. Decline German nouns in singular and plural forms in the nominative, accusative, dative, and genitive cases in context.

2. Identify and analyze determiners in nominative, accusative, dative, and genitive cases in context.

3. Identify and analyze often-used adjectives and adverbs, adjective endings, and comparative and superlative forms in context.

4. Identify and analyze often-used prepositions, da- and wo- compounds, and idiomatic prepositional phrases, including prepositional verb combinations.

5. Identify and analyze often-used verbs in the present, future, simple past, and present/past perfect tenses in context.

6. Identify and analyze often-used modal auxiliary verb structures in context.

7. Identify and analyze often-used dative verbs in context.

8. Identify and analyze often-used subjunctive structures in context.

9. Identify and analyze often-used reflexive verbs and reflexive pronouns in context.

10. Identify and analyze often-used passive voice constructions and common alternative forms in context.

11. Identify and analyze often-used verbs with prefixes in context.

12. Identify and analyze personal and relative pronouns in context.

13. Identify and analyze the use of the infinitive in context.

14. Identify and analyze imperative forms in context.

15. Identify and analyze interrogative constructions in context.

16. Identify and analyze negative constructions in context.

17. Identify and analyze word order in context.

18. Identify and analyze often-used coordinating and subordinating conjunctions in context.

7 Knowledge of the culture, social customs, and daily life of German-speaking countries

1. Identify well-known features of daily life and contemporary culture, including internationally known personalities, in German-speaking countries.

2. Identify social customs in German-speaking countries.

3. Identify governmental, educational, religious, and economic institutions of German-speaking countries.

4. Identify cultural differences and similarities between the United States and German-speaking countries.

5. Recognize elements in American culture and language that originated in German-speaking countries or that were introduced by immigrants from German-speaking countries.

6. Identify famous native speakers of German and their contributions to the culture of the United States.

7. Identify and recognize diversity in the target culture.

8 Knowledge of history and geography of German-speaking countries

1. Identify major historic events and well-known historic figures.

2. Identify major geographic features of German-speaking countries and well-known products, industries, and exports of German-speaking countries.

9 Knowledge of arts and sciences in German-speaking countries

1. Identify major writers, composers, and artists (e.g., Schiller, Goethe, Bertolt Brecht, Mozart, Wagner, Dürer, Otto Dix).

2. Identify major legendary and fictional characters (e.g., Faust, Siegfried, Max and Moritz, Wilhelm Tell).

3. Identify major philosophers, scientists, and inventors (e.g., Kant, Hegel, Roentgen, Einstein, Benz, Gutenberg).

10 Pedagogy and professional knowledge

1. Identify various foreign language teaching methodologies and strategies appropriate to the four skill areas of speaking, listening, reading, and writing.

2. Identify evolving aspects of foreign language instruction, proficiency-based curriculum, and communicative competence.

3. Identify state and national professional organizations and the services that are available to teachers of German from professional organizations and agencies of German-speaking countries (e.g., AATG, FATG, FASG, Goethe Institute).

4. Demonstrate knowledge of print media, broadcasts, and German Web sites.

5. Identify the role of foreign languages in an integrated curriculum.

Guidance and Counseling PK–12

Section 18

Guidance and Counseling PK–12

1 Knowledge of counseling

1. Demonstrate knowledge of major counseling theories.
2. Recognize the relationships of cultural identity, personality, learning, and human development theories to counseling theories.
3. Apply relevant counseling theories and techniques appropriate to specific situations and populations.
4. Recognize criteria for selecting appropriate modes of counseling interventions in individual, small group, and large group settings.
5. Demonstrate knowledge of interpersonal processes in small and large group settings.
6. Demonstrate knowledge of techniques and leadership skills for facilitating small and large groups.
7. Demonstrate knowledge of appropriate listening and responding skills with all stakeholders.
8. Identify appropriate evidence-based counseling approaches for specific populations.
9. Demonstrate knowledge of human development and behavior to promote positive change.

2 Knowledge of activities and programs for addressing current concerns

1. Demonstrate knowledge of evidence-based strategies that promote academic, career, and personal-social development, and community involvement.
2. Demonstrate knowledge of crisis counseling and crisis management plans (e.g., responses to death, natural disasters, acts of violence, medical emergencies).
3. Identify materials and resources for implementing guidance curricula (e.g., character education, conflict resolution, bullying prevention, mediation training).
4. Identify high-risk and addictive behaviors and appropriate intervention strategies.
5. Demonstrate knowledge of school counseling programs for classrooms and large groups (e.g., drug education, personal safety, career education).
6. Demonstrate knowledge of peer helper programs.
7. Demonstrate knowledge of the components of ASCA National Model: A Framework for School Counseling Programs and Florida's School Counseling and Guidance Framework: A Comprehensive Student Development Program Model (e.g., foundation, management, delivery, accountability, systemic change, collaboration, advocacy, leadership).

3 Knowledge of student assessment

1. Demonstrate knowledge of basic measurement concepts (e.g., validity, norming, reliability, error of measurement, standardization).

2. Identify factors that may influence student performance and affect test results.

3. Demonstrate knowledge of the major functions, strengths, and limitations of various standardized and nonstandardized assessments.

4. Interpret the results of formal and informal assessments.

5. Identify appropriate methods of communicating synthesized data from a variety of sources (e.g., response to intervention, Florida's Academic Counseling and Tracking for Students [FACTS]) for a comprehensive assessment of a student.

6. Apply the results of formal and informal assessments from a variety of sources to improve student educational outcomes.

4 Knowledge of career development and postsecondary opportunities

1. Demonstrate knowledge of major career development theories.

2. Identify school counseling activities related to careers.

3. Identify decision-making approaches for students in various stages of career development.

4. Demonstrate knowledge of resources, including assessments, used in career development.

5. Interpret student assessment data relevant to career development.

6. Identify appropriate activities for promoting student employability and lifelong learning.

7. Demonstrate knowledge of resources that provide specific information about educational and technical career opportunities.

8. Identify ways to assist students in selecting secondary and postsecondary opportunities.

9. Demonstrate knowledge of sources of financial assistance for funding educational opportunities.

5 Knowledge of consultation, collaboration, and coordination

1. Identify components essential to a consultation model.

2. Demonstrate knowledge of strategies for collaborating with stakeholders to facilitate student success.
3. Demonstrate knowledge of collaborative decision making and the use of appropriate data and resources to assist individuals and groups and enhance the school environment.

4. Identify appropriate procedures and follow-up strategies for student transitions.

5. Select effective procedures for communicating information to stakeholders (e.g., graphing response to intervention, Web site, e-mail, workshop, newsletter).

6. Identify appropriate approaches and resources for making in-school and out-of-school referrals.

7. Identify effective methods for communicating the benefits of a comprehensive school counseling program to all stakeholders.

8. Demonstrate knowledge of multicultural, ethical, and professional competencies in planning, organizing, implementing, evaluating, and enhancing the comprehensive school counseling program.

6 Knowledge of professional, ethical, and legal considerations

1. Demonstrate knowledge of legal and ethical standards relevant to the counseling process and practices.

2. Demonstrate knowledge of the professional and ethical standards of the American Counseling Association and the American School Counselor Association.

3. Demonstrate knowledge of the legal rights of students and parents or guardians with regard to student records (e.g., Family Educational Rights and Privacy Act, Health Insurance Portability and Accountability Act, Individuals with Disabilities Education Improvement Act).

4. Demonstrate knowledge of legislation concerning students with special needs.

5. Demonstrate knowledge of the counselor's role as an advocate and leader to promote and support student success in the school and community.

7 Knowledge of academic advisement

1. Identify effective strategies for promoting student awareness of graduation requirements, the college admission process, scholarships, and other postsecondary opportunities.

2. Interpret academic assessment data for appropriate educational placement and progression for all student populations.

3. Identify approaches for assisting students with course selection to prepare for secondary and postsecondary educational or employment opportunities.

4. Identify systemic interventions that foster equity and access to close achievement, opportunity, and informational gaps.

8 Knowledge of research, program evaluation, and follow-up

1. Demonstrate knowledge of accountability and research methodology.

2. Apply the results of assessment, research, and evaluation to determine program goals and objectives.

3. Demonstrate knowledge of needs assessment techniques.

4. Demonstrate knowledge of the purposes, types, and basic steps of program evaluation and relevant follow-up activities.

5. Demonstrate knowledge of progress monitoring and outcomes reporting to all stakeholders (e.g., graphing student performance, response to intervention, program outcomes).

9 Knowledge of appropriate technology

1. Demonstrate knowledge of the use of technology in accessing, managing, storing, reporting, and transmitting student information.

2. Demonstrate knowledge of the appropriate use of technology to plan, organize, implement, evaluate, and enhance the comprehensive school counseling program.

3. Demonstrate knowledge of the benefits and limitations of various technological applications.

10 Knowledge of social and cultural diversity

1. Demonstrate knowledge of multicultural and pluralistic societal changes and trends when developing and coordinating the school counseling program.

2. Demonstrate knowledge of the characteristics, needs, and issues of diverse populations.

3. Demonstrate knowledge of facilitating the counseling process for diverse students and families.

4. Demonstrate knowledge of the counselor's responsibility to address his or her own biases.

5. Identify inclusive strategies that eliminate biases, prejudices, and discriminatory contexts within the school and community.

Health
K–12

Section 19

Health K–12

1 Knowledge of the foundation, theories, and principles of health education

1. Identify the philosophies, theories, and models of comprehensive health education.
2. Distinguish between the stages of prevention and intervention along continua of care.
3. Identify and apply the individual components of effective coordinated school health programs.
4. Identify and apply policies and legislation impacting school health education and services.
5. Demonstrate cultural competency within the analysis of foundations, theories, and principles of health education.

2 Knowledge of health education standards and health literacy

1. Demonstrate an understanding of health literacy.
2. Identify and apply state and national health standards for health education.

3 Knowledge of health education instructional practices

1. Identify and compare tools and techniques for assessing the health needs of individuals, schools, and communities.
2. Identify and apply instructional strategies to meet the needs of diverse populations.
3. Identify effective health education program planning.
4. Select and apply effective implementation strategies for health education programs.
5. Identify methods for evaluating health education programs.
6. Identify health education resources and health practitioners.
7. Identify effective techniques to communicate health information to appropriate audiences.
8. Identify methods, tools, and strategies for assessing students' progress toward health literacy.

4 Knowledge of personal health behaviors and wellness

1. Interpret and analyze concepts and components of wellness.
2. Evaluate the benefits and consequences of personal health practices.

3. Evaluate goal-setting strategies used for personal health and wellness.

4. Evaluate decision-making strategies used for personal health and wellness.

5 Knowledge of human anatomy and physiology

1. Demonstrate knowledge of the structures and interrelated functions of human body systems.

2. Identify the relationships of anatomy and physiology to health.

3. Identify physiological changes to the human body throughout the life cycle (e.g., conception to death).

4. Identify physiological adaptations as a result of physical activity, rest, and sleep.

6 Knowledge of pathology and prevention of human diseases and disorders

1. Identify causes, modes of transmission, risk factors, symptoms, treatments, and prevention of communicable diseases.

2. Identify causes, risk factors, symptoms, treatments, and prevention of noncommunicable diseases and disorders affecting the body.

3. Identify and determine common screenings and diagnostic techniques for prevention or early intervention benefits.

7 Knowledge of interpersonal health

1. Analyze relationships among families, peers, culture, media, and technology regarding interpersonal health behaviors.

2. Identify and interpret the influence of changing roles, relationships, and socioeconomic factors on interpersonal health.

3. Identify and demonstrate an understanding of the effective use of coping skills.

4. Define and demonstrate an understanding of the effective use of interpersonal communication skills.

5. Identify effective community resources that support and assist in healthy social development.

8 Knowledge of sexual health

1. Identify key characteristics of sexual development (e.g., infancy, childhood, adolescence, adulthood).

2. Determine age- and developmentally-appropriate relationship skills throughout life (e.g., friend relationships, dating relationships, intimate relationships; healthy relationships, unhealthy/abusive relationships).

3. Identify effective research-based strategies for preventing pregnancy.

4. Identify effective research-based strategies for preventing STIs, including HIV.

9 Knowledge of nutrition and physical fitness

1. Identify basic nutrients, food guides, and serving size recommendations.

2. Analyze the impact of culture on nutrition and exercise.

3. Describe the relationships between daily food intake, body weight, and physical activity.

4. Identify the signs, symptoms, and risk factors associated with eating disorders and obesity.

5. Analyze the benefits of regular physical activity and proper nutrition.

6. Explain the principles of exercise prescription and fitness assessment.

10 Knowledge of mental and emotional health

1. Identify characteristics of positive mental health and emotional intelligence.

2. Identify mental and emotional health risk factors.

3. Identify common signs and symptoms of mental and emotional health disorders requiring referral (e.g., self-harming behaviors, suicidal ideation).

4. Evaluate the impact of mental health disorders on the individual, family, peers, and community.

5. Identify strategies for prevention and intervention of mental and emotional health disorders.

6. Identify the psychosocial and physiological effects of stress.

7. Apply appropriate and effective strategies for stress management.

8. Identify community and other resources that support and assist healthy mental and emotional development.

11 Knowledge of substance use, abuse, and dependency and addictive behaviors

1. Identify risk factors contributing to substance use, abuse, and dependency and addictive behaviors.

2. Identify protective factors contributing to the prevention of substance use, abuse, and dependency and addictive behaviors.

3. Recognize signs and symptoms of possible substance use, abuse, and dependency and addictive behaviors.

4. Identify the effects of substance use, abuse, and dependency and addictive behaviors on all domains (i.e., individual, peer, school, family, community) .

5. Recognize socioeconomic and legal consequences of substance use, abuse, and dependency and addictive behaviors.

6. Identify research-based resources and strategies for prevention, intervention, and treatment of substance use, abuse, and dependency and addictive behaviors.

7. Explain the physiological and psychological effects of alcohol, tobacco, drugs, and other substances of abuse.

12 Knowledge of violence prevention and intervention

1. Identify types and characteristics of violence.

2. Determine and assess factors contributing to violent or abusive behaviors.

3. Differentiate among the characteristics of bullies, victims, and bystanders.

4. Evaluate the effects of bullying, harassment, and hazing.

5. Identify effective school- and community-based strategies for the prevention and intervention of violent or abusive behaviors among youth.

6. Identify relationships between the use of technology and violent or abusive behaviors.

13 Knowledge of consumer health-related practices and media literacy

1. Identify criteria and resources for evaluating health information, products, practices, and services.

2. Compare the relationship between consumer health laws and practices.

3. Identify emerging and holistic health practices and complementary alternative medicine.

4. Apply strategies for evaluating media-based health information.

5. Identify types of media and technology strategies used to influence individual health decisions and community health.

6. Differentiate strategies for accessing valid health education information, products, and services to enhance health.

14 Knowledge of community health

1. Interpret existing data to determine a community's level of risk and protection.

2. Analyze how perceptions of norms influence risk-taking and health-enhancing behaviors in a community.

3. Determine variables that influence the culture and climate of communities.

4. Determine the accessibility and effectiveness of community resources to address a variety of community health needs.

5. Evaluate how public health policies and government regulations influence community health.

6. Analyze the relationships between community health data and policy decisions.

7. Identify advocacy strategies for personal, family, and community health.

15 Knowledge of environmental health

1. Explain interrelationships between human behavior and the environment.

2. Relate how environmental hazards impact individuals and communities.

3. Determine ways individuals and the community assume responsibility for developing and maintaining environmental quality.

4. Identify effective strategies to improve environmental quality.

16 Knowledge of unintentional injury and safety practices

1. Identify effective safety practices used in schools, home, community, and recreational settings.

2. Identify leading causes of unintentional injuries among children, adolescents, and adults.

3. Identify first aid techniques and procedures, including the use of CPR and an AED.

4. Identify crisis and emergency management procedures (e.g., hurricane preparedness, fire safety planning, water emergency response).

Hearing Impaired
K–12

Section 20

Hearing Impaired K–12

1 Knowledge of philosophical, historical, and legal foundations and their impact on the education of students who are deaf or hard of hearing

1. Identify federal and Florida laws, rules, and legal decisions that pertain to persons who are deaf or hard of hearing.

2. Identify philosophical bases of current educational practices.

3. Relate significant historical events, persons, institutions, and controversies in the education of students who are deaf or hard of hearing to current events, trends, and theorists.

2 Knowledge of the auditory mechanism and hearing loss and its impact upon communication and learning

1. Identify the primary components and functions of the auditory mechanism.

2. Identify causes of hearing loss and additional disabilities associated with specific etiologies.

3. Compare the nature and characteristics of unilateral, bilateral, conductive, mixed, sensorineural, progressive, and intermittent hearing loss.

4. Identify current educational definitions of hearing loss, identification criteria, labeling issues, and current incidence and prevalence data.

5. Identify the potential impact of amplification devices on the communicative and social-emotional development of students who are deaf or hard of hearing.

3 Knowledge of language development and methods of communication for students who are deaf or hard of hearing

1. Identify the developmental sequence of normal language development.

2. Analyze the relationships between reading and writing skills and the communication and language development of students who are deaf or hard of hearing.

3. Analyze language samples of students who are deaf or hard of hearing, using linguistic principles.

4. Identify various communication methods used with students who are deaf or hard of hearing.

5. Identify methods to maximize speech reception and recognition through the use of residual hearing, including amplification and cochlear implants.

6. Identify a hierarchy of auditory skills, including vowel and consonant acoustic information, used for an individual auditory training program.

7. Identify the factors that influence the visual reception of speech and the visual reception of sign language.

8. Contrast the linguistic features of ASL with sign systems and with spoken English.

9. Identify the primary components and functions of the speech mechanism.

10. Identify causes, errors, and remediation techniques for articulation and voice clarity errors found in the speech of students with various degrees and configurations of hearing loss.

4 Ability to comprehend signing

1. Translate a basic message given in English-based signs.

2. Translate a basic message given in ASL.

3. Identify the correct sign(s) when given a written phrase or sentence.

5 Knowledge of the psychosocial aspects of students who are deaf or hard of hearing

1. Compare the stages of adjustment that deaf and hearing families may experience when developing acceptance of a child's hearing loss.

2. Identify common perceptions held by (a) hearing persons concerning persons who are deaf or hard of hearing and (b) persons who are deaf or hard of hearing concerning hearing persons.

3. Identify the social effects of hearing loss.

4. Identify the psychosocial impact of severe language delay and/or other disabilities on a student who is deaf or hard of hearing.

6 Knowledge of deaf and family cultures and their impact on students who are deaf or hard of hearing

1. Identify the cultural practices and defining characteristics unique to the Deaf Community.

2. Identify the role of ASL in the Deaf Community.

3. Identify the psychosocial implications for students who are culturally diverse and deaf or hard of hearing.

7 Knowledge of service delivery models for students who are deaf or hard of hearing

1. Identify provisions of the Florida Administrative Code that apply to the identification and placement procedures for students who are deaf or hard of hearing.

2. Identify service delivery models for students who are deaf or hard of hearing.

3. Identify the factors involved in the placement of students who are deaf or hard of hearing related to the least restrictive environment.

4. Identify the roles and responsibilities of the various professionals who provide educational and support services for students who are deaf or hard of hearing.

8 Knowledge of the design, development, and implementation of Individual Education Plans (IEP), Individualized Family Service Plans (IFSP), and Transition Individual Educational Plans (TIEP)

1. Identify the components of the IEP, IFSP, and TIEP and the required participants and their roles.

2. Relate the accountability implied by the IEP, IFSP, and TIEP to the procedural safeguards associated with the process.

3. Identify appropriate present level of functioning statements based on specific assessment data for the following areas: communication, academic achievement, developmental functioning, social-emotional functioning, and independent living.

4. Identify the appropriate use of assessment data for instructional planning of the IEP, IFSP, and TIEP.

5. Identify methods for assessing mastery of objectives of the IEP, IFSP, and TIEP and for determining an appropriate timeline for mastery.

6. Identify measurable annual IEP, IFSP, and TIEP goals.

9 Knowledge of transitional services for students who are deaf or hard of hearing

1. Identify postsecondary programs and alternatives for students who are deaf or hard of hearing, given their career interests and abilities.

2. Relate content areas to career awareness, exploration, and preparation for students who are deaf or hard of hearing.

10 Knowledge of assessments appropriate for students who are deaf or hard of hearing

1. Interpret the results of an audiological assessment that include unaided/aided test results.

2. Distinguish between assessment instruments and procedures used for evaluating expressive and receptive language of students with various types and degrees of hearing loss.

3. Distinguish between assessment instruments and procedures of assessing speech production and intelligibility of students with various types and degrees of hearing loss.

4. Identify informal assessment techniques used for determining communication mode and competency for students who are deaf or hard of hearing.

5. Identify standardized and criterion-referenced tests appropriate for the assessment of developmental, academic, and social-emotional abilities of students who are deaf or hard of hearing.

6. Identify methods to informally assess the academic performance of students who are deaf or hard of hearing.

7. Interpret assessment information to determine the curriculum needs of students who are deaf or hard of hearing.

8. Recognize the behaviors associated with deaf or hard of hearing students who have other exceptionalities and determine the referral process for evaluation.

9. Identify appropriate and allowable modifications and accommodations in formal and informal assessment procedures.

11 Knowledge of instructional strategies and modifications for students who are deaf or hard of hearing

1. Identify current curricula, methods, and procedures of language instruction for students who are deaf or hard of hearing.

2. Identify teaching strategies to enhance the acquisition of syntactic, semantic, and pragmatic competence of students who are deaf or hard of hearing.

3. Use information about language development in hearing and deaf children to identify an appropriate instructional program for students who are deaf or hard of hearing.

4. Identify appropriate adaptations of language in academic materials to the linguistic competence of students who are deaf or hard of hearing.

5. Identify procedures to adapt textbooks and other instructional materials used in general education for students who are deaf or hard of hearing.

6. Identify current curricula and research-based strategies for academic instruction used with students who are deaf or hard of hearing.

7. Apply an appropriate hierarchy in questioning skills.

8. Identify ways to individualize instruction to accommodate students with additional handicaps.

9. Identify a variety of instructional strategies for diverse learning styles in individual or group lessons.

10. Identify methods to foster positive social-emotional growth for students who are deaf or hard of hearing.

11. Identify the basic components of reading instruction and modifications for students who are deaf or hard of hearing.

12 Knowledge of unique technologies, media, and resources for students who are deaf or hard of hearing

1. Identify the major parts of amplification devices, including cochlear implants, the minor problems that may occur with these devices, and the skills necessary to monitor and maintain them.

2. Identify special media and assistive devices for students with hearing loss.

3. Identify the acoustical components involved in designing an appropriate classroom environment and ways to make accommodations in the existing school environment for students who are deaf or hard of hearing.

4. Identify appropriate procedures for the evaluation and selection of technology for use with students who are deaf or hard of hearing.

13 Knowledge of content design and requirements for general education

1. Identify major content areas and State standards in general education.

2. Identify the requirements for a standard diploma, special diploma, and certificate of attendance.

3. Identify the content area components of a balanced instructional day for a variety of grade levels.

14 Knowledge of professional communication, advocacy, and collaboration to meet the needs of students who are deaf or hard of hearing

1. Identify activities, literature, resources, and references designed to help parent/guardian participation in the development and enhancement of their child's communicative, social-emotional, and academic skills.

2. Identify strategies for assisting general education teachers in the successful mainstreaming or inclusion of students who are deaf or hard of hearing.

3. Identify strategies for collaborating with a variety of support personnel (e.g., speech-language pathologists, paraprofessionals, general education mainstream facilitators).

4. Identify strategies for developing students' self-advocacy in the home, school, and community.

5. Identify the names and functions of the major associations, organizations, and research publications related to hearing loss and other disabilities.

Humanities
K–12

Section 22

Humanities K–12

1 Knowledge of the vocabulary and concepts basic to the humanities

1. Identify basic vocabulary used in discussing the arts.
2. Identify organizational principles of the arts.
3. Identify characteristics of various genres of musical, visual, literary, and performing arts.

2 Knowledge of historical periods, styles, and movements

1. Identify major periods of Western culture.
2. Identify significant artists and characteristics of major art forms and principal genres throughout the different periods of Western culture.
3. Identify prominent philosophers and philosophical ideas throughout the different periods of Western culture.
4. Identify prominent political and economic systems of the major periods of Western culture.
5. Identify significant Egyptian, Greek, Roman, and Byzantine contributions to, and influences on, Western culture.
6. Identify significant Jewish, Christian, and Muslim contributions to, and influences on, Western culture.
7. Identify significant African, Asian, Latin American, and indigenous American contributions to, and influences on, Western culture.
8. Identify the influences of geography and historical events on the arts.

3 Knowledge of the interrelatedness of arts and ideas

1. Identify works of art with common themes, symbols, or motifs.
2. Identify the influence of one artistic work, artist, or group of artists on another.
3. Relate a major concept or idea to a representative work or person.
4. Identify the influences popular and fine art forms have on each other.
5. Identify the effects of scientific discoveries and technological advances on the arts.

4 Knowledge of the relationship between a culture's beliefs and values and their expression in the humanities

1. Identify major works of art that influence a culture.
2. Identify themes, symbols, and motifs that recur over time and across cultures.
3. Identify ways in which different cultures portray and express historical and religious events.
4. Identify the philosophical and religious influences found in significant artistic works.
5. Identify the influences of political, social, or religious institutions on artistic expression.
6. Identify ways in which gender roles are reflected in the arts.
7. Relate artistic styles and techniques to the beliefs and values of different cultures.

5 Knowledge of prominent aesthetic principles used by major cultures in evaluating the arts

1. Identify ways in which different aesthetic principles are manifested in significant works of musical, visual, literary, and performing art.
2. Discriminate among aesthetic principles of different eras and cultures.

6 Knowledge of instructional techniques, assessment, and resources appropriate to the humanities

1. Identify effective methods of presenting humanities topics.
2. Identify effective teaching strategies for diverse student populations in humanities classes.
3. Identify appropriate evaluation methods for assessing and measuring student progress in humanities classes.
4. Identify appropriate and effective academic, community, and technological resources for teaching the humanities.

Journalism
6–12

Section 23

Journalism 6–12

1 Knowledge of journalistic style

1. Identify the characteristics of journalistic writing.
2. Identify the elements of a lead.
3. Identify different types of leads.
4. Identify the angle of a story.
5. Identify the characteristics of the following forms of writing: news, news features, editorials, columns, reviews, sports, and interpretive analyses.
6. Identify headlines that follow AP style in voice, structure, and format.
7. Identify the correct use of tense, voice, grammar, and punctuation in cutlines (captions).
8. Identify journalistic jargon for all media.

2 Knowledge of editing skills for print media

1. Identify AP style as it applies to grammar, punctuation, capitalization, and spelling.
2. Identify copyediting and proofreading symbols.
3. Identify examples of libelous, obscene, and disruptive writing.
4. Identify the correct use of quotations and paraphrasing with attribution in journalistic writing.
5. Distinguish between active and passive voice.

3 Knowledge of news judgment

1. Identify the following news values/elements: conflict, timeliness, proximity, consequence, prominence, human interest, and novelty.
2. Identify examples of sensitivity, fairness, balance, and clarity.
3. Identify examples of sensationalism, exploitation, editorializing, and spin.
4. Identify the appropriateness of material for a target audience.

4 Knowledge of news-gathering skills

1. Identify appropriate, reliable, and credible sources.

2. Identify appropriate interviewing skills (e.g., selecting sources, phrasing questions, establishing rapport, interpreting nonverbal cues, taking notes, using electronic devices).

3. Identify appropriate survey-writing techniques and polling strategies.

4. Identify appropriate beats in news-gathering.

5 Knowledge of design skills

1. Identify basic terminology for layout, photography, and graphics.

2. Identify basic layout and design principles appropriate for yearbooks, newspapers, magazines, or online and broadcast media as they apply to visual impact, including the use of copy, art, photos, graphics, headlines, cutlines, and white space.

3. Identify correct use of basic typography skills, including font selection, copy fitting, and headline fitting.

4. Identify ways in which news value/elements, ethics, and quality influence photographic selection.

5. Choose photographs that demonstrate appropriate cropping and proportioning.

6. Identify the basic characteristics of photographic composition.

6 Knowledge of staff management and media production

1. Identify components of a plan for staff organization, including selection of editors and staff and development of job descriptions.

2. Identify basic production equipment for print, broadcast, and online media.

3. Identify components of a copy flow and production schedule.

4. Select appropriate criteria for evaluating student performance in a journalism class or production laboratory.

5. Identify criteria for evaluating student-produced print, broadcast, and online media.

7 Knowledge of history

1. Identify major publications in the history of journalism.

2. Identify milestones and key people in the history of print, broadcast, and online media.

3. Identify major technological advances in the development of journalism.

8 Knowledge of law and ethics

1. Identify the implications or effects of the First Amendment as it applies to censorship, obscenity, disruption, libel, and invasion of privacy for secondary schools.

2. Identify landmark decisions in media law (e.g., *Hazelwood School District v. Kuhlmeier*, *Tinker v. Des Moines*).

3. Identify the rights and responsibilities of the media adviser.

4. Identify examples of plagiarism, fabrication, and violations of copyright laws for print, broadcast, and online media.

5. Identify the elements of a code of ethics for student media.

6. Identify the elements of an editorial policy.

9 Knowledge of careers and resources in mass media

1. Identify career opportunities in the editorial, technical, online, business and managerial, and advertising divisions within media corporations, private corporations, and government agencies.

2. Identify significant professional and scholastic press organizations and governmental agencies that support and/or regulate the mass media.

3. Identify major publications, networks, and online news outlets.

4. Identify the impact of convergence on mass communication careers.

10 Knowledge of business management and advertising

1. Calculate advertising rates for print, online, and broadcast media.
2. Analyze financial statements for print, online, and broadcast media.
3. Identify components of a budget for print, online, and broadcast media.
4. Identify elements of advertising copy.
5. Identify visual and auditory elements of advertisements.
6. Identify the elements of an advertising policy and marketing plan.
7. Identify propaganda techniques.

Latin
K–12

Section 24

Latin K–12

1 Knowledge of English words derived from Latin vocabulary

1. Use knowledge of prefixes and suffixes of Latin origin to partially decode the meanings of English words.

2. Use Latin roots to determine meanings of English words.

2 Knowledge of Latin vocabulary in a given context

1. Select the most appropriate English meaning for a Latin word, phrase, or idiom in a given context.

2. Choose the most appropriate Latin word, phrase, or idiom in a given context.

3 Knowledge of the grammatical forms of Latin words

1. Apply the rules for the formation of regular nouns and pronouns (e.g., personal, demonstrative, relative, interrogative): the nominative, genitive, dative, accusative, ablative, and vocative forms of nouns; and the nominative, genitive, dative, accusative, and ablative forms of pronouns.

2. Apply the rules for the formation of regular adjectives and adverbs: the nominative, genitive dative, accusative, ablative, and vocative forms of adjectives in the positive, comparative, and superlative degrees; and the forms of adverbs in the positive, comparative, and superlative degrees.

3. Apply the rules for the formation of regular verbs: the person, number, tense, and voice of verbs in the indicative and subjunctive moods; and the present active positive imperative mood of verbs.

4. Apply knowledge of irregular verb forms (e.g., *sum*, *eo*, *fero*, *volo*): the person, number, tense, and voice of verbs in the indicative and subjunctive moods; and the present active positive imperative mood of verbs, including the irregular forms of *dico*, *duco*, *fero*, and *facio*.

5. Apply the rules for the formation of verbals: the tense and voice of the infinitive (with the exception of the future passive) and the tense, voice, and case of participles.

4 Understanding of grammatical constructions in a given context

1. Identify the appropriate use of nouns in the following cases: the nominative case (e.g., subject and predicate noun); the genitive case (e.g., possessive, partitive); the dative case (e.g., indirect object, with certain adjectives); the accusative case (e.g., direct object, extent of space and time, with certain prepositions, subject of infinitive); the ablative case (e.g., place from which, place where, personal agent, accompaniment, manner, means, time, comparison, separation, degree of difference); and the vocative case.

2. Determine the appropriate use of pronouns (e.g., personal, demonstrative, relative, interrogative).

3. Determine the appropriate use of adjectives (e.g., as modifiers, as predicate adjectives, as nouns or substantives).

4. Distinguish the appropriate use of mood in independent and subordinate clauses: the indicative, subjunctive, and imperative moods in an independent clause; and the indicative and subjunctive moods in dependent (subordinate) clauses (e.g., indicative in relative clauses and subjunctive in purpose, result, indirect command, indirect question, *cum* clauses).

5. Identify the appropriate use of verbals: the complementary infinitive, the structure of the indirect statement, participles and participial phrases (e.g., ablative absolute, active and passive periphrastics, gerunds and gerundives, supines).

5 Knowledge of pedagogical methods, reference materials, and teaching aids appropriate to the Latin classroom

1. Select appropriate methods for teaching derivation and vocabulary.

2. Select appropriate methods for analyzing the structure of Latin in a given situation.

3. Select appropriate methods for teaching reading comprehension and analysis.

4. Select appropriate reference materials and instructional aids for teaching mythology and political, social, and literary history.

6 Ability to read and understand passages of connected Latin prose at the level of difficulty of straightforward narrative passages in *Caesar's Gallic Wars, Book 1*, or the *De Illustribus Viris* of Cornelius Nepos and poetry at the level of difficulty of Vergil's *Aeneid* or Ovid's *Metamorphoses*

1. Identify a main idea in a given passage of prose or poetry.

2. Identify facts and opinions in a given passage of prose or poetry.

3. Identify a historical, literary, or mythical reference in a given passage of prose or poetry.

7 Ability to identify meter in Latin poetry and basic literary devices in Latin prose or poetry

1. Identify metric patterns within a line of dactylic hexameter.

2. Identify basic literary devices (e.g., anaphora, antithesis, asyndeton, chiasmus, litotes, parallelism) in a given passage of Latin prose or poetry.

8 Knowledge of classical mythology

1. Identify the functions and attributes of the major Greek and Roman deities.

2. Identify major stories and historical events connected with the prominent mythological figures.

9 Knowledge of Roman literary history

1. Identify authors of the Republic (i.e., Plautus, Terence, Cicero, Caesar, Catullus, Lucretius) by genre and major works.

2. Identify major authors of the early Empire (i.e., Vergil, Horace, Ovid, Livy, Pliny the Younger) by genre and major works.

10 Knowledge of Roman political history

1. Identify the names and dates of the three major periods of Roman history: Monarchy (753-509 BCE), Republic (509-27 BCE), and Empire (27 BCE-CE 476).

2. Identify events and biographical information associated with major characters of the Roman Monarchy (i.e., Romulus through Tarquinius Superbus).

3. Identify events and biographical information associated with major characters of the Roman Republic (e.g., Cincinnatus, Hannibal, the Gracchi, Marius, Sulla, Pompey, Crassus, Caesar, Cicero, Cleopatra, Antony).

4. Identify events and biographical information associated with major characters of the Roman Empire (e.g., the Julio-Claudian emperors, Vespasian, Hadrian, Marcus Aurelius, Diocletian, Constantine).

11 Knowledge of Roman social history

1. Identify major geographical locations in Italy, Gaul, Greece (Athens), Asia Minor (Troy), and North Africa (Carthage).

2. Identify the parts of a Roman name.

3. Identify the titles and primary duties of major Roman governmental officials.

4. Identify terms used for the major parts of a Roman house and basic articles of Roman clothing.

5. Apply the rules for the formation of Roman numerals.

6. Identify the sequence of chronological dates (i.e., BCE, CE).

12 Knowledge of Roman contributions to Western civilization

1. Identify contributions of Latin literature to Western literary tradition.

2. Recognize contributions of Roman civilization to Western art, architecture, and engineering.

3. Identify contributions of Roman civilization to modern law, government, and science.

4. Identify contributions of the Latin language to the Romance languages.

5. Identify Latin mottoes, abbreviations, and expressions currently in use in the English language.

Marketing
6–12

Section 57

Marketing 6–12

1 Knowledge of marketing careers and employability

1. Identify the resources for marketing career research, including educational and personal requirements, job descriptions, and career ladders.

2. Identify methods for finding job leads and securing information about marketing positions, including technology (e.g., Internet applications).

3. Identify correctly prepared job applications, cover letters, and resumes in print and electronic formats.

4. Identify successful job interview and follow-up techniques.

5. Identify acceptable work habits.

2 Knowledge of human relations

1. Demonstrate knowledge of the concepts of self-understanding, self-esteem, and human relations.

2. Demonstrate knowledge of personal goal setting and time management principles.

3. Identify interpersonal skills necessary to foster positive working relationships.

4. Identify positive customer/client relations and methods of handling difficult customers, customer inquiries, and complaints.

5. Identify ethical and unethical business practices in the work environment.

6. Identify issues relating to sexual harassment in the workplace.

7. Identify appropriate behaviors related to diversity in the workplace (e.g., people of different cultures, people with special needs).

3 Knowledge of communications

1. Identify principles of verbal and nonverbal communications (e.g., speaking, writing, listening, reading, body language).

2. Apply knowledge of printed and electronic business letters, business reports, and inter-departmental and company communications.

3. Identify appropriate procedures for using communication technologies in a professional manner (e.g., proper etiquette, legal considerations, ethical considerations).

4. Demonstrate knowledge of the nature and importance of employee communications (e.g., employee publications, staff meetings, e-mail, Web sites, intranet).

5. Identify modern communications technology and its impact on the field of marketing.

4 Knowledge of marketing mathematics

1. Analyze information in charts and graphs.

2. Solve sales transaction problems involving cash, charge, layaway, COD, returns, and discounts.

3. Perform marketing calculations, such as stock turnover, net sales, stock-sales ratio, mark-ups, markdowns, planned purchases, inventory overages and shortages, and open-to-buy.

4. Calculate purchase order and invoice totals and terms.

5. Analyze profit and loss statements.

6. Identify simple and compound interest.

7. Calculate break-even points.

5 Knowledge of economic principles

1. Identify economics terminology and economic activities.

2. Identify economic goods, services, and resources.

3. Identify the five types of economic utility (e.g., form, place, possession, time, information).

4. Analyze the concept of supply and demand.

5. Identify the characteristics of the different types of economic systems and how each system answers the three basic economic questions.

6. Identify the roles of profit, risk, competition, and productivity in a free enterprise system.

7. Analyze the relationship between government and business.

8. Analyze the relationship between organized labor and business.

9. Identify the components of the Gross Domestic Product and Gross National Product.

10. Analyze the phases and characteristics of business cycles.

11. Demonstrate knowledge of the issues involved in international trade (e.g., terminology, case situations, legal ramifications).

12. Identify the components of Consumer Price Index and how those components are measured.

6 Knowledge of marketing principles

1. Identify marketing functions and related activities.

2. Identify and analyze marketing strategies.

3. Apply knowledge of the concept of market and market identification to business situations.

4. Identify the characteristics and functions of channels of distribution (e.g., industrial, consumer, direct, indirect, integrated).

5. Identify pricing concepts and the factors affecting selling price.

6. Identify the principles of product/service planning and the stages of the product life cycle.

7. Identify factors of a business image.

8. Demonstrate knowledge of components of a marketing mix for online and physical store locations or both (i.e., click businesses, brick-and-mortar businesses, brick-and-click businesses).

7 Knowledge of selling

1. Demonstrate knowledge of the steps of the selling process: opening, questioning, substitution, demonstration, handling objections, closing, suggestion selling, and follow-up.

2. Identify key factors in building a clientele and maintaining a customer and prospect list.

3. Identify customers' buying motives.

4. Identify the process of feature and benefit selling.

5. Identify the purpose of sales quotas, sales journals, sales training, and sales-incentive programs.

6. Demonstrate knowledge of sales via Internet marketing.

7. Identify the types and roles of nonpersonal and personal sales.

8 Knowledge of business operations

1. Identify the fundamentals of store security, safety, and maintenance.
2. Identify the steps of the shipping and receiving processes.
3. Identify the fundamentals of inventory control and recognize inventory variances.
4. Identify the fundamentals of credit and the factors involved in granting consumer credit.
5. Identify the types of business risks and the methods of risk management.
6. Demonstrate knowledge of and the role of outsourcing.
7. Analyze the different types of investments where business cash reserves can be placed.

9 Knowledge of sales promotion

1. Demonstrate knowledge of the elements of the promotional mix and its components (e.g., public relations/publicity, display, personal selling, sales promotion, advertising).
2. Demonstrate knowledge of the factors involved in planning promotional programs.
3. Identify the role of the advertising agency.
4. Identify the types of advertising media and calculate their costs.
5. Identify the factors used in the selection and evaluation of advertising media.
6. Identify the parts of a printed advertisement.
7. Identify similarities and differences between promotional and institutional advertising.

10 Knowledge of product and service technology

1. Identify sources of product and/or service information.
2. Identify grades, standards, warranties, and guarantees.
3. Identify the roles of trade journals/periodicals, professional/trade organizations, trade shows, dealer/franchise meetings, and online resources.

11 Knowledge of leadership and management

1. Identify leadership or management styles (e.g., authoritarian, laissez-faire, democratic).
2. Demonstrate knowledge of human resources development functions, such as motivation, training, and evaluation.

3. Identify factors involved in employee wages, fringe benefits, and incentive programs.

4. Identify operating budget procedures.

5. Identify management's role in customer relations.

6. Identify computer applications in marketing: inventory, merchandising, data entry, and spreadsheets for decision making.

7. Identify the functions of management (e.g., planning, organizing, directing, controlling).

12 Knowledge of work-based experiences

1. Identify how to develop business partners and promote work-based programs (e.g., mentoring, career shadowing, internships, cooperative work experience).

2. Identify student placement procedures: training stations, training plans, and evaluating students.

3. Demonstrate knowledge of the child labor laws.

4. Identify strategies to recruit and place student learners.

5. Demonstrate knowledge of industry certifications (e.g., IC3, MOUS, 440 Customer Service Representative).

13 Knowledge of program operation

1. Identify the purposes and functions of a marketing education advisory committee.

2. Identify professional publications and organizations (e.g., *Techniques*, *Dimensions*, *Florida Trend*, *Wall Street Journal;* Florida Association of Marketing Educators [FAME], Florida Association of Career and Technical Educators [FACTE], Marketing Education Association [MEA], Association of Career and Technical Educators [ACTE], National Career Academy Coalition [NCAC]).

3. Identify current trends and terminology in marketing education.

4. Demonstrate knowledge of the purpose, operations, and goals of career student organizations (e.g., DECA: An Association of Marketing Students).

14 Knowledge of entrepreneurship

1. Recognize the elements of entrepreneurship.

2. Identify personal characteristics necessary to be a successful entrepreneur.

3. Identify the components of a plan for opening a business (e.g., form of ownership, financing, merchandising, promotion).

4. Demonstrate knowledge of the different types of business ownership.

5. Differentiate between the terms used in entrepreneurial endeavors (e.g., franchise, franchisee, franchisor, sole-proprietorship, limited liability, partnership, nonprofit, corporation).

15 Knowledge of financial literacy

1. Identify steps to balance a checkbook.

2. Identify different savings options (e.g., savings account, money market, certificate of deposit).

3. Identify differences between banks and credit unions.

4. Identify personal investment options (e.g., stocks, bonds, mutual funds, real estate, collectibles).

Mathematics
6–12

Section 26

Mathematics 6–12

1 Knowledge of algebra

1. Apply the properties of real numbers: closure, commutative, associative, distributive, transitive, identities, and inverses.

2. Solve linear equations and inequalities in one or two variables, symbolically or graphically.

3. Relate the graphical and algebraic representations of linear equations or inequalities on a number line or in the coordinate plane.

4. Determine the slope, intercepts, or equation of a line, given appropriate information.

5. Formulate and solve systems of linear equations or inequalities, including models of real-world situations.

6. Solve equations or inequalities involving absolute value.

7. Solve or identify models of real-world problems involving ratio, proportion, or direct, inverse, and joint variations.

8. Solve or identify equations containing rational or radical expressions including models of real-world situations.

9. Solve quadratic equations using factoring, graphing, completing the square, or applying the quadratic formula, including complex solutions.

10. Solve or identify models of real-world problems using quadratic equations.

2 Knowledge of advanced algebra

1. Relate graphical and algebraic representations of nonlinear inequalities.

2. Perform arithmetic operations of complex numbers algebraically or geometrically.

3. Solve equations involving radicals (index greater than two), powers, exponents, and logarithms.

4. Solve polynomial equations (third degree or higher).

5. Expand binomials to a positive integral power or determine a specified term in the expansion.

6. Perform and model vector addition, subtraction, and scalar multiplication on the plane.

7. Determine a specified term or a rule for an arithmetic or geometric sequence.

8. Determine the sum of terms in an arithmetic or geometric sequence.

9. Perform operations on matrices.

10. Solve and interpret models of real-world problems using discrete structures (e.g., sequences, finite graphs, matrices).

3 Knowledge of functions

1. Determine which relations are functions, given mappings, sets of ordered pairs, rules, and graphs.

2. Determine the domain and range of a given function.

3. Relate graphs and equations of functions (e.g., absolute value, step, piecewise, polynomial, exponential, periodic).

4. Determine the inverse of a given function or the composition of two functions and their related properties.

5. Determine or prove whether a function is symmetric, periodic, or even/odd.

6. Determine the graph or equation of a transformed function.

4 Knowledge of geometry

1. Identify or apply the relation between the perimeter, area, or volume of similar figures.

2. Determine the relationships between points, lines, and planes, including their intersections with other two and three dimensional figures.

3. Differentiate and relate geometric figures or solids according to their properties.

4. Derive or apply formulas to find the measures of interior and exterior angles of convex polygons including their sum.

5. Prove or apply properties of quadrilaterals, including models of real-world situations.

6. Prove theorems or solve problems with similar or congruent polygons or solids.

7. Apply the Pythagorean theorem or its converse, including models of real-world situations.

8. Apply 30-60-90 or 45-45-90 triangle relationships to solve problems.

9. Derive or apply formulas for perimeter, circumference, or area of two-dimensional figures (e.g., circles, sectors, segments, arc lengths, polygons, composite figures).

10. Apply theorems pertaining to the relationships of chords, secants, diameters, radii, and tangents with respect to circles and to each other.

11. Prove or apply theorems pertaining to the measures of inscribed angles and angles formed by chords, secants, and tangents.

12. Analyze basic geometric constructions (e.g., bisecting angles or line segments, constructing parallels or perpendiculars).

13. Derive or apply formulas for surface area and volume of prisms, pyramids, cylinders, cones, and spheres.

5 Knowledge of coordinate geometry

1. Apply distance or midpoint formulas involving two points, a point and a line, or two parallel lines.

2. Determine the equation or graph of parabolas, ellipses, and hyperbolas, and the directrix, foci, vertices, axes, and asymptotes, given appropriate information.

3. Determine the equation, graph, center, or radius of a circle, given appropriate information.

4. Determine the images of geometric objects on a coordinate plane under translations, rotations, dilations, or reflections, and analyze appropriate properties of images and preimages.

5. Determine the equation of a conic section to model real-world situations.

6 Knowledge of trigonometry

1. Determine equations of graphs of circular/trigonometric functions and their inverses.

2. Prove circular/trigonometric function identities or apply them to solve problems.

3. Analyze the graphs of trigonometric functions (e.g., amplitude, period, phase shift).

4. Solve real-world problems involving triangles using the law of sines or the law of cosines.

5. Apply trigonometric ratios to solve right triangle problems.

6. Determine an equation to model real-world periodic phenomenon.

7 Knowledge of statistics and probability

1. Interpret data on a single categorical or quantitative variable (e.g., measures of central tendency, spread, location).

2. Interpret data on two categorical or quantitative variables (e.g., correlation, linear regression, two-way tables) or identify an appropriate representation.

3. Interpret information from bar graphs, histograms, circle graphs, stem-and-leaf plots, scatter plots, and box-and-whisker graphs or identify an appropriate representation for given data.

4. Identify the processes used to design and conduct statistical experiments including possible sources of bias.

5. Infer and justify conclusions from sample surveys, experimental data, and observational studies.

6. Solve problems using the Fundamental Counting Principle, permutations, and combinations.

7. Determine probabilities of independent, dependent (i.e., conditional probability), or compound events using a variety of procedures (e.g., counting procedures, tables, sample spaces, tree diagrams, permutations, combinations).

8. Use probability to evaluate outcomes of decisions, including the use of expected value.

8 Knowledge of calculus

1. Determine limits using theorems concerning sums, products, and quotients of functions.

2. Determine the derivatives of algebraic, trigonometric, exponential, and logarithmic functions.

3. Determine the derivative of the sum, product, quotient, or the composition of functions.

4. Determine the slope or equation of a tangent line at a point on a curve.

5. Use the first derivative of a given function in various representations to determine increasing and decreasing intervals or extrema.

6. Use the second derivative of a given function in various representations to determine intervals of concavity or points of inflection.

7. Solve problems using velocity and acceleration.

8. Solve problems using instantaneous rates of change and related rates of change.

9. Determine antiderivatives for algebraic, trigonometric, exponential, and logarithmic functions.

10. Solve distance, area, and volume problems using integration.

11. Relate functions and their derivatives through the use of graphs or tables.

9 Knowledge of mathematical reasoning

1. Evaluate arguments or conjectures using laws of logic or counterexamples.

2. Identify or compare the converse, inverse, and contrapositive of a conditional statement.

3. Analyze mathematical assertions within proofs (e.g., direct, indirect, mathematical induction, algebraic).

4. Classify examples of reasoning as inductive or deductive.

10 Knowledge of instruction and assessment

1. Analyze students' misconceptions and choose instructional approaches to address the misconceptions with particular focus on number operations, algebra, advanced algebra, functions, and geometry.

2. Identify or evaluate diagnostic, formative, or summative assessment items that measure conceptual or procedural understanding.

3. Determine the appropriate sequence of lessons for a specific mathematical concept.

4. Evaluate student responses to identify misconceptions or gaps in knowledge and provide specific feedback to promote student achievement, including the use of a rubric.

5. Analyze a given instructional segment which may include the selection or use of available tools and resources (e.g., mathematical models, manipulatives, dynamic grapher, interactive geometry drawing tool, computer algebra system, appropriate calculators).

6. Develop and interpret appropriate models for mathematical concepts including real-world models, and equivalent representations (e.g., graphical, symbolic, verbal, numeric).

7. Identify or apply methods, strategies, and questioning techniques for teaching problem-solving skills and applications (e.g., constructing tables from given data, guess-and-check, working backwards, reasonableness, estimation).

8. Differentiate among various learning environments, including alternative methods of assessment (e.g., performance, portfolios, projects) to accommodate the needs and diversity of students.

Middle Grades English
5–9

Section 14

Middle Grades English 5–9

1 Knowledge of the characteristics of students in order to make instructional decisions for teaching and learning language arts

1. Identify the characteristics of cognitive development that impact student learning in language arts.
2. Identify the characteristics of social and emotional development that impact student learning in language arts.
3. Identify the cultural characteristics that impact student learning in language arts.
4. Apply knowledge of students' characteristics (e.g., cognitive, social, emotional development, culture) in making instructional decisions in language arts.

2 Knowledge of applications of evidence-based research and best practices in teaching language arts

1. Identify effective instructional practices that are aligned with state-adopted standards at the appropriate grade level.
2. Identify and apply evidence-based research to select appropriate technology for language arts instruction.
3. Identify and apply evidence-based research in the integration of language arts content with other disciplines.
4. Determine and apply appropriate methods and materials for meeting the diverse learning needs of students.
5. Determine and apply strategies for incorporating multicultural experiences in reading and writing activities.

3 Knowledge of language arts content

1. Identify and apply the components of text complexity (i.e., quantitative, qualitative, reader and task).
2. Analyze various literary and rhetorical devices (e.g., symbolism, style, allusion, irony, foreshadowing, tone, figurative language, syntax).
3. Evaluate the characteristics of various genres (e.g., drama, biography, speeches).
4. Evaluate various texts using a range of critical approaches (e.g., gender, sociological).

5. Differentiate among various forms of writing (e.g., expository, narrative, persuasive, argumentative) in various texts.

6. Identify and analyze effective organizational and stylistic choices in various forms of writing.

7. Identify and apply knowledge of the writing process (i.e., prewriting, drafting, revising, editing, proofreading, publishing).

8. Identify the characteristics of effective collaborative discussions to enhance speaking and listening opportunities.

9. Determine multimedia components (e.g., graphics, images, music, sound) and visual displays to communicate and present information.

10. Analyze media to evaluate meaning, intent, effect, and technique.

11. Identify and apply standard English grammar and usage with proficiency.

12. Identify and apply the conventions of English capitalization, punctuation, and spelling with proficiency.

13. Identify and distinguish the effective use of sentence variety.

14. Identify and interpret figurative language (e.g., idioms, figures of speech).

15. Determine and apply the connotation and denotation of key words.

16. Identify and use general academic and domain-specific language.

4 Knowledge of pedagogical content for teaching language arts

1. Select appropriate strategies for teaching the conventions of standard English (e.g., grammar, usage, capitalization, punctuation, spelling).

2. Select strategies to engage students in a variety of collaborative discussions.

3. Identify appropriate strategies to teach students how to comprehend literary and informational texts.

4. Identify appropriate strategies to teach students how to analyze literary and informational texts.

5. Select appropriate strategies to teach students to analyze and evaluate the purpose of information presented in multimedia literacies and formats.

6. Determine effective strategies to teach students to speak and listen in collaboration with generating ideas and assimilating knowledge.

7. Identify and apply strategies for teaching the writing process (i.e., prewriting, drafting, revising, editing, proofreading, publishing).

8. Identify strategies for teaching the research process (e.g., gathering relevant information, synthesizing, paraphrasing, citing information, avoiding plagiarism).

5 Knowledge of various assessments and use of corresponding data to drive instructional decisions within language arts

1. Identify appropriate and effective, formal and informal assessment tools in language arts.

2. Select appropriate formal and informal assessments to differentiate instruction as needed.

3. Analyze results of formal and informal assessments to diagnose students' strengths and needs.

4. Analyze and evaluate results of formal and informal assessments to prescribe modifications and accommodations appropriate to instruction and student achievement.

5. Identify ways to share the outcomes of student assessment data with students and stakeholders.

6 Knowledge and application of the collaborative processes of reading and writing

1. Identify and apply appropriate instructional practices to teach the reading and writing processes for a variety of discipline-specific tasks, purposes, and audiences.

2. Select appropriate instructional practices to teach writing and speaking in response to literary and informational texts (e.g., images, sound, performance, oral presentations).

3. Apply strategies for teaching the research process (e.g., gathering relevant information, synthesizing, paraphrasing, citing information, avoiding plagiarism).

4. Identify and determine how text structure (e.g., compare-contrast, cause and effect, chronological) impacts comprehension.

5. Determine the meaning of a word, phrase, paragraph, or text based on its context.

7 Demonstration of the ability to respond critically through an analysis of a literary selection

1. Demonstrate the ability to organize ideas around a clear and coherent thesis statement.

2. Incorporate relevant details and ample textual evidence to support the thesis statement.

3. Demonstrate proficient use of postsecondary level standard written English (e.g., varied word choice and syntax, semantics, language conventions).

4. Use appropriate style to enhance the reader's interest and understanding.

Middle Grades General Science
5–9

Section 04

Middle Grades General Science 5–9

1 Conceptual and quantitative knowledge of the structure and behavior of matter

1. Analyze the physical and chemical properties of matter (e.g., mass, volume, density, chemical reactivity).
2. Distinguish between the states of matter.
3. Apply knowledge of the gas laws.
4. Identify the major discoveries in the development of the atomic theory.
5. Identify the characteristics of elements, compounds, and mixtures.
6. Apply knowledge of symbols, formulas, and equations for common elements and compounds (e.g., acids, bases, salts, carbon compounds) and their reactions.
7. Identify characteristics and functions of the components of an atom.
8. Identify chemical or physical properties of elements based on their placement on the periodic table.
9. Identify characteristics of types of chemical bonding (e.g., covalent, ionic, metallic, hydrogen).
10. Identify types of chemical reactions and their characteristics.

2 Conceptual and quantitative knowledge of forces and motion

1. Differentiate between the types and characteristics of contact forces and forces acting at a distance, and their interactions.
2. Identify applications of Newton's laws of motion.
3. Solve problems involving force or motion.
4. Identify types, characteristics, and properties of waves.
5. Analyze characteristics of wave phenomena (e.g., intensity, refraction, interference, Doppler effect, wave-particle duality) as they apply to real-world situations.
6. Identify origins, characteristics, and examples of electricity.
7. Identify types of magnets and characteristics of magnetic fields.
8. Apply knowledge of magnets and magnetic fields to real-world situations (e.g., generators, solenoids).

9. Identify characteristics of motion as they apply to real-world situations (e.g., speed, velocity, acceleration, linear and angular momentum).

3 Conceptual and quantitative knowledge of energy and its effects

1. Differentiate between forms of energy and their transformations.
2. Relate energy to transitions between states of matter.
3. Distinguish between temperature, heat, and thermal energy.
4. Distinguish between the types of thermal energy transfer (e.g., radiation, conduction, convection).
5. Apply the laws of thermodynamics to real-world situations.
6. Differentiate between potential and kinetic energy.
7. Identify characteristics of nuclear reactions.
8. Identify the regions of the electromagnetic spectrum and energy associated with each.
9. Identify the use of light and optics in real-world applications (e.g., optical instruments, communication).
10. Solve problems involving energy, work, power, mechanical advantage, and efficiency.
11. Apply the laws of conservation of mass and energy to chemical reactions, nuclear reactions, physical processes, and biological processes.
12. Identify types, characteristics, and measurements of electrical quantities.
13. Apply knowledge of currents, circuits, conductors, insulators, and resistors to real-world situations.
14. Solve mathematical problems involving current, voltage, resistance, power, and energy in direct current (DC) circuits.

4 Knowledge of Earth and the processes that affect it

1. Relate surface and subsurface geologic processes to the movement of tectonic plates.
2. Trace the development of the theory of continental drift to the current theory of plate tectonics.
3. Relate the characteristics of geologic structures to the mechanisms by which they are formed.

4. Identify the evidence used to define geologic eras (e.g., geologic events, biotic factors, abiotic factors).

5. Apply methods for determining geologic age (e.g., law of superposition, radioactive decay, relative dating).

6. Interpret various charts and models (e.g., topographic, geologic, weather).

7. Identify the characteristics of ocean currents and how they influence weather patterns.

8. Identify characteristics of Florida's geology and its formation.

9. Identify the major processes of formation and properties of rocks, minerals, and fossils.

10. Distinguish between the processes of weathering, erosion, and deposition and their products.

11. Identify the characteristics and functions of the atmospheric layers.

12. Relate atmospheric conditions to weather.

13. Identify the factors that contribute to the climate of a geographic area.

14. Identify the movement of water in the hydrologic cycle, including sources of water, types of precipitation, and causes of condensation.

15. Analyze ways in which earth and water interact (e.g., soil absorption, runoff, leaching, groundwater, karst topography).

16. Identify various forms of water storage (e.g., aquifers, reservoirs, watersheds).

17. Analyze interactions between the atmosphere, geosphere, hydrosphere, biosphere, and cryosphere and the effects of these interactions.

5 Knowledge of space science

1. Identify consequences of Earth's motions and orientation (e.g., seasons, tides, lunar phases).

2. Identify the properties of stars and the factors that affect their evolutionary patterns.

3. Identify devices and techniques for collecting and analyzing data about stars and other celestial objects.

4. Explain the role of space exploration and its impact on technological advancements.

5. Identify the components of the solar system (e.g., Kuiper belt, Oort cloud), their characteristics, how they interact (e.g., solar winds, impacts, gravitational attraction), and how they evolve.

6. Evaluate celestial objects in order to determine formation, age, location, characteristics, and evolution.

6 Knowledge of processes of life

1. Identify the relationship between biological and chemical processes (e.g., cellular respiration, ATP energy transfer) necessary for life.

2. Compare prokaryotes and eukaryotes.

3. Relate cell organelles to their functions.

4. Identify the sequence of events, the significance of the process, and the consequences of irregularities during mitosis and meiosis.

5. Apply principles of Mendelian genetics to monohybrid and dihybrid crosses and crosses involving linked genes.

6. Apply principles of human genetics, including relationships between genotypes and phenotypes and causes and effects of disorders.

7. Analyze the genetic code and the roles of DNA and RNA in replication and protein synthesis.

8. Classify organisms based on the levels of biological taxonomy.

9. Identify characteristics of viruses, bacteria, protists, and fungi.

10. Differentiate between structures and processes of plant and animal cells and their organelles.

11. Identify plant structures and their functions.

12. Identify the major steps of plant processes (e.g., photosynthesis, respiration, electron transport, transpiration, reproduction).

13. Identify the processes of animal physiology (e.g., digestion, respiration).

14. Identify the structures of the organs and organ systems of various kinds of animals, including humans.

15. Analyze behaviors or adaptations of animals and plants that enable them to survive.

16. Interpret cell theory and how its discovery relates to the process of science.

17. Identify how evolution is supported by the fossil record, comparative anatomy, embryology, biogeography, molecular biology, genetics, and observed change.

18. Evaluate the roles of adaptation, genetic variation, mutation, and extinction in natural selection.

19. Interpret the impact of biotechnology on the individual, society, and the environment, including medical and ethical issues.

7 Knowledge of the effects of physical and biological factors on the environment

1. Identify components and sequences of biogeochemical cycles (e.g., carbon, oxygen, hydrogen, nitrogen).

2. Identify issues related to the development, use, and conservation of natural resources.

3. Evaluate environmental factors and their impact on the adaptation and survival rates of organisms.

4. Identify the major characteristics of world biomes and communities, including succession and interrelationships of organisms.

5. Identify how biotic and abiotic factors influence ecosystems.

6. Analyze interactions between microorganisms and the environment.

7. Identify the effects of homeostasis on the survivability of an organism.

8. Relate the interactions of biotic and abiotic factors to the flow of energy and biomass within a system.

9. Analyze the relationship between natural factors and human activities as they affect Florida's ecosystems.

8 Knowledge of the science learning environment

1. Identify legal and ethical requirements for proper use, care, handling, and disposal of organisms.

2. Identify the safe and appropriate techniques used in the preparation, storage, dispensing, and supervision of materials used in science instruction.

3. Identify appropriate substitutions for materials and activities necessary for effective science instruction.

4. Identify the federal and state legal requirements for safe preparation, use, storage, and disposal of chemicals and other materials.

5. Use multiple assessment tools and strategies to identify and address student misconceptions.

6. Select appropriate strategies for teaching scientific inquiry.

7. Identify appropriate technological tools that facilitate the learning of science.

9 Knowledge of process skills and application of scientific inquiry

1. Apply appropriate scientific process skills to observe and analyze natural phenomena and communicate findings.

2. Apply scientific inquiry, including scientific methods, to investigations.

3. Apply knowledge of mathematics and technology to scientific investigation.

4. Compare the methods used in the pursuit of a scientific explanation as applied in different fields of science such as geology, astronomy, physics, and biology.

5. Identify the traits of scientists and how they affect the development of scientific knowledge.

6. Identify the assumptions of scientific knowledge (e.g., durable, open to change).

7. Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation.

8. Evaluate the impact of the historical and cultural development of science on the advancement of scientific knowledge.

9. Compare the development, use, benefits, and limitations of theories, laws, hypotheses, and models.

10. Analyze the interdependence between scientific knowledge and economic, political, social, and ethical concerns.

Middle Grades Integrated Curriculum
5–9

English
General Science
Mathematics
Social Science

Section 62

Middle Grades Integrated Curriculum 5–9
English

1 Knowledge of written and oral language

1. Determine a systematic process for the collection, processing, and presentation of information.
2. Identify standard English usage, grammar, and punctuation.
3. Select statements that best develop and support a thesis.
4. Choose an organizational strategy for a specific purpose (e.g., chronological, spatial, causal, sequential).
5. Identify appropriate modes (e.g., expository, narrative, persuasive) to create effective discourse.

2 Knowledge of reading

1. Determine the author's purpose of a written text.
2. Make inferences and draw conclusions based on information conveyed in a written text.
3. Determine the main idea of a written text.
4. Distinguish between fact and opinion.
5. Assess the relevance, importance, and sufficiency of facts, examples, and reasons provided in support of an argument.
6. Identify cause-and-effect relationships in a written text.
7. Compare and contrast elements (e.g., setting, plot, character, theme) in a written text.
8. Determine meanings of words using context clues.

3 Knowledge of literature

1. Identify selections from literature, including folklore and mythology, for a variety of student interests and needs.
2. Interpret fictional and nonfictional texts representative of diverse cultures and historical periods.

3. Identify common literary elements and techniques (e.g., theme, figurative language, mood, tone, foreshadowing, point of view).

4 Knowledge of teaching middle grades English

1. Apply interdisciplinary techniques within middle grades English classrooms.

2. Select appropriate strategies and resources, including technological resources, for language arts (e.g., written and oral language, literature) and reading instruction.

Middle Grades Integrated Curriculum 5–9
General Science

5 Knowledge of the nature of science

1. Apply knowledge of science skills (e.g., observing, inferring, communicating, classifying, predicting, metric or SI measuring, graphing) to real-world situations.

2. Apply knowledge of the science processes (e.g., forming hypotheses, manipulating variables, collecting data, analyzing results, reaching conclusions) to real-world situations.

3. Apply knowledge of scientific inquiry in designing and performing investigations.

4. Identify procedures for the appropriate and safe use, care, handling, storage, and disposal of chemicals, equipment, organisms, and other laboratory materials.

6 Knowledge of living things and their environment

1. Distinguish relationships between structure and function (e.g., reproduction, maintenance, growth, regulation) in organelles, cells, and organisms.

2. Apply the principles of genetics, including mitosis and meiosis, Mendelian genetics, molecular biology (e.g., DNA, RNA, replication, protein synthesis), and patterns of inheritance, to genetic problem solving.

3. Identify the major steps of plant and animal physiological processes (e.g., photosynthesis, transpiration, reproduction, respiration, digestion, circulation).

4. Differentiate structures and functions of organs and organ systems of living things.

5. Identify patterns of animal behavior (e.g., territorial, social, learned, instinctive, communicative).

6. Identify current issues and effective methods of conservation of natural resources.

7. Identify interactions between biotic and abiotic factors in the environment (e.g., population density, pollution, succession, adaptation).

8. Identify the major characteristics of world biomes and communities and the interrelationships of the organisms within them.

7 Knowledge of the forces of Earth and space

1. Identify the characteristics of geologic structures (e.g., mountains, canyons, rivers, glaciers) and the mechanisms (e.g., plate tectonics, volcanic activity, erosion) by which they were formed.

2. Identify how fossils are formed, the methods for determining geologic age, and how this information is used to interpret the past.

3. Analyze data to interpret and forecast weather.

4. Analyze the chemical, physical, and geological characteristics of the ocean (e.g., salinity, currents, tides, shorelines).

5. Identify the characteristics of rocks, minerals, and soils and the mechanisms by which they were formed.

6. Identify the ways in which earth, air, and water interact (e.g., runoff, percolation, erosion, hydrologic cycle, wind patterns, storms).

7. Identify components and pathways of the nitrogen, carbon, and oxygen cycles.

8. Identify components of Earth's solar system, their individual characteristics, and how they interact.

9. Identify structures in the universe (e.g., stars, black holes, galaxies, other solar systems, quasars), their characteristics, and scientific theories of their origins.

10. Demonstrate knowledge of space travel and exploration and identify examples of their impact on society.

8 Knowledge of matter and energy

1. Identify the physical and chemical properties of matter (e.g., mass, volume, density, chemical reactivity, temperature, pressure, state).

2. Apply knowledge of the periodic table to identify the characteristics of atoms, the chemical and physical combinations of atoms, and associated representations (e.g., symbols, formulas, equations).

3. Identify the features and characteristics of different ranges of wavelengths across the electromagnetic spectrum.

4. Apply knowledge of energy forms (e.g., potential, kinetic), energy types (e.g., solar; electrical; magnetic; mechanical; chemical; nuclear, including fission and fusion), and energy transfer (e.g., convection, conduction, radiation) to solve problems.

5. Apply knowledge of laws of force, motion, and energy (e.g., Newton's laws, the ideal gas law, simple or compound machines) to solve problems.

6. Apply knowledge of currents, circuits, conductors, insulators, and resistors in real-world situations.

7. Identify properties and behaviors of sound and light waves (e.g., wavelength, frequency, amplitude, Doppler effect, refraction, reflection, diffraction, interference).

9 Knowledge of teaching middle grades general science

1. Apply interdisciplinary techniques within middle grades general science classrooms.

2. Select appropriate strategies and resources, including technological resources, for general science instruction (e.g., the nature of science, life and environmental science, Earth and space science, physical science).

Middle Grades Integrated Curriculum 5–9
Mathematics

10 Knowledge of number sense, concepts, and operations

1. Apply ratio and proportion to solve real-world problems.

2. Solve real-world problems that involve percents, decimals, fractions, and numbers expressed in scientific and exponential notation.

3. Apply number concepts, including primes, factors, and multiples, to analyze number sequences and solve problems.

4. Categorize numbers by their membership in the various subsets of the real number system (e.g., rational, irrational, integer).

5. Identify the use of the field properties of the real number system (e.g., associative, commutative, distributive) in real-world situations.

6. Determine the greatest common factor or least common multiple in a given set of numbers, and apply them in real-world situations.

7. Compare the relative values of fractions, decimals, percents, and other real numbers expressed in a variety of symbolic notations (e.g., square roots, scientific notation, exponents) used in a real-world context.

11 Knowledge of data analysis and probability

1. Determine whether mean, median, or mode is the most appropriate measure of central tendency in a given situation.

2. Interpret information from graphical representations (e.g., stem and leaf plots, box and whiskers plots, scatter plots, pictographs, circle graphs, bar graphs, histograms, line graphs).

3. Apply experimental or theoretical probabilities to make conjectures based on data.

4. Determine the probability of occurrence or nonoccurrence of an event in a real-world context.

12 Knowledge of algebra

1. Analyze and interpret relationships represented by tables, graphs, and rules.

2. Analyze functional relationships expressed as ordered pairs, rules, graphs, and mappings.

3. Determine the solution set of a pair of linear equations or linear inequalities.

4. Solve real-world problems using graphs, equations, or inequalities.

5. Apply equations or inequalities to solve real-world and mathematics problems.

6. Determine the slope, x-intercept, or y-intercept of a line given its graph, its equation, or two points on the line.

7. Convert between graphical representations and algebraic equations or inequalities.

8. Interpret or solve problems with algebraic expressions, equations, inequalities, or graphs.

13 Knowledge of geometry

1. Apply the Pythagorean theorem to solve real-world problems.

2. Apply geometric properties and relationships to solve real-world and mathematics problems.

3. Apply concepts and properties of transformational geometry (e.g., dilation, translation, rotation, reflection).

4. Apply properties of lines, angles, triangles, quadrilaterals, and circles in solving problems.

5. Identify convex, concave, regular, and irregular polygons, and determine the measure of their interior and exterior angles.

14 Knowledge of measurement

1. Solve problems involving units of measure and convert answers to a larger or smaller unit within either the metric or customary system.

2. Solve simple or more complex real-world and mathematics problems involving length, area, perimeter, circumference, weight or mass, capacity or volume, time, temperature, and angles.

3. Solve real-world problems by determining how a change in dimension (e.g., length, width, height, radius) affects other measurements (e.g., perimeter, area, surface area, volume).

4. Interpret scale drawings (e.g., number lines, blueprints, maps) to solve real-world problems.

5. Relate concepts of measurement, similarity, congruence, and proportionality in a real-world context.

6. Determine the value of a fractional part of a given geometrical figure.

15 Knowledge of teaching middle grades mathematics

1. Apply interdisciplinary techniques within middle grades mathematics classrooms.

2. Select appropriate strategies and resources, including technological resources, for mathematics instruction (e.g., algebra, financial literacy, geometry, probability, statistics).

Middle Grades Integrated Curriculum 5–9
Social Science

16 Knowledge of history

1. Identify major themes and historical events that are related by cause and effect (e.g., exploration, settlement, growth, conflict).

2. Evaluate examples of primary source documents to show historical perspective.

3. Identify the cultural contributions and technological developments of Eastern and Western civilizations.

4. Identify significant individuals, events, and ideas that have influenced Eastern and Western civilizations.

5. Identify significant individuals, events, and ideas that have influenced economic, social, and political institutions in the United States.

6. Identify significant individuals, events, and ideas that have influenced economic, social, and political institutions in Florida.

17 Knowledge of geography

1. Identify the five themes of geography (i.e., location, place, region, movement, human-environment interaction).

2. Interpret and use maps and other graphic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.

3. Determine the factors that influence the selection of a location for a specific activity.

4. Interpret data (e.g., graph, table, survey, chart) that show human and physical characteristics of various places.

5. Infer how a given historical event has affected current human characteristics (e.g., wealth and poverty, land tenure, exploitation, colonialism, independence) of places.

6. Assess ways in which people adapt to an environment through the production and use of clothing, food, and shelter.

7. Analyze the physical, cultural, economic, and political reasons for the movement of people in the world, nation, or state.

8. Identify physical and cultural characteristics that define and differentiate the major regions of the world.

18 Knowledge of government, economics, and other social sciences

1. Identify purposes and methods for establishing and maintaining governments in various ancient and modern societies.

2. Demonstrate knowledge of the rights and responsibilities of a citizen in the world, nation, state, and community.

3. Identify major concepts of the U.S. Constitution.

4. Compare and contrast the various political systems in the world (e.g., democracy, constitutional monarchy, socialism, communism).

5. Differentiate the structures and functions of U.S. federal, state, and local governments.

6. Predict how limited resources affect the choices made by governments and individuals.

7. Compare and contrast the characteristics of various economic systems.

8. Identify the role of markets from production to distribution to consumption.

19 Knowledge of teaching middle grades social science

1. Apply interdisciplinary techniques within middle grades social science classrooms.

2. Select appropriate strategies and resources, including technological resources, for social science instruction (e.g., history, geography, civics and government, economics, other social sciences).

Middle Grades Mathematics
5–9

Section 25

Middle Grades Mathematics 5–9

1 Knowledge of problem-solving and reasoning skills

1. Analyze realistic situations and identify the appropriate mathematical expression or equation.
2. Apply strategies to solve nonroutine problems with multiple steps.
3. Evaluate the reasonableness of results from the original problem.
4. Apply appropriate mathematical concepts and procedures to solve problems in various contexts.
5. Evaluate the validity of mathematical arguments (e.g., a justification that the sum of two odd numbers is always even).
6. Predict logical conclusions from given statements.
7. Identify appropriate instructional strategies to facilitate student understanding of problem solving.
8. Distinguish between deductive and inductive reasoning in a given situation.

2 Knowledge of mathematical manipulatives and models and instructional technology

1. Identify appropriate mathematical representations (e.g., verbal statements, manipulatives, pictures, graphs, algebraic expressions).
2. Interpret concepts with multiple representations (e.g., manipulatives, tables, graphs, symbolic expressions, technology).
3. Select appropriate manipulatives and technology for teaching specific mathematical concepts (e.g., graphing calculators, dynamic software, virtual and physical manipulatives).
4. Use appropriate manipulatives and technology for teaching diverse groups of students (e.g., varied learning styles and exceptionalities).

3 Knowledge of assessment in mathematics

1. Assess student learning through various methods (e.g., informal, formative, summative).
2. Analyze student work samples to assess and diagnose student learning needs.
3. Analyze student performance using technology (e.g., online resources, audience-response systems, instructor software).

4. Interpret student performance data to drive instruction.

5. Recognize cognitive complexity in various questioning strategies.

6. Evaluate appropriate alternative assessments (e.g., projects, portfolios) that utilize various cognitive complexity levels.

4 Knowledge of connections among mathematical concepts

1. Identify prerequisite skills for a given topic (e.g., ratio, slope).

2. Predict common misconceptions in mathematics (e.g., area and perimeter, box plot).

3. Connect interrelated mathematical concepts (e.g., scale factor and proportional reasoning).

4. Analyze mathematical errors (e.g., computational, algebraic, statistical, geometric).

5. Identify fundamental concepts that connect middle grades mathematics to high school and postsecondary mathematics (e.g., trigonometry, number theory, calculus).

5 Knowledge of number sense, operations, and proportionality

1. Compare the relative size of real numbers expressed in a variety of forms (e.g., fractions, decimals, percents, absolute value).

2. Apply mental computation and estimation strategies.

3. Apply prime factorization of composite numbers to other operations (e.g., cube roots, polynomials).

4. Compute fluently with rational numbers using the greatest common factor (GCF) and least common multiple (LCM).

5. Apply ratios and proportions to similar figures and to solve realistic problems.

6. Select the appropriate operation(s) to solve realistic problems that involve real numbers.

6 Knowledge of foundations of algebra

1. Predict missing terms in numerical, algebraic, and pictorial patterns.

2. Analyze relationships between tables, graphs, or equations.

3. Simplify rational and irrational expressions.

4. Simplify expressions involving radicals and rational exponents using the properties of exponents.

5. Solve equations or inequalities with one variable (e.g., number line).

6. Identify graphs of inequalities involving one variable on a number line.

7. Identify graphs of linear equations or inequalities involving two variables on the coordinate plane.

8. Identify and interpret the slope and intercepts using a graph, table, or an equation.

9. Determine the equation of a line.

10. Find and estimate square roots.

11. Apply properties of operations (e.g., commutative, associative, distributive) to generate equivalent expressions.

7 Knowledge of algebraic thinking

1. Determine the impact when changing values of given linear and nonlinear functions (e.g., change of y-intercept or coefficients).

2. Identify the equation of a line that is perpendicular or parallel to a given line.

3. Apply operations to analyze polynomials (e.g., finding zeros, factoring, arithmetic operations).

4. Solve systems of linear equations involving two variables using graphing, substitution, or elimination.

5. Determine the solution set of a system of linear inequalities involving two variables.

6. Use quadratic equations to solve abstract and realistic problems.

7. Identify the graph of quadratic functions.

8. Solve equations involving radicals, limited to square roots.

9. Apply the laws of exponents.

8 Knowledge of data analysis, statistics, and probability

1. Determine which measure of center (i.e., central tendency) is the most appropriate in a given situation.

2. Find and interpret the range and distribution of data.

3. Interpret information and patterns from various graphical representations using univariate (e.g., a line plot) and bivariate data (e.g., scatterplot).

4. Identify appropriate graphical representations for a given data set.

5. Identify an appropriate sample to draw inferences about a population.

6. Make predictions based on experimental or theoretical probabilities.

9 Knowledge of two-dimensional geometry

1. Identify precise definitions of symbols for lines, segments, rays, and distances based on point, line, and plane as undefined terms.

2. Identify and apply properties of the relationships of angles or pairs of angles.

3. Identify and apply properties of polygons to determine the measure(s) of interior angles and/or exterior angles.

4. Evaluate proofs and apply the properties of triangles (e.g., isosceles, scalene, equilateral).

5. Evaluate proofs and apply triangle inequality theorems (e.g., opposite the largest angle is the longest side, the sum of two sides is greater than the third side).

6. Use the SAS, ASA, and SSS postulates to show pairs of triangles congruent, including the case of overlapping triangles.

7. Apply theorems and postulates that apply to right triangles to solve mathematical and realistic problems (e.g., Pythagorean theorem, special right triangles).

8. Apply trigonometric ratios to solve right triangle problems.

9. Apply the specific properties of quadrilaterals (e.g., parallelograms, rectangles, rhombuses, squares, kites, trapezoids).

10. Apply the formulas for distance and midpoint on the coordinate plane.

11. Classify and apply the types of transformations of geometric figures including similar figures.

12. Apply properties and theorems about circles.

10 Knowledge of measurement and spatial sense

1. Convert units of measure within and between given measurement systems, including derived units.

2. Solve realistic and mathematical problems involving perimeter, circumference, area, surface area, and volume.

3. Determine how a change in dimensions (e.g., length, width, height, radius) affects other measurements (e.g., perimeter, area, surface area, volume).

4. Identify characteristics of three-dimensional figures (e.g., faces, edges, vertices).

5. Identify the net of a three-dimensional figure.

6. Identify the two-dimensional view of a three-dimensional object.

Middle Grades Social Science
5–9

Section 38

Middle Grades Social Science 5–9

1 Knowledge of history

1. Identify major historical events and how they are related by cause and effect.

2. Analyze examples of primary source documents for historical perspective.

3. Identify cultural, political, social, economic, and technological contributions made by civilizations in Africa, the Americas, Asia (including the Middle East), Europe, and Oceania.

4. Relate major historical events and movements to physical and human geographic factors.

5. Identify significant historical leaders and events and their influence on world civilizations.

6. Analyze the causes and effects of exploration, settlement, and growth in Africa, the Americas, Asia (including the Middle East), Europe, and Oceania.

7. Identify individuals, ideas, and events that have influenced economic, cultural, social, and political institutions in the United States.

8. Identify immigration and settlement patterns that have shaped the history of Florida.

9. Identify significant individuals, events, and social, cultural, political, and economic characteristics of different periods of Florida history.

2 Knowledge of geography

1. Identify essential themes and elements in geography and the terms associated with them.

2. Interpret maps and other graphic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.

3. Use mental maps to organize information about people, places, and environments.

4. Analyze the factors (e.g., topographic, environmental, economic) that influence the selection of a location for a specific activity (e.g., industrial and urban development, agriculture, transportation).

5. Interpret statistics that show how places differ in their human and physical characteristics.

6. Identify cultural, political, economic, sociological, and technological characteristics that define, link, or divide regions.

7. Identify ways in which people adapt to an environment through the production and use of clothing, food, and shelter.

8. Evaluate the effects of human activity and technology on the environment.

9. Identify physical, cultural, social, economic, and political reasons for the movement of people in the world, nation, or state.

10. Analyze factors contributing to the level of economic development in various geographic regions.

11. Identify examples of interdependence between regions of the world.

3 Knowledge of civics and government

1. Identify the structure, functions, and purposes of government.

2. Identify major concepts, content, and purposes of the U.S. Constitution and other historical documents.

3. Compare and contrast the various political systems in the world (e.g., monarchy, parliamentary system, federal republic, democracy, totalitarianism).

4. Identify the characteristics of the U.S. electoral system and the election process.

5. Identify the major structures and functions of federal, state, and local governments in the United States.

6. Analyze relationships between social, cultural, economic, and political institutions and systems.

7. Identify the tenets (e.g., rule of law, innocent until proven guilty), institutions, and processes of the U.S. legal system.

8. Identify major U.S. Supreme Court cases and their impact on society.

9. Evaluate the goals, conduct, and consequences of U.S. foreign policy.

10. Identify features and concepts of international relations (e.g., United Nations, Organization of the Petroleum Exporting Countries, Red Cross, Organization of American States, European Union).

11. Identify the rights and responsibilities of a U.S. citizen in society.

4 Knowledge of economics

1. Analyze the effects of scarcity on the choices made by governments and individuals.

2. Compare and contrast the characteristics of various economic systems.

3. Identify the role of markets in decisions affecting production, distribution, and consumption.

4. Evaluate factors to consider when making consumer decisions.

5. Identify the advantages and disadvantages of various kinds of credit.

6. Identify factors involved in global economic interdependence and trade between nations.

7. Identify the purposes and effects of various types of taxes.

5 Knowledge of social science curriculum and instruction

1. Identify the interdisciplinary relationships of the social sciences.

2. Apply nontextbook resources (e.g., technology, media, community) for use in social science instruction.

3. Identify how social science content can be integrated with other areas of the curriculum.

4. Identify various assessment strategies for the social sciences.

5. Select strategies for teaching the social sciences to differentiated populations.

6. Identify strategies for teaching the use of social science resources (e.g., primary source documents, charts, maps, graphs).

Music
K–12

Section 28

Music K–12

1 Knowledge of music theory, history, and literature

1. Identify and discriminate between rhythmic structures (e.g., beat, meter, pattern, polyrhythms).

2. Identify and discriminate between melodic structures (e.g., contour/patterns, tonal systems [modes/scales], melodic sequence).

3. Identify and discriminate between harmonic structures and textures.

4. Identify and discriminate between standard music forms.

5. Identify and discriminate between stylistic features, principal genres, and contributions of representative composers of the traditional stylistic eras of Western music.

6. Identify and discriminate between stylistic features in American music (e.g., folk, ethnic, electronic, popular, jazz, classical).

7. Identify and discriminate between musics of other cultures.

8. Identify and interpret terms and symbols found in music scores.

2 Knowledge of curricula and instructional planning

1. Identify appropriate skills, teaching strategies, and sequence of concepts for developing students' musical independence.

2. Select music literature and materials appropriate for students' capabilities and musical maturity, including adaptation if warranted.

3. Identify appropriate instructional strategies for the exceptional student.

4. Identify instructional strategies for teaching music history and theory.

5. Identify techniques for developing students' creative musical skills (e.g., improvisation, composition, listening skills, sight reading, performance skills).

6. Identify appropriate organization of rehearsals and classroom activities to include music history, music theory, listening skills, performance, and sight-reading as integral parts of instruction.

7. Identify trends and research affecting music curriculum development and instruction.

8. Identify the relationships between music, the other arts, and disciplines outside the arts.

9. Identify factors in creating a music curriculum that provides a balance of musical experiences for all students.

3 Knowledge of instructional and assessment procedures

1. Identify music performance problems (e.g., intonation, phrasing, blend, balance, tone quality, notation/performance discrepancies) and methods for correcting the problems.

2. Select teaching strategies that motivate and promote students' musical growth, independence, and creativity.

3. Read, interpret, and identify appropriate techniques for conducting music scores.

4. Make critical judgments about expressive qualities of music performances.

5. Identify techniques for assessing and evaluating student progress.

6. Evaluate the effectiveness of music instruction in terms of content, process, and teacher self-evaluation.

7. Select strategies for implementing technology in music instruction.

8. Identify qualities of music performance: characteristic tone quality, phrasing, blend, balance, timbre, tempo, dynamics, articulation, and both linear and vertical intonation.

4 Knowledge of professional and instructional resources

1. Identify media resources and technology (e.g., sound recording and reproduction systems, visual aids) for instructional purposes.

2. Select acoustic and electronic instruments (e.g., pianos, synthesizers, guitars, keyboards) for instructional purposes.

3. Identify and select appropriate computer hardware and software for both administrative purposes and instructional applications.

4. Identify techniques and resources for advocating music education and for generating community support for school music programs.

5. Identify legal and ethical issues that impact music education (e.g., copyright, financial accountability, liability).

6. Identify resources available through professional organizations, music industry, and publications.

7. Identify procedures for student selection, recruitment, and retention, including feeder pattern articulation and placement in appropriate music courses.

5 Knowledge of instructional emphasis: choral

1. Identify basic vocal diction techniques in different languages (e.g., English, Latin, Italian, Spanish, French, German).

2. Identify problems of individual vocal production and determine methods of correction.

3. Identify practices in the care and maintenance of the vocal mechanism to promote lifelong performance.

4. Classify vocal characteristics and ranges at various levels of development and maturation.

5. Identify representative repertoire for solo voices and small/large vocal ensembles at various levels of maturation and development (e.g., music lists from FVA, ACDA).

6. Identify musical problems in an ensemble performance and determine methods of correction.

6 Knowledge of instructional emphasis: instrumental

1. Identify basic performance techniques for wind, string, and percussion instruments (e.g., proper playing position; embouchure; sticking, fingering, and bowing techniques).

2. Identify families of wind, percussion, and string instruments and their ranges, clefs, and transpositions.

3. Identify problems of individual tone production (e.g., embouchure, bowing, sticking, proper breath support) and determine methods of correction.

4. Identify musical problems in an ensemble performance and determine methods of correction.

5. Identify representative repertoire for solo and small/large ensembles at various levels of maturation and development (e.g., FBA, FOA, NBA, NSOA).

6. Identify practices in the care and maintenance of instruments and accessories.

7 Knowledge of instructional emphasis: general music

1. Identify appropriate materials and repertoire for use at various levels of maturation and development.

2. Identify practices in the care and maintenance of classroom instruments.

3. Identify methods for incorporating creative movement in music instruction.

4. Identify techniques for teaching students how to play classroom instruments (e.g., autoharps, guitars, chromatic bells, keyboards, recorders, ukuleles, Orff, percussion instruments).

Physical Education
K–12

Section 63

Physical Education K–12

1 Knowledge of the history and philosophy of the physical education profession

1. Identify historical events and analyze trends that have influenced the physical education profession.

2. Relate the goals and values of physical education to the philosophies of education that they reflect.

2 Knowledge of standards-based physical education curriculum development

1. Identify and differentiate the characteristics of various curriculum models.

2. Identify and analyze various factors to consider in curriculum planning, such as student ability, time (e.g., class duration, time of day, frequency), environment, equipment, facilities, space, and community resources.

3. Identify ways that national and state documents, standards, benchmarks, and philosophies can be used to design and develop curricula.

4. Identify and apply principles of long- and short-term planning (e.g., scope and sequence, annual plan, unit plan, lesson plan, emergency plans) to maximize learner participation and success.

5. Identify cross-curricular content and concepts for the design and development of physical education learning experiences.

3 Knowledge of developmentally appropriate physical education instructional strategies

1. Identify and apply strategies and adaptations that address the diverse needs of all students (e.g., cultural, linguistic, cognitive, motor, experiential).

2. Identify and distinguish between teaching styles, communication delivery systems, and materials that facilitate student learning.

3. Identify and apply motivational theories and techniques that enhance student learning.

4. Analyze developmentally appropriate instructional strategies, techniques, and research-based teaching methods that promote student learning.

5. Identify feedback as a strategy to facilitate student learning.

6. Identify differentiated instructional practices that enhance student learning.

4 Knowledge of human growth and development and motor learning as they relate to physical education

1. Select developmentally appropriate practices that demonstrate knowledge of human growth and development.

2. Apply learning theories and knowledge of human development to construct a positive learning environment that supports psychomotor, cognitive, and affective development.

3. Apply principles of motor development and motor learning to skill acquisition.

4. Identify and apply the principles of sequential progression of motor skill development.

5 Knowledge of developmentally appropriate movement skills and concepts related to physical education

1. Identify and apply movement concepts (e.g., spatial awareness, body awareness, relationships, effort) as they relate to physical education.

2. Identify and apply the fundamental movement patterns, including locomotor, nonlocomotor, and manipulative skills.

3. Identify and apply sequentially progressive activities that promote the acquisition of skills in the psychomotor, cognitive, and affective domains.

4. Identify and apply appropriate cues and prompts for teaching movement skills.

5. Apply mechanical principles of motion to various forms of movement.

6. Analyze the mechanics of a skill or sequence of movements and identify ways in which students can improve their performance.

7. Identify how components of skill-related fitness affect performance.

6 Knowledge of lifetime health, wellness, and physical fitness

1. Analyze data from physical fitness assessments and select strategies for improving student levels of health-related physical fitness.

2. Identify the health-related components in a personal fitness program.

3. Demonstrate knowledge of nutrition and exercise and their roles in meeting the needs of all students.

4. Identify health risks and benefits associated with physical activity.

5. Apply training principles and guidelines to improve personal fitness.

6. Identify exercises that benefit the major muscle groups of the human body.

7. Determine how human body systems (e.g., muscular, cardiovascular, nervous, skeletal) adapt to physical activity.

8. Identify the contributions of physical education to lifetime health, wellness, and physical fitness.

9. Identify community opportunities for participation in a variety of physical activities.

7 Knowledge of cognitive, social, and emotional development through physical education and physical activity

1. Identify the role physical education can play in developing an understanding of diversity.

2. Identify the role physical education and physical activity can play in developing responsible behaviors and values.

3. Identify the intellectual, sociological, and psychological benefits that occur through participation in physical activities.

4. Identify major factors associated with the development of social and emotional health through physical activity (e.g., communication skills, self-concept, fair play, conflict resolution, character development, stress management).

8 Knowledge of various types of assessment strategies that can be used to determine student levels and needs in physical education

1. Identify and apply assessment strategies, including authentic and traditional methods, for appropriate use within the cognitive domain.

2. Identify and apply assessment strategies, including authentic and traditional methods, for appropriate use within the affective domain.

3. Identify and apply assessment strategies, including authentic and traditional methods, for appropriate use within the psychomotor domain.

4. Analyze appropriate assessment strategies for curriculum design, lesson planning, and program evaluation.

5. Identify appropriate assessment strategies for an inclusive environment.

6. Determine appropriate physical fitness assessment strategies for use within physical education.

9 Knowledge of strategies that promote an effective learning environment

1. Identify procedures for selecting and maintaining appropriate equipment and facilities to enhance student learning.

2. Identify organizational strategies that create and sustain an effective learning environment (e.g., rituals and routines, maximum participation, rules and standards).

3. Identify supervisory and behavioral management techniques that enhance student learning.

4. Determine appropriate action for the care and prevention of injuries in physical education.

10 Knowledge of laws, legislation, and liabilities that pertain to physical education

1. Identify major federal and state legislation that impacts physical education.

2. Identify legal liabilities applicable to physical education.

11 Knowledge of appropriate safety considerations, rules, strategies, and terminology related to physical education and a variety of physical activities

1. Apply appropriate rules and strategies of play to game and sport situations.

2. Identify terminology for physical education and physical activities.

3. Identify safety considerations for a variety of physical activity settings.

12 Knowledge of professional ethics, advocacy, and development

1. Identify physical education professional development experiences that will enhance teacher effectiveness, promote collaboration, and improve student performance.

2. Identify professional organizations, professional literature, research, and other resources (e.g., code of ethics) that enhance a physical educator's continuous improvement.

3. Identify ways to advocate for physical education.

13 Knowledge of the appropriate use of technology as related to physical education

1. Determine the appropriate uses of technology in the physical education instructional process.

2. Determine the appropriate uses of technology in assessing student performance in physical education.

3. Identify ways that using technology in physical education supports cross-curricular learning.

4. Identify ways that all students can use technology in physical education.

Physics
6–12

Section 32

Physics 6–12

1 Knowledge of the nature of scientific investigation and instruction in physics

1. Identify the characteristics and processes of scientific inquiry.

2. Identify potentially hazardous situations in a physics laboratory and classroom, methods of prevention, and corrective actions.

3. Select the appropriate laboratory equipment for specific scientific investigations.

4. Relate the historical development of the major concepts, models, and investigations in physics to current knowledge (e.g., force and motion, conservation principles, fields, quantum theory).

5. Distinguish between scientific theories and laws in terms of their specific roles and functions.

6. Identify elements of guided inquiry (e.g., engaging through questioning, eliciting prior knowledge, engaging in thoughtful discussion, engaging in exploration, fostering data-based argumentation, providing for application) in the physics classroom and laboratory.

7. Identify the areas of teacher liability and responsibility in science-related activities, including accommodations for diverse student populations.

2 Knowledge of the mathematics of physics

1. Determine the validity of a formula based on dimensional analysis.

2. Combine vectors using graphic and trigonometric methods.

3. Determine the dot product and cross product of two vectors.

4. Convert between units of a given quantity (e.g., length, area, volume, mass, time, temperature).

5. Identify prefixes in the metric system and standard units of measure (e.g., newtons, meters, kilowatt-hours, teslas, electron volts, calories, horsepower).

6. Estimate the order of magnitude of a physical quantity.

7. Interpret the slope of a graph or area under the curve in relation to physical concepts.

8. Apply the concepts of accuracy, precision, uncertainty, and significant figures to measurements and calculations.

3 Knowledge of thermodynamics

1. Relate changes in length, area, or volume of a system to changes in temperature.

2. Distinguish between the three methods of heat transfer (i.e., conduction, convection, radiation).

3. Determine the amount of heat transferred by conduction or radiation.

4. Interpret segments of graphs of temperature versus heat added or removed (e.g., latent heats, specific heats).

5. Analyze pressure, volume, and temperature relationships using the ideal gas law.

6. Apply the first law of thermodynamics (i.e., energy conservation) to physical systems.

7. Calculate work done by or on a gas from pressure versus volume diagrams.

8. Interpret pressure versus volume diagrams (e.g., identify isobaric, isothermal, and adiabatic processes).

9. Determine the specific heat, latent heat, or temperatures of a substance, given appropriate calorimetric data.

10. Apply the second law of thermodynamics (i.e., entropy increase) to physical processes.

11. Relate temperature or pressure to kinetic molecular theory.

4 Knowledge of mechanics

1. Analyze the motion of an object moving in one dimension, given a graph (e.g., displacement versus time, velocity versus time, acceleration versus time).

2. Determine distance traveled, displacement, speed, velocity, acceleration, or time of travel for objects moving in one dimension.

3. Determine distance traveled, displacement, speed, velocity, acceleration, or time of travel for objects moving in two dimensions (e.g., projectile motion).

4. Apply Newton's laws of motion to problems involving linear motion of a body.

5. Apply Newton's laws of motion to problems involving circular motion of a body.

6. Identify action-reaction pairs of forces between two bodies.

7. Apply conservation of momentum to problems in one or two dimensions.

8. Analyze problems using the impulse-momentum theorem.

9. Analyze problems using Newton's universal law of gravitation (e.g., orbital motion).

10. Analyze problems involving static or kinetic frictional forces.

11. Apply conservation of mechanical energy.

12. Use Newton's second law to analyze problems involving two connected masses (e.g., Atwood machine, Atwood machine on inclined plane, blocks, massless pulley).

13. Analyze problems involving torque (e.g., equilibrium, rotational dynamics).

14. Apply conservation of angular momentum and conservation of energy to problems involving rotational motion.

15. Analyze problems involving work done on mechanical systems (e.g., power, work-energy theorem).

16. Analyze problems involving the relationships between depth, density of fluid, and pressure.

17. Analyze problems involving the buoyant force on a submerged or floating object (i.e., Archimedes' principle).

18. Analyze problems involving moving fluids (e.g., mass conservation, Bernoulli's principle).

19. Analyze problems involving center of mass.

20. Use free-body diagrams to analyze static or dynamic problems in two or three dimensions.

21. Analyze characteristics and examples of simple harmonic motion (e.g., oscillating springs, vibrating strings, pendula).

5 Knowledge of waves and optics

1. Identify characteristics of waves (e.g., velocity, frequency, amplitude, wavelength, period, pitch, intensity, phase, nodes, antinodes, transverse waveforms, longitudinal waveforms).

2. Analyze the motion of particles in a medium in the presence of transverse and longitudinal waves.

3. Identify factors that affect wave propagation and wave speed.

4. Analyze problems involving the superposition, or interference, of waves (e.g., beats, standing waves, interference patterns).

5. Analyze problems involving standing waves (e.g., open or closed tube, vibrating string).

6. Analyze the Doppler effect due to the motion of a source or receiver.

7. Analyze waves, using either graphical or mathematical representations.

8. Analyze reflection and refraction problems using the law of reflection and Snell's law).

9. Interpret the relationships between wavelength, frequency, and speed of light.

10. Analyze the effects of linear polarizing filters on the polarization and intensity of light.

11. Analyze the geometric optics of thin lenses and mirrors.

12. Analyze patterns produced by diffraction and interference of light (e.g., single-slit, double-slit, diffraction gratings).

13. Identify the use and characteristics of various optical instruments (e.g., eye, spectroscope, camera, telescope, microscope, corrective lenses).

14. Apply the relationship between intensity and distance from a point source (i.e., inverse-square law).

15. Compare qualitative features of the ranges of the electromagnetic spectrum.

6 Knowledge of electricity and magnetism

1. Determine the electric force on a point charge due to one or more other charges.

2. Determine the electric potential difference between two points in an electric field.

3. Analyze problems involving capacitance, with or without dielectrics.

4. Analyze the electric field due to a charge distribution.

5. Apply Gauss's law to determine or characterize an electric field.

6. Analyze charge distributions in conductors and nonconductors.

7. Simplify series and parallel combinations of resistors or capacitors.

8. Solve problems using Ohm's law.

9. Apply Kirchhoff's laws to analyze DC circuits.

10. Determine the power dissipated through one or more elements of a DC circuit.

11. Relate the resistance of a conductor to its geometry and resistivity.

12. Analyze problems involving the direction and magnitude of the magnetic force acting on moving charges (e.g., mass spectrometer).

13. Apply the laws of electromagnetic induction (i.e., Faraday's law, Lenz's law).

14. Analyze problems involving AC circuits (e.g., transformers, peak current, root-mean-square voltage, frequency, reactance, resonant frequency, impedance).

15. Identify principles and components involved in the operation of motors and generators.

16. Predict the magnetic fields associated with current-carrying conductors (e.g., long straight wires, loops, solenoids).

7 Knowledge of modern physics

1. Analyze problems based on the energy of a photon (e.g., photoelectric effect, $E = hf$).

2. Apply Einstein's theory of special relativity (e.g., light postulate, length contraction, time dilation).

3. Apply Einstein's mass-energy equivalence ($E = mc^2$).

4. Determine the allowed energies of quantum atomic states or of transitions between such states.

5. Compare the characteristics of alpha, beta, and gamma radiation.

6. Predict outcomes of radioactive decay processes (e.g., balancing a nuclear equation).

7. Calculate the age of a radioactive source, given data (e.g., half-life, activity, remaining mass, decayed fraction).

8. Differentiate between fission and fusion processes and their applications.

9. Analyze problems involving Heisenberg's uncertainty principle (e.g., momentum versus position, energy versus time).

10. Differentiate between historical models of the atom (e.g., Thomson's plum pudding, Rutherford, Bohr, electron cloud).

11. Identify characteristics of subatomic and elementary particles (e.g., protons, neutrons, electrons, photons, neutrinos, quarks, antiparticles).

12. Distinguish between the four fundamental forces of nature in terms of the particles they act upon, the relative distances over which they act, and their relative strengths.

13. Identify characteristics of the dual (i.e., wave and particle) nature of light and matter.

Prekindergarten/Primary
PK–3

Subtests in the Following Areas:

Developmental Knowledge
Language Arts and Reading
Mathematics
Science

Section 53

Prekindergarten/Primary PK–3
Subtest 1: Developmental Knowledge

1 Knowledge of child growth, child development, and relationships with families and the community

1. Identify the major effects of genetics, health, nutrition, public policy, environment, and economics on child development.

2. Identify the developmental stages (e.g., social-emotional, cognitive, language, physical) and the milestones for the typically developing child.

3. Identify atypical development (e.g., social-emotional, cognitive, language, physical).

4. Identify and distinguish the influences of substance abuse, physical abuse, and emotional distress on child development.

5. Identify diverse family systems and recognize their influences on children's early experiences which contribute to individual differences and development and learning.

6. Identify the influence of scientific research on theories of cognitive and social development, the principles of how children learn, and the development and implementation of instructional strategies.

7. Identify and apply strategies to involve families in their child's development and learning in all phases of school programs.

8. Identify and apply strategies to facilitate family and community partnerships.

2 Knowledge of the profession and foundations of early childhood (PreK–3) education

1. Identify theorists, theories, and developmental domains (e.g., physical, cognitive, social-emotional) in the fields of early childhood education and their implications for the classroom teacher of young children.

2. Identify models of early childhood curriculum (e.g., Montessori, Creative Curriculum).

3. Identify and analyze the impact of federal and state laws on education in the classroom (e.g., English for Speakers of Other Languages, Individuals with Disabilities Education Act).

4. Identify professional organizations, websites, and scholarly journals in the field of early childhood education.

5. Interpret professional standards set by early childhood and elementary educational organizations (e.g., National Association for the Education of Young Children, Association for Childhood Education International, National Council of Teachers of Mathematics, Southern Early Childhood Association).

6. Analyze the relationships among current educational issues, trends, and legislation and their impact on the field of early childhood education.

7. Analyze and apply ethical behavior and professional responsibilities as they relate to young children, families, colleagues, and the community (e.g., Florida Educator Accomplished Practices, Florida Department of Education Code of Ethics, National Association for the Education of Young Children Code of Ethics).

3 Knowledge of developmentally appropriate practices

1. Identify and apply developmentally appropriate practices that guide effective instruction.

2. Identify the components of effective organization and management, such as classroom rituals, routines, and schedules.

3. Identify ways to organize furniture, equipment, materials, and other resources in an indoor or outdoor environment in order to support early childhood development and curricula.

4. Identify and analyze strategies for short- and long-term planning to set instructional goals in alignment with standards for developing teacher objectives.

5. Identify strategies for designing appropriate objectives and developing, implementing, and assessing lesson plans.

6. Identify and select developmentally and/or age-appropriate instructional materials that enrich and extend active learning.

7. Apply a variety of methods of flexibly grouping children for the purposes of instruction.

8. Identify and apply characteristics of an integrated curriculum.

9. Identify characteristics of play as related to children's social, emotional, and cognitive development.

10. Identify strategies for building and nurturing trusting relationships with students.

11. Analyze and evaluate the use of evidence-based practices to improve student achievement.

4 Knowledge of developmentally appropriate curricula

1. Analyze and select developmentally appropriate curricula that provide for all areas of child development (i.e., physical, emotional, social, linguistic, aesthetic, cognitive).

2. Identify strategies for facilitating the development of literal, interpretive, and critical listening and thinking skills.

3. Determine activities that support the development of fine and gross motor skills.

4. Select and apply strategies, including the use of technology, for presenting instruction and concepts related to health, safety, and nutrition.

5. Select and apply strategies, including the use of technology, for presenting instruction and concepts related to visual arts, music, drama, and dance.

6. Select and apply strategies, including the use of technology, in developmentally appropriate ways to teach reading, mathematics, science, and social studies.

7. Select and apply strategies, including the use of technology, in developmentally appropriate ways to increase receptive and expressive vocabulary.

5 Knowledge of developmentally appropriate intervention strategies and resources available to meet the needs of all students

1. Select and analyze evidence-based instructional strategies to adapt curricula for children with diverse needs.

2. Identify characteristics of children with diverse needs in order to support their learning.

3. Identify and select resources and procedures that support children with diverse needs and their families.

4. Identify characteristics of children at risk for school failure and select appropriate intervention strategies for these children.

5. Identify major trends in educating children with exceptionalities and incorporate such trends in early childhood settings as appropriate.

6. Select and apply appropriate strategies for working with children who are in foster care and children who are migrant, transient, orphaned, or homeless.

7. Identify ways for accessing and appropriately using health information to monitor children's medical needs (e.g., medications for allergies) and/or other health impairments.

8. Identify needs for, and methods of, collaboration with other professionals in order to positively impact student learning.

9. Identify programs, curricula, and activities that address the language needs of children and their families with limited English proficiency.

6 Knowledge of diagnosis, assessment, and evaluation

1. Select and apply developmentally appropriate, reliable, and valid formal and informal screening, progress monitoring, and diagnostic instruments and procedures that measure specific characteristics.

2. Identify procedures for accurately establishing, maintaining, and using formal and informal student records.

3. Interpret formal and informal assessment data to make instructional decisions about the educational needs of children.

4. Identify procedures for appropriately using authentic assessments (e.g., portfolios, observations, journals) to plan instruction that further develops a child's level of learning and interest.

5. Identify procedures and legal requirements that provide for productive family conferences or home visits, regarding the assessment, education, and development of children, in accordance with due process (e.g., IEP, RtI) and confidentiality.

6. Identify methods of observing, facilitating, and extending children's play to practice newly acquired abilities (e.g., through problem solving, imitation, persistence, and creativity).

7. Identify different types of assessments (e.g., norm-referenced, criterion-referenced, diagnostic, curriculum-based) and the purposes of each.

8. Identify and apply appropriate processes for monitoring struggling students (e.g., RtI, tiered interventions) and planning and implementing intervention strategies.

7 Knowledge of child guidance and classroom behavioral management

1. Identify and analyze developmentally appropriate components of a positive and effective classroom behavioral management system.

2. Apply developmentally appropriate positive strategies for guiding children's behavior and responding to challenging behaviors.

3. Identify opportunities for promoting children's positive self-concept and self-esteem, prosocial skills, and social-emotional development through interaction with peers and familiar adults.

4. Select developmentally appropriate problem-solving strategies for conflict resolution, self-regulatory behavior, and social interaction.

5. Select and analyze appropriate strategies for teaching character development to young children.

6. Identify the roles of early childhood professionals in collaboration with other professionals (e.g., social workers, school counselors, community liaisons) in helping children and their families cope with stressors.

Prekindergarten/Primary PK–3
Subtest 2: Language Arts and Reading

1 Knowledge of literacy and literacy instruction

1. Identify the content of emergent literacy (e.g., oral language development, phonological awareness, alphabet knowledge, concepts of print, motivation, written language development).

2. Identify common emergent literacy difficulties and apply strategies for prevention and intervention.

3. Apply various approaches for developing emergent and early literacy skills (e.g., oral language and listening, phonological awareness, alphabet knowledge, background knowledge, concepts of print).

4. Identify appropriate emergent and early literacy activities.

5. Select specific instructional methods (e.g., whole group, small group, explicit, systematic) for developing emergent literacy.

6. Identify the components of and techniques for creating a print-rich environment reflecting diverse cultures and the impact of such an environment on classroom instruction.

7. Analyze the structure (e.g., small group, whole group) and components (e.g., vocabulary, phonics) of a balanced literacy program.

8. Apply instructional approaches and strategies for teaching informational literacy skills (e.g., reading labels, signs, newspapers).

9. Identify effective methods and strategies to integrate reading, writing, speaking, listening, viewing, and presenting across the curriculum.

10. Determine effective techniques for motivating students to engage in academic and personal reading (e.g., student interest in texts, student reading goals, student self-selection of texts).

2 Knowledge of fiction and nonfiction genres including reading informational texts (e.g., literary nonfiction, historical, scientific, and technical texts)

1. Select literature (e.g., pattern books, concept books) from a variety of narrative texts that build language skills and concept development.

2. Identify and distinguish the elements of various literary genres and formats of prose and poetry (e.g., multicultural literature, fables, legends, biographies, realistic fiction, fantasy).

3. Analyze and compare literature with common themes written from different viewpoints and cultural perspectives.

4. Identify instructional approaches and apply strategies for developing literary analysis (e.g., story-mapping, plot structure, elements of literary devices).

5. Select appropriate techniques for encouraging students to respond to literature and informational texts in a variety of ways (e.g., retelling, dramatizing, writing).

6. Identify a variety of uses and purposes for multiple representations of information (e.g., maps, timelines, charts, tables, graphs, pictures, print and nonprint media).

7. Identify instructional methods and strategies (e.g., using graphic organizers, summarizing, oral questioning, inferring) for facilitating students' reading comprehension across the curriculum.

8. Identify and appropriately use text structures (e.g., cause and effect, chronological order, compare and contrast) to develop student comprehension.

9. Identify informational text features and their purposes (e.g., index, glossary, heading/subheading, table of contents, bibliography, references).

3 Knowledge of reading foundational skills

1. Identify appropriate stages of word recognition (e.g., pre-alphabetic, partial-alphabetic, full-alphabetic) and cueing strategies (e.g., graphophonic, syntactic, semantic) that effective readers use in the decoding process.

2. Identify the components of reading fluency (i.e., accuracy, automaticity, rate, prosody).

3. Select instructional methods and strategies for increasing vocabulary acquisition and development (e.g., concept maps, morphemic and contextual analysis) across the curriculum.

4. Select effective instructional methods for teaching essential comprehension skills (e.g., main idea, supporting details, author's purpose, inference).

5. Apply instructional strategies (e.g., utilizing graphic organizers, activating background knowledge) for helping students comprehend content area texts.

6. Identify instructional strategies (e.g., making connections, questioning, summarizing) for developing critical thinking skills (e.g., critiquing, analyzing, problem-solving).

7. Select and apply instructional methods for developing reading fluency (e.g., practice with high-frequency words, timed readings, repeated readings).

8. Apply effective reading strategies to comprehend complex literature and informational texts (e.g., stories, drama, poetry, biographies, technical texts).

4 Knowledge of language elements used for effective oral and written communication

1. Distinguish among the developmental stages of writing (e.g., drawing, scribbling, letter-like formations, strings of letters).

2. Identify developmentally appropriate writing strategies for developing concepts of print and conventions, including spelling and punctuation.

3. Determine the stages of the writing process (e.g., prewriting, editing, publishing).

4. Identify and distinguish characteristics of various modes of writing (e.g., narrative, expository, persuasive, descriptive).

5. Select and analyze the appropriate mode of writing for a variety of occasions, purposes and audiences, and use textual support, reader response, and research as needed.

6. Identify developmentally appropriate strategies for enhancing writer's craft (e.g., supporting details, dialogue, transition words).

7. Determine effective strategies for comprehension and collaboration (e.g., following multiple-step directions, following group rules, participating in group discussions).

8. Identify key elements in students' presentations of ideas (e.g., visual and digital components, organization of ideas, clarity of thought).

9. Analyze the increasing complexity of conventions of English (e.g., common prepositions, personal and possessive pronouns, compound and complex sentences).

10. Compare characteristics and uses of formal and informal language (e.g., oral, written).

5 Knowledge of assessments to inform literacy instruction

1. Identify appropriate oral and written methods for assessing individual student progress in reading and writing (e.g., fluency probes, conferencing, rubrics, running records, portfolios).

2. Interpret and analyze data from informal and formal reading assessments using qualitative and quantitative measures (e.g., screening, progress monitoring, diagnostic) to guide differentiated instruction.

Prekindergarten/Primary PK–3
Subtest 3: Mathematics

1 Knowledge of effective mathematics instruction

1. Identify and analyze developmentally appropriate strategies for presenting mathematical concepts progressing from concrete to semi-concrete to abstract.

2. Identify and apply related mathematical concepts, computation, problem-solving, and reasoning.

3. Identify and analyze opportunities and strategies to integrate mathematics with other subject areas.

4. Identify mathematical concepts appropriate for the PreK–3 curriculum.

5. Select and apply the appropriate use of available tools, including technology (e.g., interactive white boards, computers) and manipulatives in teaching mathematics.

6. Identify the use of mathematical practices to promote critical thinking (e.g., construct viable arguments, make use of structure, express regularity in repeated reasoning).

7. Select and analyze uses of a variety of assessments to plan instruction.

8. Select and analyze structured experiences for small and large groups of students according to mathematical concepts.

9. Identify and analyze attitudes and dispositions underlying mathematical thinking.

2 Knowledge of algebraic thinking

1. Identify and extend simple number and nonnumeric repeating and growing patterns using words, variables, tables, and graphs.

2. Determine and apply the concepts of equality and inequality in real-world situations (e.g., balancing and comparing quantities).

3. Identify and apply function rules using addition and subtraction (e.g., input-output machines, tables).

4. Identify and analyze appropriate instructional strategies (e.g., draw a picture, make a table, act it out) to facilitate student understanding of problem solving.

3 Knowledge of number concepts and operations in base ten

1. Identify the cardinal number for a set, various ways to count efficiently (e.g., counting by ones, skip counting, counting on, counting backwards, counting collections), and ordinal numbers.

2. Identify pre-number concepts, 1-to-1 correspondence, conservation of numbers, constructing sets to match given criteria, and rote counting.

3. Use knowledge of place value to name, compare, and flexibly represent numbers in base ten (e.g., 22 = 2 tens and 2 ones, 1 ten and 12 ones, or 22 ones).

4. Use place value (e.g., flexibility of numbers) and properties of operations (i.e., commutative, associative, distributive, identity) to solve problems involving addition and subtraction of multi-digit numbers and multiplication facts through 100.

5. Differentiate between problem-solving strategies that use models, properties of operations, and the inverse relationship of operations.

6. Use area, set, and linear fraction models (e.g., number lines) to represent fractions, including fractions greater than one.

7. Relate the size of the fractional part to the number of equal-sized pieces in the whole.

8. Use models to represent equivalent fractions, including fractions greater than one, and numerical representation of equivalents (e.g., 1/2 = 2/4 = 3/6, the same amount is shaded in the whole).

4 Knowledge of measurement and data collection and analysis

1. Identify the use of measurable attributes and the appropriate use of metric and customary units to measure and compare length, area, perimeter, and volume.

2. Identify effective instructional activities for estimating, telling, and writing time; calculating elapsed time; and counting money.

3. Select effective methods to organize, represent, and interpret data (e.g., bar graphs, line plots).

4. Solve problems analyzing data sets, drawing conclusions, and making predictions.

5 Knowledge of geometric and spatial concepts

1. Identify and classify two-dimensional and three-dimensional shapes according to defining attributes (e.g., number of sides, length of sides, measure of angles).

2. Identify the composition of a complex figure using basic two-dimensional and three-dimensional shapes (e.g., squares, circles, triangles, spheres, cones, prisms).

3. Analyze and distinguish examples of symmetry and non-symmetry in two dimensions.

4. Identify spatial concepts (e.g., above, below, hidden view, through) and vocabulary (e.g., line, angle, ray, plane) useful for teaching geometry in real-world situations.

Prekindergarten/Primary PK–3
Subtest 4: Science

1 Knowledge of effective science instruction

1. Analyze developmentally appropriate strategies for teaching science practices (e.g., observing, questioning, designing and carrying out investigations, developing and using models, constructing and communicating explanations).

2. Identify strategies and skills for facilitating children's experiences in ways that support their active inquiry, naturalistic exploration, talk and argument, and conceptual development.

3. Identify and analyze strategies for formal and informal learning experiences to provide science curriculum that promotes children's natural curiosity about the world (e.g., active hands-on experiences, active engagement in the physical world, student interaction).

4. Identify ways to organize and manage the early childhood classroom for safe, effective science teaching and learning (e.g., procedures, equipment, layout).

5. Identify and select developmentally appropriate formal and informal assessments to evaluate prior knowledge, to guide instruction, and to evaluate the impact of science experiences on student learning.

6. Select and analyze small- and large-group strategies to help students explain the concepts they are learning, provide opportunities to introduce formal science terms, and to clarify scientific concepts and misconceptions.

7. Select and apply safe and effective instructional strategies when using curricular and instructional tools and resources such as physical and conceptual models, scientific equipment, realia, and print and digital representations to support and enhance science instruction.

8. Apply scientifically and professionally responsible decision-making regarding the selection of socially and culturally sensitive science content and activities.

2 Knowledge of the nature of science

1. Identify and apply basic process skills (e.g., observing, inferring, classifying, measuring) and developmentally appropriate science practices (e.g., analyzing and interpreting data, constructing explanations, engaging in argument from evidence).

2. Evaluate and interpret pictorial representations, charts, tables, and graphs of authentic data from scientific investigations to make predictions, construct explanations, and support conclusions.

3. Analyze the dynamic nature of science as a way of understanding the world (e.g., tentativeness, replication, reliance on evidence).

4. Identify and select appropriate tools, including digital technologies, and units of measurement for various science tasks.

5. Evaluate the relationship between claims (e.g., including predictions), evidence (i.e., scientific knowledge, observations) and explanations (i.e., linking claims to evidence, drawing conclusions).

6. Identify and analyze attitudes and dispositions underlying scientific thinking (e.g., curiosity, openness to new ideas, appropriate skepticism, cooperation).

7. Identify and analyze ways in which science is an interdisciplinary process and interconnected to STEM disciplines (i.e., science, technology, engineering, mathematics).

8. Analyze considerations of science technology in society including cultural, ethical, economic, political, and global implications.

3 Knowledge of the earth and space sciences

1. Identify the living and nonliving composition of the Earth's surface and the properties of the nonliving materials that make up Earth's surface (e.g., soil, minerals, rocks, water).

2. Identify the processes that change the surface of the Earth.

3. Analyze the effects of the law of gravity on objects on Earth and in space.

4. Identify and distinguish distant objects seen in the daytime and nighttime sky (e.g., Sun, stars, planets, Moon).

5. Identify and analyze the causes and effects of atmospheric processes (e.g., weather, wind, water cycle).

6. Interpret and predict the direct and indirect effects of the Sun's energy on Earth, including plants, animals, water, land, and air.

7. Identify the components and significance of space research and exploration (e.g., timelines, tools and equipment, benefits and cost to society).

8. Identify and describe repeated patterns in the Sun-Earth-Moon system (e.g., the day-night cycle, phases of the Moon, seasons).

9. Analyze the impact of human activity on renewable and nonrenewable resources and natural events, including preparation for severe weather related events (e.g., hurricanes, tornadoes, flooding).

4 Knowledge of the physical sciences

1. Sort matter by its observable qualitative properties (e.g., shape, color, states, texture, hardness) and quantitative properties (e.g., mass, volume, temperature, weight, density).

2. Categorize matter as an element, compound, or mixture and compare the similarities and differences among them.

3. Identify and differentiate between physical and chemical changes in matter.

4. Identify and compare types, characteristics, and functions of energy.

5. Identify and analyze ways energy is transferred between objects or the surrounding air.

6. Analyze and compare the relationship between forces (e.g., push or pull) and an object's change in position, direction, and/or speed.

5 Knowledge of the life sciences

1. Identify how plants and animals respond to their environment.

2. Identify basic concepts of heredity (e.g., why offspring resemble their parents).

3. Classify plants and animals into major groups according to characteristics (e.g., physical features, behaviors, development).

4. Compare the ways living things meet their basic needs through interaction with and dependence on one another when sharing an environment (e.g., competition, predation, pollination).

5. Identify basic characteristics of living and nonliving things.

6. Identify and describe the basic structures, behaviors, and functions of plants and animals that allow them to carry out their life processes (e.g., grow, reproduce, and survive).

7. Identify and compare the structure and functions of major systems of the human body.

8. Identify and compare the predictable ways plants and animals change as they grow, develop, and age.

9. Identify and compare processes of sexual and asexual reproduction in plants, animals, and microorganisms.

10. Identify the variety of habitats within ecosystems and analyze how they meet the needs of the organisms that live there.

Preschool Education (Birth–Age 4)

Section 07

Preschool Education (Birth–Age 4)

1 Knowledge of child development from conception to age 8

1. Identify the developmental domains of physical, cognitive, language acquisition, self-help, and social-emotional development.

2. Identify factors that may contribute to atypical development.

3. Identify the major influences of biology, environment, health and nutrition, socioeconomics, family, community, and societal attitudes on child development.

4. Identify prenatal, perinatal, and postnatal factors that place a child at risk for developmental delay or disability.

2 Knowledge of early childhood foundations, standards, professional practices, and professional development

1. Identify the major historical theorists and their contributions to child development.

2. Identify State standards and national standards, policies, and position statements for young children.

3. Recognize minimal State licensing standards and competency areas for State recognized accreditation that apply to early education and care programs and settings.

4. Identify the roles and responsibilities of early care and education professionals.

5. Identify procedures for protecting the rights of children, families, and professionals.

6. Identify ethical conduct for early care and education professionals.

7. Identify the components of a cooperative team approach.

8. Identify methods for professional development.

9. Identify federal and State supported programs that provide services for young children and their families.

3 Knowledge of contemporary research, trends, and issues in early childhood

1. Identify the impact of federal and State laws on early care and education.

2. Identify resources and strategies for collaborating with other community professionals to support children and their families.

3. Identify professional organizations, research publications, and activities in the fields of early childhood education and early childhood special education.

4. Identify indicators of high quality early care and education.

4 Knowledge of cultural and linguistic diversity

1. Identify activities designed to avoid bias and stereotyping.

2. Recognize appropriate strategies and activities that provide for the communication and language needs of children and families with limited English proficiency.

3. Identify appropriate strategies for working with diverse family structures, patterns, and values.

4. Identify accommodations for cultural, linguistic, and literacy differences.

5 Knowledge of issues and strategies for engaging families and communities

1. Determine appropriate procedures for facilitating the transitions of children and their families from one setting to another.

2. Identify strategies and models for encouraging, facilitating, and incorporating family and community involvement in all phases of early childhood education.

3. Identify barriers that limit access to high quality care or services.

4. Select effective communication techniques to use with families.

5. Select appropriate techniques for identifying family concerns, priorities, and resources as they relate to developing a family support plan.

6 Knowledge of curriculum and developmentally appropriate instructional practices

1. Identify major curriculum models.

2. Identify activities that provide a creative, relevant, and success-oriented environment.

3. Identify activities that support the development of language arts, mathematics, science, and social studies concepts.

4. Identify activities that promote aesthetic learning through visual arts, music, movement, and drama.

5. Identify developmentally appropriate uses of technology with young children.

6. Identify the impact of research, events, and advances in technology on curriculum and instructional strategies in early childhood.

7. Identify developmentally appropriate practices that accommodate different learning styles, multiple intelligences, and varying ability levels.

8. Identify activities that promote active learning through play, such as independent exploration, discovery, and multisensory involvement.

9. Identify schedules that provide a variety of indoor and outdoor learning experiences and a balance between types of activities: individual and group, small and large group, teacher-initiated and child-initiated, and quiet and active.

10. Identify activities promoting the development of both fine and gross motor skills.

11. Identify emergent and early literacy activities.

12. Identify strategies for enhancing language acquisition and communication skills.

13. Identify strategies for building upon early childhood experiences.

14. Select activities that support the development of critical thinking and problem-solving skills, knowledge of cause-and-effect relationships, and the ability to predict outcomes.

15. Identify ways to organize space, equipment, facilities, and materials to provide opportunities for private and personal space and to create an environment that supports the curriculum, the development of the whole child, and positive behavior.

7 Knowledge of child guidance and positive behavior support

1. Identify developmentally appropriate strategies for guiding and managing children's behavior.

2. Identify strategies to develop intrinsic motivation in children.

3. Identify strategies that facilitate the coordination of family and early childhood personnel support for children's positive behavior.

8 Knowledge of children and families requiring special services

1. Identify services and programs designed to meet the special needs of children and families.

2. Recognize components of Parts B and C of IDEA (e.g., service coordination, eligibility).

3. Apply the processes for screening, assessing, and staffing of children with special needs.

4. Identify the processes and strategies for developing and implementing an individual educational plan (IEP) and family support plan (FSP) within the context of multidisciplinary, interdisciplinary, and transdisciplinary teams and the family.

5. Identify the procedures for the inclusion of children with special needs in least restrictive and natural environments.

6. Determine strategies for working with children who are at risk.

7. Differentiate between types of disabilities and disorders, their causes, symptoms, and impact on the child and family.

8. Identify federal legislation related to procedural safeguards and due process for children with exceptionalities.

9 Knowledge of screening, assessment, and evaluation

1. Distinguish between screening, assessment, and evaluation.

2. Identify appropriate information gathering and nonbiased assessment resources and strategies.

3. Identify measurement terms.

4. Interpret screening and assessment data to identify appropriate intervention, remediation, enrichment, or need for further evaluation.

5. Select approaches for involving families in the evaluative process.

6. Distinguish between multidisciplinary, interdisciplinary, and transdisciplinary models of assessment.

7. Identify methods of program and setting evaluation and uses for evaluation results.

10 Knowledge of safety and emotional, mental, and physical health

1. Identify the types and symptoms of common childhood diseases and health concerns.

2. Identify procedures for disease control and prevention.

3. Identify the procedures for administering standard first aid and pediatric cardiopulmonary resuscitation (CPR).

4. Identify procedures for promoting the safety of young children.

5. Identify procedures for maintaining accurate medical and immunization records of children.

6. Identify signs of, and reporting procedures for, child abuse and neglect.

7. Identify strategies that promote healthy living and proper nutrition for children and families.

8. Select strategies for promoting age-specific mental health.

9. Identify the influence of temperament on cognitive, language, and social-emotional development of infants, toddlers, and preschool children.

10. Identify indicators that an individual child may need additional physical and mental health, vision, speech, and/or language screening.

Reading
K–12

Section 35

Reading K–12*

***Competencies and skills incorporate the scientifically based reading research (SBRR) and the components of Florida's formula for reading success addressing improved reading outcomes for Florida's students: 5 (phonological awareness, phonics, fluency, vocabulary, and comprehension) + 3 (assessments to include screening, diagnostics, and progress monitoring) + ii (initial instruction) + iii (immediate intensive intervention).**

1 Knowledge of the theories and underlying assumptions of reading processes

1. Identify foundational theories and theorists of reading processes and development.
2. Identify instructional applications of theories of reading processes and development.

2 Knowledge of emergent literacy

1. Identify the terminology and concepts of emergent literacy (e.g., oral language development, phonological awareness, alphabet knowledge, decoding, concepts of print, motivation, text structures, written language development).
2. Identify instructional methods for developing emergent literacy.
3. Identify characteristics of difficulties in emergent literacy development.
4. Identify methods for prevention of and intervention for emergent literacy difficulties.

3 Knowledge of decoding, encoding, and related reading processes

1. Identify the processes and skills (e.g., graphophonemic, morphemic, syntactic, semantic) effective readers use for word recognition.
2. Identify the phases of word recognition within the decoding process (e.g., pre-alphabetic, partial-alphabetic, full-alphabetic, consolidated-alphabetic).
3. Identify instructional methods for promoting the development of decoding and encoding skills.

4 Knowledge of reading fluency development

1. Identify the components of reading fluency (i.e., accuracy, automaticity, rate, prosody).
2. Identify appropriate instructional methods for developing reading fluency (e.g., practice with high-frequency words, timed readings, repeated readings, read alouds, choral reading, recorded books, readers theatre).

5 Knowledge of reading comprehension

1. Identify the elements of reading comprehension (e.g., background/prior knowledge, author's purpose, vocabulary, metacognition).

2. Identify instructional methods and strategies to facilitate students' reading comprehension (e.g., predicting, summarizing, monitoring comprehension, question answering, question generating, use of graphic and semantic organizers, recognizing story structure, use of multiple strategy instruction).

3. Identify instructional methods and strategies to increase vocabulary acquisition (e.g., word analysis, context clues, multiple exposures, selection of relevant words from text).

4. Identify instructional methods and strategies for developing critical thinking (e.g., application, analysis, synthesis, evaluation).

6 Knowledge of content area reading and learning

1. Identify instructional approaches and strategies for developing and using content area vocabulary (e.g., semantic mapping, semantic feature analysis, categorization activities).

2. Identify text structures (e.g., cause and effect, chronological order, compare and contrast) and features (e.g., index, glossary, heading/subheading, lists) of fiction and nonfiction texts.

3. Identify instructional approaches and strategies for teaching study skills (e.g., note taking; summarizing; discussion; using reference materials, maps, and graphics).

4. Identify instructional approaches and strategies for teaching functional literacy skills (e.g., reading labels, signs, newspapers, schedules).

5. Apply instructional approaches and strategies for helping students comprehend content area texts (e.g., discussion, graphic organizers, metacognition, background knowledge).

7 Knowledge of literary genres, elements, and interpretations

1. Identify the characteristics and elements of various literary genres and formats of prose and poetry (e.g., classics, multicultural literature, fables, legends, biographies).

2. Identify instructional approaches and strategies for developing literary analysis (e.g., storymapping, identifying plot structure, identifying elements of literary devices).

8 Knowledge of diverse learners

1. Choose appropriate methods, including differentiating instruction, modifications, and accommodations, for meeting reading needs of diverse learners (e.g., gifted, economically disadvantaged, struggling learners, students with disabilities).

2. Choose appropriate methods, including differentiating instruction and linguistic accommodations, for meeting reading needs of English language learners (ELLs).

3. Select appropriate resources to reflect and address students' cultural and linguistic diversity.

9 Knowledge of reading assessments

1. Identify measurement concepts, characteristics, and uses of norm-referenced, criterion-referenced, and performance-based assessments.

2. Identify appropriate oral and written methods for assessing individual student progress (e.g., informal reading inventories, fluency probes, rubrics, running records, story retelling, portfolios).

3. Interpret data from informal and formal assessments (e.g., screening, progress monitoring, diagnostic, survey) to guide instructional decisions.

4. Use individual student reading data to differentiate instruction.

5. Evaluate the appropriateness (e.g., curriculum alignment, cultural bias, reliability/validity) of assessment instruments and practices.

10 Knowledge of print and nonprint media

1. Identify criteria for selecting and evaluating both print and nonprint media (e.g., Internet, software, trade books, textbooks, DVDs, videos, interactive computing) for instructional use.

2. Identify appropriate use of print and nonprint media to match students' needs and interests within the instructional unit.

11 Knowledge of classroom environments that support reading

1. Identify the characteristics and purposes of various reading programs (e.g., core reading program, supplemental reading program, intensive intervention program).

2. Identify appropriate classroom organizational formats (e.g., literature circles, small groups, individuals, workshops, reading centers, multiage groups) for specific instructional objectives.

3. Identify methods and strategies (e.g., explicit and systematic instruction, scaffolding, modeling) to integrate reading, writing, speaking, listening, viewing, and presenting across the curriculum.

4. Choose effective techniques (e.g., selecting text at the appropriate reading level, matching text to student interest, involving students in setting reading goals) for improving attitudes toward reading and for motivating students to engage in academic and personal reading.

12 Knowledge of research

1. Identify characteristics (e.g., validity, reliability) of scientifically based reading research.

2. Identify findings from current reading research (e.g., National Reading Panel Report, Preventing Reading Difficulties in Young Children).

3. Identify reliable sources of reading research (e.g., peer-reviewed journals, technical reports).

4. Identify the purpose, procedure, and application of teacher action research.

13 Knowledge of reading program supervision and administration

1. Identify the purposes and practices for involving family members, community members, and other professionals in reading efforts.

2. Interpret reading information, regulations, and assessment data to administrators, staff members, policy makers, media, students, parents, and the community.

3. Use school-related data to identify the content and process of ongoing high-quality staff development.

4. Select and evaluate instructional materials for reading.

5. Identify criteria for evaluating the effectiveness of a reading program.

6. Use school data and program evaluation results to identify methods to modify and improve curriculum and instruction.

7. Determine effective methods for training and monitoring paraprofessionals, tutors, and volunteers.

School Psychologist
PK–12

Section 36

School Psychologist PK–12

1 Knowledge of measurement theory, test construction, research, and statistics

1. Identify theories of measurement and test construction.
2. Demonstrate knowledge of statistical concepts and terms.
3. Identify principles of research design (e.g., single subject, qualitative, quantitative, program evaluation).
4. Interpret research findings from psychoeducational studies.

2 Knowledge of data-based decision making and accountability

1. Identify data gathering methods (e.g., checklists, records review, assessment instruments, interviews, behavioral observations, curriculum-based measurement, technology) in the comprehensive evaluation process.
2. Identify appropriate methods for progress monitoring.
3. Select appropriate psychoeducational assessment instruments based on a referral question.
4. Determine appropriate evaluation methods and sources of information based on a referral question.
5. Select appropriate instruments and methods of psychoeducational assessment that consider the needs of specialized populations (e.g., culturally, ethnically, and linguistically diverse students; students with low-incidence disabilities; preschool children).
6. Interpret data from multiple sources (e.g., checklists, records review, graphs, instructional software, assessment instruments and software, interviews, behavioral observations, curriculum-based measurement) to address referral questions and make appropriate recommendations.
7. Demonstrate knowledge of data-based decision making at the system, group, and individual levels.

3 Knowledge of child and adolescent development

1. Identify theories of cognitive and intellectual development.
2. Identify theories and principles of language, perceptual, and sensorimotor development.
3. Identify theories of personality and social-emotional development.
4. Apply principles of learning, memory, and motivation.

5. Identify developmental patterns of disorders in childhood and adolescence.

6. Relate the major theories of child and adolescent development to psychoeducational practices.

4 Knowledge of Section 504 of the Rehabilitation Act of 1973 (Section 504) and exceptional student education

1. Identify the characteristics of various exceptionalities and disabilities (e.g., specific learning disabilities, gifted, visual or hearing impairment).

2. Interpret psychometric and other assessment data (e.g., response to intervention) related to identification of exceptionalities and disabilities.

3. Determine appropriate evaluation procedures or accommodations consistent with suspected or documented disabilities.

4. Identify federally mandated procedures in the development of an Individual Educational Plan (IEP) and a Section 504 accommodation plan.

5. Identify federally required disciplinary policies and procedures (e.g., manifestation determination, suspension) for students with an IEP or Section 504 accommodation plan.

5 Knowledge of curricula and instruction

1. Identify components of curricula and effective instruction.

2. Demonstrate knowledge of reading, mathematics, and written and oral language development and instruction.

3. Identify appropriate instructional strategies for reading, mathematics, and written and oral language.

4. Identify screening, prevention, and intervention methods to address academic concerns.

6 Knowledge of biological, social, and cultural bases of learning and behavior

1. Identify the signs, symptoms, and impact of substance abuse.

2. Identify the signs, symptoms, and impact of child abuse and other traumatic events.

3. Identify social, cultural, linguistic, and ethnic factors that influence learning and behavior.

4. Identify experiential, instructional, environmental, medical, and biological factors that influence learning and behavior.

5. Identify social, cultural, linguistic, ethnic, and instructional factors that influence language development.

6. Identify the neurological functions of the brain (e.g., brain-behavior relationships, executive functions).

7 Knowledge of laws, rules, regulations, and court decisions

1. Demonstrate knowledge of legislation (e.g., Health Insurance Portability and Accountability Act; No Child Left Behind Act; Individuals with Disabilities Education Improvement Act; Section 490, Florida Statutes) related to the practice of school psychology and public education.

2. Identify federal and state rules, regulations, and policies related to the practice of school psychology and public education.

3. Identify the implications of landmark court decisions related to the practice of school psychology.

8 Knowledge of evidence-based interventions

1. Identify theories and techniques of individual counseling.

2. Identify theories and techniques of group counseling.

3. Select appropriate prevention activities and evidence-based interventions for academic concerns.

4. Identify components and techniques (e.g., positive behavior supports, functional behavior assessments, positive behavior intervention plans) of applied behavior analysis.

5. Select appropriate methods for evaluating the fidelity of implementation and response to interventions from various sources (e.g., technology, curriculum-based measurement).

6. Identify schoolwide screening, prevention, and intervention methods that address bullying, violence, and suicide.

7. Identify techniques for threat and suicide assessment.

8. Select appropriate prevention activities and evidence-based interventions for behavioral and social-emotional concerns.

9. Identify techniques for crisis intervention.

9 Knowledge of consultation, collaboration, and problem solving

1. Identify appropriate theories and methods of consultation and collaboration with school personnel, parents and guardians, and other specialists in the school or community.

2. Demonstrate knowledge of the problem-solving process.

3. Apply methods of consultation, collaboration, and problem solving to academic, behavioral, and social-emotional concerns.

10 Knowledge of professional school psychology and ethical decision making

1. Identify elements of the organizational and operational structures of public schools.

2. Identify important milestones in the development of the profession of school psychology.

3. Identify professional standards of practice in school psychology.

4. Identify the guidelines for professional conduct as stated in the ethical codes of the Florida Association of School Psychologists, National Association of School Psychologists, and American Psychological Association, and in the Code of Ethics of the Education Profession in Florida.

5. Apply appropriate decision making to standards of practice and ethical dilemmas.

Social Science
6–12

Section 37

Social Science 6–12

1 Knowledge of geography

1. Apply the six essential elements of geography.

2. Identify the ways natural processes and human-environment interactions shape the Earth's physical systems and features.

3. Identify the ways natural processes and human-environment interactions shape cultural features (e.g., communities, language, technology, political and economic institutions).

4. Analyze geographic information from maps, charts, and graphs.

2 Knowledge of economics

1. Analyze how scarcity and opportunity cost influence choices about how to allocate resources.

2. Identify how economic systems (e.g., market, command, traditional) answer the three basic economic questions.

3. Analyze the interaction of supply and demand in determining production, distribution, and consumption.

4. Analyze how macroeconomic factors (e.g., national income, employment, price stability) influence the performance of economic systems.

5. Evaluate the roles of government, central banking systems, and specialized institutions (e.g., corporations, labor unions, banks, stock markets) in market and command economies.

6. Analyze the features of global economics (e.g., exchange rates, terms of trade, comparative advantage, less developed countries) in terms of their impact on national and international economic systems.

7. Evaluate the functions of budgeting, saving, and credit in a consumer economy.

3 Knowledge of political science

1. Identify the features and principles of the U.S. Constitution, including its amendments, the separation of powers, checks and balances, and federalism.

2. Identify the functions of U.S. political institutions, including the executive, legislative, and judicial branches.

3. Identify the effects of voter behavior, political parties, interest groups, public opinion, and mass media on the electoral process in the United States.

4. Identify the elements and functions of state and local governments in the United States.

5. Analyze the guiding concepts, principles, and effects of U.S. foreign policy.

6. Compare various political systems in terms of elements, structures, and functions.

7. Analyze the key elements of U.S. citizenship, including rights, privileges, and responsibilities.

4 Knowledge of world history

1. Identify characteristics of prehistoric cultures and early civilizations (e.g., Mesopotamian, Egyptian, Indus Valley, Chinese).

2. Evaluate the influence of ancient civilizations (e.g., Greek, Roman, Indian, Chinese) on the evolution of modern civilization.

3. Identify the major contributions of African, Asian, and Mesoamerican societies before 1500.

4. Identify the major contributions of the Middle Ages, the Renaissance, and the Reformation period to Western civilization.

5. Identify the social, cultural, political, and economic characteristics of African, Asian, and eastern European societies from 1500 to 1900.

6. Evaluate the significant scientific, intellectual, and philosophical contributions of the Age of Reason through the Age of Enlightenment.

7. Identify the causes, effects, events, and significant individuals associated with the Age of Exploration.

8. Assess the social, political, and economic effects of the Industrial Revolution.

9. Identify the causes, effects, events, and significant individuals associated with the Age of Revolution.

10. Evaluate the impact of imperialism and nationalism on global social, political, geographic, and economic development.

11. Analyze the causes and effects of political transformations and military conflicts in the 20th century.

12. Analyze major contemporary global political, social, economic, and geographic issues and trends.

13. Identify major world religions and ideologies.

5 Knowledge of U.S. history

1. Evaluate the impact of the Age of Exploration on the Americas.

2. Analyze the social, cultural, political, and economic development of the Americas during the colonial period.

3. Identify the causes, significant individuals, and effects of the events associated with the Revolutionary era.

4. Identify the causes, significant individuals, and effects of the events associated with the Constitutional era and the early republic.

5. Evaluate the impact of westward expansion on the social, cultural, political, and economic development of the emerging nation.

6. Identify the social, cultural, political, and economic characteristics of the antebellum period.

7. Identify the causes, significant individuals, and effects of the events associated with the American Civil War and Reconstruction eras.

8. Evaluate the impact of agrarianism, industrialization, urbanization, and reform movements on social, cultural, political, and economic development in the late 19th and early 20th centuries.

9. Evaluate the impact of immigration on social, cultural, political, and economic development in the late 19th and early 20th centuries.

10. Identify the causes, significant individuals, and effects of the events associated with the World War I era.

11. Identify social, cultural, political, and economic developments (e.g., Roaring Twenties, Harlem Renaissance, Great Depression, New Deal) between World War I and World War II.

12. Identify the causes, significant individuals, and effects of the events associated with the World War II era.

13. Identify the causes, significant individuals, and effects of the events associated with domestic and foreign affairs during the Cold War era.

14. Identify the causes, significant individuals, and effects of the events associated with movements for equality, civil rights, and civil liberties in the 19th and 20th centuries.

15. Identify the causes, significant individuals, and effects of the events associated with contemporary domestic and foreign affairs.

16. Identify key individuals, events, and issues related to Florida history.

6 Knowledge of social science and its methodology

1. Identify social science disciplines (e.g., anthropology, psychology, sociology).

2. Identify social science concepts (e.g., culture, class, technology, race, gender).

3. Analyze the interrelationships between social science disciplines.

4. Interpret tabular and graphic representations of information related to the social sciences.

5. Identify appropriate strategies, methods, tools, and technologies for the teaching of social science.

6. Evaluate examples of primary (e.g., letters, photographs, political cartoons) and secondary (e.g., historical texts, encyclopedias) sources.

Spanish
K–12

Section 39

Spanish K–12

1 Proficiency in presentational and interpersonal modes of communication (Speaking)

1. Give in Spanish a series of classroom directions presented in English.
2. Narrate, describe, or explain in past, present, and future time.
3. Express and defend an opinion.
4. Communicate on concrete topics relating to particular interests, disciplines, or current events.
5. Respond to situations of everyday life.
6. Demonstrate ability to interact (e.g., make requests, obtain information, seek assistance).

2 Proficiency in presentational mode of communication (Writing)

1. Demonstrate the ability to write effectively on a specific topic (e.g., world issues, family, travel).
2. Demonstrate appropriate style for the content through vocabulary choice, tone, and idiomatic expressions.
3. Demonstrate mastery of spelling, structure, and punctuation.

3 Proficiency in interpretive modes of communication (Listening and Reading)

1. Understand and interpret authentic broadcasts on nontechnical subjects.
2. Understand authentic conversations of a routine social nature concerning everyday topics and current events.
3. Understand the essential points of a discussion or speech on a topic in a special field of interest.
4. Understand verbal directions and instructions.
5. Demonstrate comprehension of written material on a common subject (e.g., sports, travel, movies, theatre, food, music).
6. Demonstrate comprehension of authentic news articles on current topics.
7. Identify main ideas in contemporary literature.

4 Knowledge of Hispanic cultures (Spain, Latin America, and the United States)

1. Identify patterns of social behavior and social interactions in various settings.

2. Demonstrate general knowledge of the geography, history, arts, and literatures of the Spanish-speaking world.

3. Demonstrate knowledge of similarities and differences between the various Hispanic cultures.

5 Knowledge of language structure

1. Identify the correct usage of verb conjugations and tense/mood selection.

2. Identify the correct usage of interrogatives (e.g., *qué* vs. *cuál*, *cómo* vs. *qué*, *dónde* vs. *adónde*).

3. Identify the correct usage of prepositions (e.g., *por*, *para*, *en*, *a*).

4. Identify the correct usage of troublesome verb pairs (e.g., *ser* vs. *estar*, *saber* vs. *conocer*, *pedir* vs. *preguntar*, *tocar* vs. *jugar*).

5. Identify the usage of correct agreement (e.g., gender, number, subject-verb).

6. Identify the correct usage of pronouns (e.g., subject, object, reflexive).

7. Identify the correct usage of adjectives (e.g., shortened, position, comparative, superlative, demonstrative).

8. Identify the correct usage of definite and indefinite articles.

9. Identify the correct usage of syntax.

6 Knowledge of second language acquisition principles and teaching methods

1. Identify major concepts of language acquisition.

2. Identify effective techniques (e.g., cooperative learning, use of authentic materials, interdisciplinary approaches, total physical response, task-based teaching) for teaching proficiency in interpersonal, interpretive, and presentational modes of communication.

3. Identify effective techniques for integrating culture into language instruction.

4. Identify effective techniques for teaching a culturally and academically diverse student population.

5. Identify effective use of technology (e.g., computers, videos, Internet, audio laboratories) in the acquisition of Spanish.

6. Identify various assessment alternatives for evaluating student proficiency in the three modes of communication (i.e., interpersonal, interpretive, and presentational).

Speech
6–12

Section 41

Speech 6–12

1 Knowledge of the fundamentals of effective communication

1. Identify the components of the communication process.
2. Identify the relationship between verbal and nonverbal communication.
3. Identify differences between oral, written, and mediated (e.g., e-mail, television, World Wide Web) communication processes.
4. Identify the components of intrapersonal communication, interpersonal communication, small group discussion, public speaking, and mass communication.
5. Distinguish between fact and opinion in preparing and evaluating messages.
6. Identify positive and negative communication behaviors.
7. Identify purposes of communication.
8. Identify ethical behaviors in communication.
9. Identify the components and principles of the First Amendment.

2 Knowledge of the role of context in effective communication

1. Identify the influences of context on effective communication.
2. Select communication strategies appropriate to a given context.
3. Identify the various roles of the communicator in conflict management.
4. Identify strategies for analyzing various audiences.
5. Identify criteria for selecting materials for a given communication situation.
6. Identify the effects of individual, social, and cultural diversity on communication.

3 Knowledge of listening skills

1. Identify components of the listening process.
2. Distinguish between the characteristics of hearing and listening.
3. Identify the steps in the decoding process.
4. Recognize internal and external barriers to listening.

5. Distinguish between the types and purposes of listening.

6. Recognize fallacies in reasoning.

7. Identify examples of bias, prejudice, and propaganda.

8. Recognize the shared responsibilities of speakers and listeners.

4 Knowledge of research skills

1. Identify the ethical responsibilities of the researcher.

2. Identify options for conducting research.

3. Identify appropriate research strategies.

4. Identify criteria for evaluating electronic and nonelectronic sources.

5. Select appropriate sources of support materials for a specific purpose.

6. Distinguish between primary and secondary sources.

7. Identify appropriate citations of research for a speech.

8. Identify the differences between types of bibliographies.

5 Knowledge of message creation for public speaking

1. Identify the steps in speech preparation.

2. Identify types of speeches.

3. Identify the elements of audience analysis.

4. Identify the guidelines for selecting a speech topic.

5. Identify a topic that is appropriate in scope and content for a given speech situation.

6. Identify guidelines for informative, persuasive, entertaining, and special occasion speeches.

7. Identify the components of an outline.

8. Identify the components of an introduction.

9. Identify attention-gaining devices in a speech.

10. Choose the appropriate pattern of organization for the body of a speech.

11. Identify methods for concluding a speech.

12. Identify types of reasoning and persuasion strategies.

6 Knowledge of message delivery for public speaking

1. Identify types of delivery.

2. Identify methods of adapting delivery to an audience.

3. Select appropriate language to enhance a speech.

4. Identify the components of vocal delivery.

5. Recognize elements of appropriate nonverbal communication for delivery.

6. Select appropriate presentation aids for a speech.

7 Knowledge of forensic events and techniques

1. Identify the types of forensic events and organizations.

2. Identify terms essential to a debate.

3. Analyze a debate proposition.

4. Identify the speaking order and duties of the affirmative and negative speakers in debate formats.

5. Identify the issues and refutations of a debate from a flow sheet.

6. Identify the criteria for decision in a debate round.

7. Identify the responsibilities for coaches preparing students before a competition and managing students at a forensic event.

8. Select appropriate evaluative criteria for judging specific forensic events.

8 Knowledge of instructional techniques

1. Select appropriate evaluative criteria for specific communication activities.

2. Identify techniques for improving students' delivery.

3. Recognize activities that manage communication apprehension.

4. Recognize instructional strategies and teacher behaviors that create a supportive environment in the classroom.

5. Identify strategies for improving students' listening skills.

6. Identify methods for teaching students to physically manage information.

7. Identify strategies for teaching students to self-evaluate.

8. Identify strategies for incorporating technology into instruction.

9. Identify strategies for teaching students the ability to access, analyze, evaluate, and produce media messages in various forms.

10. Identify techniques for teaching storytelling skills.

9 Delivery of a speech with a unified message, integrating verbal and nonverbal techniques

1. Select an appropriate thesis statement for the chosen topic.

2. Demonstrate an appropriate organizational pattern for the speech.

3. Present accurate information on the topic.

4. Employ support material related to the topic and thesis.

5. Use effective introductory, transitional, and concluding material.

6. Use language appropriate for a specific audience in a given situation.

7. Use appropriate vocal elements to enhance the message.

8. Demonstrate correct use of standard American English.

9. Use time appropriately.

10. Use appropriate eye contact and body movement.

Speech-Language Impaired
K–12

Section 42

Speech-Language Impaired K–12

1 Knowledge of basic communication processes

1. Identify the anatomy of speech and hearing mechanisms, including neurological components.

2. Distinguish physiological components of the anatomical speech and hearing mechanisms, including the neurological aspects.

3. Identify terms related to articulation; fluency; voice; and oral and written language, including pragmatics, phonology, and auditory perception.

4. Identify the normal development and parameters of articulation; fluency; voice; and oral and written language, including pragmatics, phonology, and auditory perception.

5. Distinguish between communication disorders and communication differences.

2 Knowledge of the assessment process for students served in the school population

1. Identify general terminology and principles of assessment.

2. Interpret data to determine strengths and weaknesses.

3. Select appropriate procedures to assess articulation; fluency; voice; and oral and written language, including pragmatics, phonology, auditory perception, and alternative and augmentative communication.

4. Select appropriate assessment procedures for culturally and linguistically diverse populations.

5. Select appropriate methods for communicating assessment information to families, professionals, related service personnel, and community agencies.

3 Knowledge of intervention techniques for students served in the school population

1. Identify appropriate methodologies and strategies for use in the remediation of communication disorders in the following areas: oral and written language, pragmatics, articulation, phonology, fluency, voice, and auditory perception.

2. Identify appropriate accommodations and strategies that support students' communication in the educational environment.

3. Identify appropriate service delivery models for a variety of student needs and classroom settings.

4. Identify appropriate and effective collaboration strategies with families, professionals, related service personnel, and community agencies.

5. Select appropriate assistive technology and materials to support communication.

6. Identify methodologies and strategies that are appropriate for culturally and linguistically diverse populations.

4 Knowledge of professional and legal issues

1. Identify the major components of federal regulations related to students with disabilities.

2. Select educationally relevant individual educational plan (IEP) goals, objectives, and benchmarks for specific communication disorders.

3. Identify procedures for effective records management and data collection.

4. Identify strategies to ensure involvement of families, professionals, related service personnel, and community agencies in the management of students' communication and educational plans.

5. Identify ethical behaviors and practices for speech-language pathologists in the public school setting.

6. Identify the roles and responsibilities of speech-language pathologists in the public school setting.

5 Knowledge of research and theory

1. Identify criteria for evaluating sources of information for assessment and intervention strategies.

2. Identify leading theorists and researchers and their contributions to the field of speech-language pathology.

Technology Education
6–12

Section 55

Technology Education 6–12

1 Knowledge of the nature and impacts of technology

1. Identify the characteristics of technology.
2. Analyze a technological system in terms of inputs, processes, outputs, and feedback.
3. Assess the role of technology in developing products and systems that solve problems.
4. Evaluate the historical, social, ethical, cultural, economic, political, and environmental causes and effects of technological development and change.
5. Identify and assess new, emerging, and developing technologies and their impacts on society.
6. Identify biotechnology applications and advances in the areas of agriculture, pharmaceuticals, food and beverages, medicine, energy, environment, and genetic engineering.

2 Knowledge of principles of drafting

1. Select appropriate drafting instruments, equipment, and materials for a given purpose.
2. Differentiate between various disciplines of drafting (e.g., architectural, electrical, mechanical).
3. Apply fundamental principles of drafting (e.g., line conventions, lettering, dimensioning, scale, measurement, graphing).
4. Analyze the types of drawings used in drafting (e.g., orthographic, pictorial, auxiliary view).
5. Select appropriate 3D modeling processes for a given purpose.
6. Identify components of hardware and software for CAD.

3 Knowledge of principles of engineering

1. Identify appropriate design and problem-solving principles and procedures in engineering design.
2. Analyze factors involved in engineering design (e.g., economic, safety, ergonomic, reliability).
3. Analyze data acquisition methods in engineering (e.g., the use of test equipment, measurement instruments, research techniques).

4. Analyze legal and ethical issues in engineering.

4 Knowledge of energy and power technologies

1. Analyze the characteristics of power (e.g., steam, fluid power, electrical, solid and liquid fuels, nuclear, solar) and methods of generation and distribution.

2. Analyze the economic, social, and environmental impacts of traditional and alternative energy sources.

3. Select appropriate tools and materials used in various energy and power technologies.

4. Identify characteristics of AC and DC circuits and their components (e.g., source, load, path).

5. Apply Ohm's law and Kirchhoff's law to series and parallel circuits.

6. Distinguish between the characteristics of analog and digital circuits.

5 Knowledge of information and communication technologies

1. Analyze communication systems in terms of their components (i.e., source, encoder, transmitter, receiver, decoder, storage, retrieval, destination).

2. Analyze the tools, machines, equipment, and sources used in multiple forms of communications (e.g., human to human, machine to machine, human to machine, machine to human).

3. Apply the design process (e.g., storyboarding, wireframes, compositions) for various media.

4. Apply appropriate hardware and software application components for Web-based, audiovisual, and print media.

5. Select the most appropriate form of communication for a given task (e.g., traditional versus emerging technologies).

6. Classify the elements (e.g., color, shape, lines) and principles of design (e.g., balance, rhythm, emphasis).

7. Distinguish between the types, characteristics, components, and processes of prepress operations (e.g., generating and manipulating images, desktop publishing, typography).

8. Identify the characteristics and components of major printing processes (e.g., screen, offset, digital, sublimation).

6 Knowledge of transportation technologies

1. Analyze transportation systems, their subsystems (i.e., structural, propulsion, suspension, guidance, control, support), and their components.

2. Analyze transportation processes (e.g., receiving, holding, shipping) and systems (e.g., railways, pipelines).

3. Select appropriate transportation systems or components for land, sea, air, and space.

4. Analyze legal and ethical issues related to transportation (e.g., environmental regulations, governmental regulations, safety).

7 Knowledge of manufacturing technologies

1. Select appropriate tools, machinery, and equipment used for manufacturing.

2. Analyze types of manufacturing (e.g., job-lot, custom, mass production) and their characteristics.

3. Analyze legal and ethical issues related to manufacturing (e.g., environmental regulations, safety procedures, labeling requirements).

4. Select appropriate manufacturing management systems (e.g., just-in-time, continuous, lean, FMS).

5. Analyze factors affecting choices in manufacturing processes (e.g., rapid prototyping, CAM, CNC, CIM), including emerging technologies.

6. Select appropriate materials according to their properties and characteristics (e.g., strength, weight, costs, environmental impact).

8 Knowledge of construction technologies

1. Differentiate between characteristics of residential, commercial, civil, and industrial construction.

2. Analyze structural systems, their subsystems, and their components.

3. Select appropriate tools, equipment, materials, and processes in construction.

4. Identify the constraints (e.g., building codes, environmental sustainability, structural forces) that affect residential, commercial, civil, and industrial construction and renovation.

5. Evaluate factors involved in estimating, bidding, and scheduling.

9 Knowledge of laboratory management and safety

1. Evaluate the requirements for safety precautions and practices in technology education laboratories for staff and all students.

2. Identify student guidelines and processes for safe, functional use, storage, and maintenance of tools, machines, and equipment.

3. Identify student guidelines and processes for safe, functional use, storage, and disposal of materials and supplies.

4. Select precautions and practices in preventing and extinguishing different classes of fires.

5. Identify components of a comprehensive safety program for work and learning spaces (e.g., emergency procedures, OSHA regulations).

6. Select appropriate tools, machines, equipment, materials, and supplies for program objectives.

7. Determine the procedures for developing and maintaining an inventory of tools, machines, equipment, materials, supplies, and records.

10 Knowledge of technology education, professional development, and standards-based instruction and assessment

1. Identify the social, historical, and philosophical foundations of technology education and STEM programs.

2. Apply appropriate instructional and assessment strategies for developing learning activities, including project-based learning, that are aligned with standards (e.g., the Standards for Technological Literacy, Florida Curriculum Frameworks, Common Core State Standards).

3. Determine how technology education supports and fosters STEM learning through cross-curricular integration.

4. Apply instructional strategies and measurement instruments for developing and assessing the cognitive learning, psychomotor processes, and problem-solving skills (e.g., critical thinking, lateral problem solving) of diverse student populations.

5. Evaluate the relationships between technology education, career readiness, and career and technical student organizations.

6. Identify components of a lifelong plan for professional and technical development, including learning theories, pedagogical practices, assessment techniques, research findings, and changing technologies.

Visually Impaired
K–12

Section 44

Visually Impaired K–12

1 Knowledge of developmental growth patterns

1. Identify cultural, familial, and environmental factors that may influence individual development.

2. Identify potential differences in concept development of motor, social, emotional, play, leisure, recreational, vocational, daily living, and communicative skills of students with visual impairments.

3. Identify learning and behavioral characteristics of students with both visual impairments and other exceptionalities.

4. Identify developmental stages for acquisition of visual skills.

2 Knowledge of assessment, evaluation, and diagnostic procedures

1. Apply medical, psychoeducational, and other data obtained through the assessment process to the education of all students with visual impairments.

2. Identify formal and informal assessment procedures appropriate for students with visual impairments at all developmental levels.

3. Identify methods and materials for assessing skills in both core and expanded core curricula.

4. Identify methods and materials used to evaluate the functional vision of students.

5. Identify methods and materials used to select learning media appropriate for students with visual impairments.

6. Interpret assessment results to make recommendations to individuals involved in students' education.

3 Knowledge of the expanded core curriculum

1. Identify the specialized curricular needs of students with visual impairments at all developmental levels.

2. Identify materials and instructional activities to facilitate concept development for students with visual impairments.

3. Identify written communication skills unique to students with visual impairments.

4. Identify social-emotional skills unique to students with visual impairments.

5. Identify skills and behaviors necessary for positive social interactions by students with visual impairments.

6. Identify independent living skills unique to students with visual impairments.

7. Identify basic orientation and mobility skills and concepts.

8. Identify prevocational and career education skills for students with visual impairments.

9. Identify visual efficiency skills needed by students with visual impairments.

10. Identify play, leisure, and recreational activities and appropriate adaptations for students with visual impairments.

11. Identify technology skills unique to students with visual impairments.

4 Knowledge of specialized assistive devices and technology

1. Identify appropriate assistive devices and technology relevant to students with visual impairments.

2. Identify the appropriate application of assistive devices and technology.

3. Identify optical and nonoptical devices used by students with visual impairments.

5 Knowledge of instructional strategies and accommodations

1. Identify instructional strategies for developing compensatory skills (e.g., listening, communicating, organizing, studying, using an abacus, braille reading and writing).

2. Identify instructional strategies for reinforcing basic orientation and mobility skills and concepts.

3. Identify instructional strategies for developing social interaction concepts (e.g., pragmatics, human sexuality, visual impairment, play) unique to students with visual impairments.

4. Identify instructional strategies for developing independent living skills (e.g., working with finances, cooking, personal hygiene, dressing) unique to students with visual impairments.

5. Identify instructional strategies for developing recreation and leisure skills unique to students with visual impairments.

6. Identify instructional strategies for developing career education skills and concepts unique to students with visual impairments.

7. Identify instructional strategies for using assistive devices and technology unique to students with visual impairments.

8. Identify instructional strategies for teaching visual efficiency and use of low-vision devices.

9. Identify instructional strategies for developing self-determination skills unique to students with visual impairments.

10. Identify instructional strategies for facilitating transition at all levels for students with visual impairments.

11. Identify instructional strategies for developing motor skills unique to students with visual impairments.

12. Identify instructional strategies for teaching tactile learning (e.g., tactile perception, object exploration, graphic interpretation).

13. Identify instructional strategies for teaching concept development unique to students with visual impairments.

14. Identify techniques for making accommodations across environments (e.g., school, home, community) for students with visual impairments.

15. Identify instructional strategies for developing the use of other senses for students with visual impairments.

6 Knowledge of collaborative approaches

1. Identify additional personnel, resources, and services available for students with visual impairments.

2. Interpret strategies for collaborating with and providing support to a variety of personnel in the school, home, and community.

3. Identify methods for instructing others in the use of specialized materials and media for students with visual impairments.

4. Identify strategies for working with paraprofessionals who provide services or specialized materials to students with visual impairments.

7 Knowledge of philosophical, historical, and legal foundations

1. Identify legislation that affects students with visual impairments.

2. Identify various societal and cultural attitudes and value systems that affect students with visual impairments and their families.

3. Identify diverse philosophical perspectives related to the implementation of education for the heterogeneous population of students with visual impairments.

4. Identify the roles and responsibilities of teachers of students with visual impairments.

5. Identify historical foundations in the provision of services to students with visual impairments.

6. Identify educational definitions, criteria for eligibility, and placement options for students with visual impairments.

7. Identify strategies for determining service delivery models and the amount of contact time for students with visual impairments.

8 Knowledge of medical aspects of visual impairments

1. Identify behaviors that may indicate a visual impairment.

2. Identify the characteristics and educational implications of specific visual impairments.

3. Interpret eye medical reports and other vision-related diagnostic information.

4. Identify the structures and functions of the visual system.

5. Identify components of various types of eye medical evaluations.

9 Knowledge of exceptional student education

1. Identify characteristics of students with exceptional learning needs.

2. Identify educational implications of additional exceptionalities.

3. Identify methods for monitoring progress of students with exceptional learning needs.

4. Identify the participants required by and the components of an IEP and an IFSP.

5. Identify appropriate, measurable goals and objectives for an IEP.

10 Knowledge of specialized learning and literacy media

1. Apply knowledge of the literary braille code.

2. Apply knowledge of the Nemeth code.

3. Identify methods of producing tactile graphics.

4. Apply knowledge of the abacus.

5. Identify visual, tactile, and auditory literacy tools.

6. Identify sources for the production, purchase, or loan of specialized instructional materials and equipment, including assistive technology.