STATE BOARD FOR EDUCATOR CERTIFICATION/TEXAS EDUCATION AGENCY
TEXAS EDUCATOR CERTIFICATION
TExES/ExCET TOPT TExMaT TASC/TASC-ASL

TExES | Texas Examinations of Educator Standards

Preparation Manual

111 Generalist 4–8

PREFACE

The State Board for Educator Certification (SBEC) has developed new standards for Texas educators that delineate what the beginning educator should know and be able to do. These standards, which are based on the state-required curriculum for students—the Texas Essential Knowledge and Skills (TEKS)—form the basis for new Texas Examinations of Educator Standards (TExES). This initiative will impact all areas of Texas education—from the more than 100 approved Texas educator preparation programs to the more than 7,000 Texas school campuses. This standards-based system reflects SBEC's commitment to help align Texas education from kindergarten through college. SBEC's role in this K–16 initiative will ensure that newly certified Texas teachers have the essential knowledge and skills to teach the TEKS to the state's public school students.

This manual is designed to help examinees prepare for the new TExES test in this field. Its purpose is to familiarize examinees with the competencies to be tested, test item formats, and pertinent study resources. Educator preparation program staff may also find this information useful as they help examinees prepare for careers as Texas educators.

More information about the new TExES tests and educator standards can be found at http://www.sbec.state.tx.us.

KEY FEATURES OF THE MANUAL

List of competencies that will be tested

Strategies for answering test questions

Sample test items and answer key

If you have questions after reading this preparation manual, please contact the State Board for Educator Certification, Office of Accountability at 1-512-238-3200.

TABLE OF CONTENTS

SECTION I	**THE NEW TExES TESTS FOR TEXAS TEACHERS**	1
	Development of the New TExES Tests	
	Taking the TExES Test and Receiving Scores	
	Educator Standards	
SECTION II	**USING THE TEST FRAMEWORK**	3
	Organization of the TExES Test Framework	
	Studying for the TExES Test	
	Test Framework (Including Weights of Each Domain)	
SECTION III	**APPROACHES TO ANSWERING MULTIPLE-CHOICE ITEMS**	43
	Item Formats	
	–Single Items	
	–Clustered Items	
SECTION IV	**SAMPLE ITEMS**	61
	Sample Items	
	Answer Key	
SECTION V	**PREPARATION RESOURCES**	223
	Journals	
	Other Sources	

SECTION I

THE NEW TExES TESTS FOR TEXAS TEACHERS

As required by the Texas Education Code §21.048, successful performance on educator certification examinations is required for the issuance of a Texas educator certificate. Each TExES test is a criterion-referenced examination designed to measure the knowledge and skills delineated in the corresponding TExES test framework. Each test framework is based on standards that were developed by Texas educators and other education stakeholders.

Each newly developed TExES test is designed to measure the requisite knowledge and skills that an entry-level educator in this field in Texas public schools must possess. The tests include both individual, or stand-alone, test items (questions) and items that are arranged in clustered sets based on real-world situations faced by educators.

Development of the New TExES Tests

Committees of Texas educators and interested citizens guide the development of the new TExES tests by participating in each stage of the test development process. These working committees are comprised of Texas educators from public and charter schools, faculty from educator preparation programs, education service center staff, representatives from professional educator organizations, content experts, the business community, and parents. The committees are balanced in terms of position, affiliation, years of experience, ethnicity, gender, and geographical location. The committee membership is rotated during the development process so that numerous Texas stakeholders may be actively involved. The steps in the process to develop the TExES tests are described below.

1. **Develop Standards.** Committees are convened to recommend what the beginning educator should know and be able to do. To ensure vertical alignment of standards across the range of instructional levels, individuals with expertise in early childhood, elementary, middle, or high school meet jointly to articulate the critical knowledge and skills for a particular content area. Participants begin their dialogue using a "clean slate" approach with the TEKS as the focal point. Draft standards are written to incorporate the TEKS and to expand upon that content to ensure that all beginning educators possess the appropriate level of both knowledge and skills to instruct students successfully.
2. **Review Standards.** Committees review and revise the draft standards. The revised draft standards are then placed on the SBEC Web site for public review and comment. These comments are used to prepare a final draft of the standards that will be presented to the SBEC Board for discussion, the State Board of Education (SBOE) for review and comment, and the SBEC Board for approval. Standards not based specifically on the TEKS, such as those for librarians and counselors, are proposed as rule by the SBEC Board; sent to the SBOE for its 90-day review; and, if not rejected by the SBOE, adopted by the SBEC Board.
3. **Develop Test Frameworks.** Committees review and revise draft test frameworks that are based on the standards. These frameworks outline the specific competencies to be measured on the new TExES tests. The TExES competencies represent the critical components of the standards that can be measured with either a pencil-paper-based or computer-based examination, as appropriate. Draft frameworks are not finalized until after the standards are approved and the job analysis/content validation survey (see #4) is complete.

4. **Conduct Job Analysis/Content Validation Surveys.** A representative sample of Texas educators who practice in or prepare individuals for each of the fields for which an educator certificate has been proposed are surveyed to determine the relative job importance of each competency outlined in the test framework for that content area. Frameworks are revised as needed following an analysis of the survey responses.
5. **Develop and Review New Test Items.** The test contractor develops draft items that are designed to measure the competencies described in the test framework. Committees review the newly developed test items that have been written to reflect the competencies in the new test frameworks and may accept, revise, or reject test items. Committee members scrutinize the draft items for appropriateness of content and difficulty; clarity; match to the competencies; and potential ethnic, gender, and regional bias.
6. **Conduct Pilot Test of New Test Items.** All of the newly developed test items that have been deemed acceptable by the item review committees are then administered to an appropriate sample of Texas educators.
7. **Review Pilot Test Data.** Committees review all the statistical data gathered from the pilot tests to ensure that the test items are valid, reliable, and free from bias.
8. **Administer New TExES Tests.** New TExES tests are constructed to reflect the competencies, and the tests are administered to candidates for certification.
9. **Set Passing Standard.** A Standard Setting Committee convenes to review performance data from the initial administration of each new TExES test and to recommend a final passing standard for that test. SBEC considers this recommendation as it establishes a passing score on the test.

Taking the TExES Test and Receiving Scores

Please refer to the current TExES registration bulletin for information on test dates, sites, fees, registration procedures, and policies.

You will be mailed a score report approximately four weeks after each test you take. The report will indicate whether you have passed the test and will include:

- a total test scaled score that is reported on a scale of 100–300. The minimum passing score is a scaled score of 240. This score represents the minimum level of competency required to be an entry-level educator in this field in Texas public schools.
- your performance in the major content domains of the test and in the specific content competencies of the test.
  - This information may be useful in identifying strengths and weaknesses in your content preparation and can be used for further study or for preparing to retake the test.
- information to help you interpret your results.

You will not receive a score report if you are absent or choose to cancel your score.

Additionally, unofficial score report information will be posted on the Internet on the score report mailing date of each test administration. Information about receiving unofficial scores via the Internet, the score scale, and other score report topics may be found on the SBEC Web site at www.sbec.state.tx.us.

Educator Standards

Complete, approved educator standards are posted on the SBEC Web site at www.sbec.state.tx.us.

SECTION II

USING THE TEST FRAMEWORK

The Texas Examination of Educator Standards (TExES) test measures the content knowledge required of an entry-level educator in this field in Texas public schools. This manual is designed to guide your preparation by helping you become familiar with the material to be covered on the test.

When preparing for this test, you should focus on the competencies and descriptive statements, which delineate the content that is eligible for testing. A portion of the content is represented in the sample items that are included in this manual. These test questions represent only a *sample* of items. Thus, your test preparation should focus on the complete content eligible for testing, as specified in the competencies and descriptive statements.

NOTE: In preparing for the Generalist 4–8 test, you should be familiar with the entire framework, which consists of the following four areas—English Language Arts and Reading, Mathematics, Social Studies, and Science. The Generalist 4–8 test will consist of approximately 31% English Language Arts and Reading items, 23% Mathematics items, 23% Social Studies items, and 23% Science items.

Organization of the TExES Test Framework

The test framework is based on the educator standards for this field.

The content covered by this test is organized into broad areas of content called domains. Each domain covers one or more of the educator standards for this field. Within each domain, the content is further defined by a set of competencies. Each competency is composed of two major parts:

1. the *competency statement,* which broadly defines what an entry-level educator in this field in Texas public schools should know and be able to do, and
2. the *descriptive statements,* which describe in greater detail the knowledge and skills eligible for testing.

The educator standards being assessed within each domain are listed for reference at the beginning of the test framework, which begins on page 6. These are then followed by a complete set of the framework's competencies and descriptive statements.

An example of a competency and its accompanying descriptive statements is provided on the next page.

Sample Competency and Descriptive Statements

Generalist 4–8

Competency:

The teacher understands the importance of oral language, knows the developmental processes of oral language, and provides a variety of instructional opportunities for students to develop listening and speaking skills.

Descriptive Statements:

The beginning teacher:

- Knows basic linguistic concepts (e.g., phonemes, segmentation) and developmental stages in acquiring oral language, including stages in phonology, semantics, syntax, and pragmatics, and recognizes that individual variations occur.
- Knows characteristics and uses of informal and formal oral language assessments and uses multiple, ongoing assessments to monitor and evaluate students' oral language skills.
- Provides language instruction that acknowledges students' current oral language skills and that builds on these skills to increase students' oral language proficiency.
- Plans, implements, and adapts instruction that is based on informal and formal assessment of students' progress in oral language development and that addresses the needs, strengths, and interests of individual students, including English Language Learners.
- Recognizes when oral language delays or differences warrant in-depth evaluation and additional help or intervention.
- Knows how to provide explicit, systematic oral language instruction and supports students' learning and use of oral language through meaningful and purposeful activities implemented one-to-one and in a group.
- Selects and uses instructional materials and strategies that promote students' oral language development; that respond to students' individual strengths, needs, and interests; that reflect cultural diversity; and that build on students' cultural, linguistic, and home backgrounds to enhance their oral language development.
- Understands relationships between the development of oral language and the development of reading and provides instruction that interrelates oral and written language to promote students' reading proficiency and learning (e.g., preview-review, discussion, questioning).
- Knows similarities and differences between oral and written language and how to promote students' awareness of these similarities and differences.
- Selects and uses instructional strategies, materials, activities, and models to strengthen students' oral vocabulary and narrative skills in spoken language and teaches students to connect spoken and printed language.

- Selects and uses instructional strategies, materials, activities, and models to teach students skills for speaking to different audiences for various purposes and for adapting spoken language for various audiences, purposes, and occasions.
- Selects and uses instructional strategies, materials, activities, and models to teach students listening skills for various purposes (e.g., critical listening to evaluate a speaker's message, listening to enjoy and appreciate spoken language) and provides students with opportunities to engage in active, purposeful listening in a variety of contexts.
- Selects and uses instructional strategies, materials, activities, and models to teach students to evaluate the content and effectiveness of their own spoken messages and the messages of others.
- Knows how to promote students' development of oral communication skills through the use of technology.

Studying for the TExES Test

The following steps may be helpful in preparing for the TExES test.

1. Identify the information the test will cover by reading through the test competencies (see the following pages in this section). *Within each domain* of the Generalist 4–8 TExES test, each competency will receive approximately equal coverage.

2. Read each competency with its descriptive statements in order to get a more specific idea of the knowledge you will be required to demonstrate on the test. When you have become familiar with the competencies, consider those competencies about which you feel you know the most and the least. You may wish to use this review of the competencies to set priorities for your study time.

3. Review Section V for possible resources to consult. Also, compile key materials from your preparation coursework that are aligned with the competencies.

4. Study this manual for approaches to taking the TExES test.

5. When using resources, concentrate on the key ideas and important concepts that are discussed in the competencies and descriptive statements.

NOTE: This preparation manual is the only TExES test study material endorsed by SBEC for this field. Other preparation materials may not accurately reflect the content of the test or the policies and procedures of the TExES program.

TEST FRAMEWORK FOR FIELD 111: GENERALIST 4–8

Domain I **English Language Arts and Reading (approximately 31% of the test)**

Standards Assessed:

English Language Arts and Reading 4–8 Standards I–VIII:
Oral Language: Teachers of students in grades 4–8 understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for students to develop listening and speaking skills.

Foundations of Reading: Teachers of students in grades 4–8 understand the foundations of reading and early literacy development.

Word Analysis Skills and Reading Fluency: Teachers understand the importance of word analysis skills (including decoding, blending, structural analysis, sight word vocabulary) and reading fluency and provide many opportunities for students to practice and improve their word analysis skills and reading fluency.

Reading Comprehension: Teachers understand the importance of reading for understanding, know the components of comprehension, and teach students strategies for improving their comprehension.

Written Language: Teachers understand that writing is a developmental process and provide instruction that helps students develop competence in written communication.

Study and Inquiry Skills: Teachers understand the importance of study and inquiry skills as tools for learning and promote students' development in applying study and inquiry skills.

Viewing and Representing: Teachers understand how to interpret, analyze, evaluate, and produce visual images and messages in various media and to provide students with opportunities to develop skills in this area.

Assessment of Developing Literacy: Teachers understand the basic principles of assessment and use a variety of literacy assessment practices to plan and implement instruction.

Domain II **Mathematics (approximately 23% of the test)**

Standards Assessed:

Mathematics Standards I–VIII:
Number Concepts: The mathematics teacher understands and uses numbers, number systems and their structure, operations and algorithms, quantitative reasoning, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.

Patterns and Algebra: The mathematics teacher understands and uses patterns, relations, functions, algebraic reasoning, analysis, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.

Geometry and Measurement: The mathematics teacher understands and uses geometry, spatial reasoning, measurement concepts and principles, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.

Probability and Statistics: The mathematics teacher understands and uses probability and statistics, their applications, and technology appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in order to prepare students to use mathematics.

Mathematical Processes: The mathematics teacher understands and uses mathematical processes to reason mathematically, to solve mathematical problems, to make mathematical connections within and outside of mathematics, and to communicate mathematically.

Mathematical Perspectives: The mathematics teacher understands the historical development of mathematical ideas, the interrelationship between society and mathematics, the structure of mathematics, and the evolving nature of mathematics and mathematical knowledge.

Mathematical Learning and Instruction: The mathematics teacher understands how children learn and develop mathematical skills, procedures, and concepts, knows typical errors students make, and uses this knowledge to plan, organize, and implement instruction; to meet curriculum goals; and to teach all students to understand and use mathematics.

Mathematical Assessment: The mathematics teacher understands assessment and uses a variety of formal and informal assessment techniques appropriate to the learner on an ongoing basis to monitor and guide instruction and to evaluate and report student progress.

Domain III Social Studies (approximately 23% of the test)

Standards Assessed:

Social Studies Standards I–X:
The social studies teacher has a comprehensive knowledge of the social sciences and recognizes the value of the social sciences.

The social studies teacher effectively integrates the various social science disciplines.

The social studies teacher uses knowledge and skills of social studies, as defined by the Texas Essential Knowledge and Skills (TEKS), to plan and implement effective curriculum, instruction, assessment, and evaluation.

History: The social studies teacher applies knowledge of significant historical events and developments, as well as of multiple historical interpretations and ideas, in order to facilitate student understanding of relationships between the past, the present, and the future.

Geography: The social studies teacher applies knowledge of people, places, and environments to facilitate students' understanding of geographic relationships in Texas, the United States, and the world.

Economics: The social studies teacher knows how people organize economic systems to produce, distribute, and consume goods and services, and uses this knowledge to enable students to understand economic systems and make informed economic decisions.

Government: The social studies teacher knows how governments and structures of power function, provide order, and allocate resources, and uses this knowledge to facilitate student understanding of how individuals and groups achieve their goals through political systems.

Citizenship: The social studies teacher understands citizenship in the United States and other societies, and uses this knowledge to prepare students to participate in our society through an understanding of democratic principles and citizenship practices.

Culture: The social studies teacher understands cultures and how they develop and adapt, and uses this knowledge to enable students to appreciate and respect cultural diversity in Texas, the United States, and the world.

Science, Technology, and Society: The social studies teacher understands developments in science and technology, and uses this knowledge to facilitate student understanding of the social and environmental consequences of scientific discovery and technological innovation.

Domain IV Science (approximately 23% of the test)

Standards Assessed:

Science Standards I–XI:

The science teacher manages classroom, field, and laboratory activities to ensure the safety of all students and the ethical care and treatment of organisms and specimens.

The science teacher understands the correct use of tools, materials, equipment, and technologies.

The science teacher understands the process of scientific inquiry and its role in science instruction.

The science teacher has theoretical and practical knowledge about teaching science and about how students learn science.

The science teacher knows the varied and appropriate assessments and assessment practices to monitor science learning.

The science teacher understands the history and nature of science.

The science teacher understands how science affects the daily lives of students and how science interacts with and influences personal and societal decisions.

The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in physical science.

The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in life science.

The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) in Earth and space science.

The science teacher knows unifying concepts and processes that are common to all sciences.

DOMAIN I—ENGLISH LANGUAGE ARTS AND READING

Competency 001 (Oral Language)

The teacher understands the importance of oral language, knows the developmental processes of oral language, and provides a variety of instructional opportunities for students to develop listening and speaking skills.

The beginning teacher:

- Knows basic linguistic concepts (e.g., phonemes, segmentation) and developmental stages in acquiring oral language, including stages in phonology, semantics, syntax, and pragmatics, and recognizes that individual variations occur.
- Knows characteristics and uses of informal and formal oral language assessments and uses multiple, ongoing assessments to monitor and evaluate students' oral language skills.
- Provides language instruction that acknowledges students' current oral language skills and that builds on these skills to increase students' oral language proficiency.
- Plans, implements, and adapts instruction that is based on informal and formal assessment of students' progress in oral language development and that addresses the needs, strengths, and interests of individual students, including English Language Learners.
- Recognizes when oral language delays or differences warrant in-depth evaluation and additional help or intervention.
- Knows how to provide explicit, systematic oral language instruction and supports students' learning and use of oral language through meaningful and purposeful activities implemented one-to-one and in a group.
- Selects and uses instructional materials and strategies that promote students' oral language development; that respond to students' individual strengths, needs, and interests; that reflect cultural diversity; and that build on students' cultural, linguistic, and home backgrounds to enhance their oral language development.
- Understands relationships between the development of oral language and the development of reading and provides instruction that interrelates oral and written language to promote students' reading proficiency and learning (e.g., preview-review, discussion, questioning).
- Knows similarities and differences between oral and written language and how to promote students' awareness of these similarities and differences.
- Selects and uses instructional strategies, materials, activities, and models to strengthen students' oral vocabulary and narrative skills in spoken language and teaches students to connect spoken and printed language.
- Selects and uses instructional strategies, materials, activities, and models to teach students skills for speaking to different audiences for various purposes and for adapting spoken language for various audiences, purposes, and occasions.

- Selects and uses instructional strategies, materials, activities, and models to teach students listening skills for various purposes (e.g., critical listening to evaluate a speaker's message, listening to enjoy and appreciate spoken language) and provides students with opportunities to engage in active, purposeful listening in a variety of contexts.
- Selects and uses instructional strategies, materials, activities, and models to teach students to evaluate the content and effectiveness of their own spoken messages and the messages of others.
- Knows how to promote students' development of oral communication skills through the use of technology.

Competency 002 (Early Literacy Development)
The teacher understands the foundations of early literacy development.

The beginning teacher:

- Understands the significance of phonological and phonemic awareness for reading and typical patterns in the development of phonological and phonemic awareness and recognizes that individual variations occur.
- Understands elements of the alphabetic principle (e.g., letter names, graphophonemic knowledge, the relationship of the letters in printed words to spoken language) and typical patterns of students' alphabetic skills development, and recognizes that individual variations occur.
- Understands that comprehension is an integral part of early literacy.
- Understands that not all written languages are alphabetic and that many alphabetic languages are more phonetically regular than English and knows the significance of this for students' literacy development in English.
- Understands that literacy acquisition generally develops in a predictable pattern from prereading (emergent literacy) to conventional literacy and recognizes that individual variations occur.
- Understands that literacy development occurs in multiple contexts through reading, writing, and the use of oral language.
- Knows characteristics of informal and formal literacy assessments (e.g., screening devices, criterion-referenced state tests, curriculum-based reading assessments, informal reading inventories, norm-referenced tests).
- Knows how to select, administer, and use results from informal and formal assessments of literacy acquisition.
- Knows how to use ongoing assessment to determine when a student needs additional help or intervention to bring the student's performance to grade level, based on state content and performance standards for reading in the Texas Essential Knowledge and Skills (TEKS).
- Analyzes students' errors in reading and responds to individual students' needs by providing focused instruction to promote literacy acquisition.
- Selects and uses instructional materials that build on the current language skills of individual students, including English Language Learners, to promote development from emergent literacy to conventional literacy.

Competency 003 (Word Identification Skills and Reading Fluency)

The teacher understands the importance of word identification skills (including decoding, blending, structural analysis, and sight word vocabulary) and reading fluency and provides many opportunities for students to practice and improve word identification skills and reading fluency.

The beginning teacher:

- Understands that many students develop word analysis skills and reading fluency in a predictable sequence and recognizes that individual variations occur.
- Understands differences in students' development of word identification skills and reading fluency and knows instructional practices for meeting students' individual needs in these areas.
- Understands the connection of word identification skills and reading fluency to reading comprehension.
- Knows the continuum of word analysis skills in the statewide curriculum and grade-level expectations for attainment of these skills.
- Knows how students develop fluency in oral and silent reading.
- Understands that fluency involves rate, accuracy, and intonation and knows the norms for reading fluency that have been established in the Texas Essential Knowledge and Skills (TEKS) for various age and grade levels.
- Knows factors affecting students' word identification skills and reading fluency (e.g., home language, vocabulary development, learning disability).
- Understands important phonetic elements and conventions of the English language.
- Knows a variety of informal and formal procedures for assessing students' word identification skills and reading fluency on an ongoing basis and uses appropriate assessments to monitor students' performance in these areas and to plan instruction for individual students, including English Language Learners.
- Analyzes students' errors in word analysis and uses the results of this analysis to inform future instruction.
- Applies norms and expectations for word identification skills and reading fluency, as specified in the Texas Essential Knowledge and Skills (TEKS), to evaluate students' reading performance.
- Knows how to use ongoing assessment of word identification skills and reading fluency to determine when a student needs additional help or intervention to bring the student's performance to grade level, based on state content and performance standards for reading in the Texas Essential Knowledge and Skills (TEKS).
- Knows strategies for decoding increasingly complex words, including using the alphabetic principle, structural cues (e.g., prefixes, suffixes, roots), and syllables, and for using syntax and semantics to support word identification and confirm word meaning.
- Selects and uses instructional strategies, materials, activities, and models to teach students to recognize high-frequency irregular words, to promote students' ability to decode increasingly complex words, and to enhance word identification skills for students reading at different levels.

- Selects and uses appropriate instructional strategies, materials, activities, and models to improve reading fluency for students reading at different levels (e.g., having students read independent-level texts, engage in repeated reading activities, use self-correction).

Competency 004 (Reading Comprehension and Assessment)

The teacher understands the importance of reading for understanding, knows components and processes of reading comprehension, and teaches students strategies for improving their comprehension.

The beginning teacher:

- Understands reading comprehension as an active process of constructing meaning.
- Understands the continuum of reading comprehension skills in the statewide curriculum and grade-level expectations for these skills.
- Understands factors affecting students' reading comprehension (e.g., oral language development, word analysis skills, prior knowledge, language background, previous reading experiences, fluency, vocabulary development, ability to monitor understanding, characteristics of specific texts).
- Knows characteristics of informal and formal reading comprehension assessments (e.g., criterion-referenced state tests, curriculum-based reading assessments, informal reading inventories, norm-referenced tests).
- Selects and uses appropriate informal and formal assessments to monitor and evaluate students' reading comprehension.
- Analyzes student errors and provides focused instruction in reading comprehension based on the strengths and needs of individual students, including English Language Learners.
- Knows how to use ongoing assessment to determine when a student needs additional help or intervention to bring the student's performance to grade level, based on state content and performance standards for reading in the Texas Essential Knowledge and Skills (TEKS).
- Understands metacognitive skills, including self-evaluation and self-monitoring skills, and teaches students to use these skills to enhance their own reading comprehension.
- Knows how to determine students' independent, instructional, and frustration reading levels and uses this information to select and adapt reading materials for individual students, as well as to guide their selection of independent reading materials.
- Uses various instructional strategies to enhance students' reading comprehension (e.g., linking text content to students' lives and prior knowledge, connecting related ideas across different texts, engaging students in guided and independent reading, guiding students to generate questions and apply knowledge of text topics).
- Knows how to provide students with direct, explicit instruction in the use of strategies to improve their reading comprehension (e.g., previewing, self-monitoring, visualizing, retelling).
- Uses various communication modes (e.g., written, oral) to promote students' reading comprehension.

- Understands levels of reading comprehension and how to model and teach literal, inferential, and evaluative comprehension skills.
- Knows how to provide instruction to help students increase their reading vocabulary.
- Understands reading comprehension issues for students with different needs and knows effective reading strategies for those students.
- Knows the difference between guided and independent practice in reading and provides students with frequent opportunities for both.
- Knows how to promote students' development of an extensive reading and writing vocabulary by providing them with many opportunities to read and write.

Competency 005 (Reading Applications)

The teacher understands reading skills and strategies appropriate for various types of texts and contexts and teaches students to apply these skills and strategies to enhance their reading proficiency.

The beginning teacher:

- Understands skills and strategies for understanding, interpreting, and evaluating different types of written materials, including narratives, expository texts, technical writing, and content-area textbooks.
- Understands different purposes for reading and related reading strategies.
- Knows and teaches strategies to facilitate comprehension of different types of text before, during, and after reading (e.g., previewing, making predictions, questioning, self-monitoring, rereading, mapping, using reading journals, discussing texts).
- Provides instruction in comprehension skills that support students' transition from "learning to read" to "reading to learn" (e.g., matching comprehension strategies to different types of text and different purposes for reading).
- Understands the importance of reading as a skill in all content areas.
- Understands the value of using dictionaries, glossaries, and other sources to determine the meanings, pronunciations, and derivations of unfamiliar words and teaches students to use these sources.
- Knows how to teach students to interpret information presented in various formats (e.g., maps, tables, graphs) and how to locate, retrieve, and retain information from a range of texts and technologies.
- Knows how to help students comprehend abstract content and ideas in written materials (e.g., by using manipulatives, examples, diagrams).
- Knows literary genres (e.g., historical fiction, poetry, myths, fables) and their characteristics.
- Recognizes a wide range of literature and other texts appropriate for students.
- Provides multiple opportunities for students to listen and respond to a wide variety of children's and young people's literature, both fiction and nonfiction, and to recognize characteristics of various types of narrative and expository texts.

- Understands and promotes students' development of literary response and analysis, including teaching students elements of literary analysis (e.g., story elements, features of different literary genres) and providing students with opportunities to apply comprehension skills to literature.
- Selects and uses a variety of materials to teach students about authors and about different purposes for writing.
- Provides students with opportunities to engage in silent reading and extended reading of a wide range of materials, including expository texts and various literary genres.
- Engages students in varied reading experiences and encourages students to interact with others about their reading.
- Uses strategies to encourage reading for pleasure and lifelong learning.
- Knows how to teach students strategies for selecting their own books for independent reading.
- Uses technology to promote students' literacy and teaches students to use technology to access a wide range of appropriate narrative and expository texts.

Competency 006 (Written Language—Writing Conventions)

The teacher understands the conventions of writing in English and provides instruction that helps students develop proficiency in applying writing conventions.

The beginning teacher:

- Knows predictable stages in the development of writing conventions (including the physical and cognitive processes involved in letter formation, word writing, sentence construction, spelling, punctuation, and grammatical expression) and recognizes that individual variations occur.
- Knows and applies appropriate instructional strategies and sequences to teach writing conventions and their applications to all students, including English Language Learners.
- Knows informal and formal procedures for assessing students' use of writing conventions and uses multiple, ongoing assessments to monitor and evaluate students' development in this area.
- Uses ongoing assessment of writing conventions to determine when a student needs additional help or intervention to bring the student's performance to grade level, based on state content and performance standards for writing in the Texas Essential Knowledge and Skills (TEKS).
- Analyzes students' errors in applying writing conventions and uses the results of this analysis as a basis for future instruction.
- Knows writing conventions and appropriate grammar and usage and provides students with direct instruction and guided practice in these areas.
- Understands the contribution of conventional spelling toward success in reading and writing.

- Understands stages of spelling development (prephonetic, phonetic, transitional, and conventional) and how and when to support students' development from one stage to the next.
- Provides systematic spelling instruction and gives students opportunities to use and develop spelling skills in the context of meaningful written expression.

Competency 007 (Written Language—Composition)

The teacher understands that writing to communicate is a developmental process and provides instruction that promotes students' competence in written communication.

The beginning teacher:

- Knows predictable stages in the development of written language and recognizes that individual variations occur.
- Promotes student recognition of the practical uses of writing, creates an environment in which students are motivated to express ideas in writing, and models writing as an enjoyable activity and a tool for lifelong learning.
- Knows and applies appropriate instructional strategies and sequences to develop students' writing skills.
- Knows characteristics and uses of informal and formal written language assessments, and uses multiple, ongoing assessments to monitor and evaluate students' writing development.
- Uses assessment results to plan focused instruction to address the writing strengths, needs, and interests of all individuals and groups, including English Language Learners.
- Uses ongoing assessment of written language to determine when a student needs additional help or intervention to bring the student's performance to grade level, based on state content and performance standards for writing in the Texas Essential Knowledge and Skills (TEKS).
- Understands the use of self-assessment in writing and provides opportunities for students to self-assess their writings (e.g., for clarity, interest to audience, comprehensiveness) and their development as writers.
- Understands differences between first-draft writing and writing for publication, and provides instruction in various stages of writing, including prewriting, drafting, editing, and revising.
- Understands the development of writing in relation to the other language arts, and uses instructional strategies that connect these various aspects of language.
- Understands similarities and differences between language (e.g., syntax, vocabulary) used in spoken and written English and helps students use knowledge of these similarities and differences to enhance their own writing.
- Understands writing for a variety of audiences, purposes, and settings, and provides students with opportunities to write for various audiences, purposes, and settings.

- Knows how to write using voices and styles appropriate for different audiences and purposes, and provides students with opportunities to write using various voices and styles.
- Understands the benefits of technology for teaching writing and writing for publication, and provides instruction in the use of technology to facilitate written communication.

Competency 008 (Viewing and Representing)

The teacher understands skills for interpreting, analyzing, evaluating, and producing visual images and messages in various media and provides students with opportunities to develop skills in this area.

The beginning teacher:

- Knows grade-level expectations in the Texas Essential Knowledge and Skills (TEKS) and procedures for assessing students' skills in interpreting, analyzing, evaluating, and producing visual images, messages, and meanings.
- Uses ongoing assessment and knowledge of grade-level expectations in the Texas Essential Knowledge and Skills (TEKS) to identify students' needs regarding the interpretation, analysis, evaluation, and production of visual images, messages, and meanings and to plan instruction.
- Understands characteristics and functions of different types of media (e.g., film, print) and knows how different types of media influence and inform.
- Compares and contrasts print, visual, and electronic media (e.g., films and written stories).
- Evaluates how visual image makers (e.g., illustrators, documentary filmmakers, political cartoonists, news photographers) represent messages and meanings and provides students with varied opportunities to interpret and evaluate visual images in various media.
- Knows how to teach students to analyze visual image makers' choices (e.g., style, elements, media) and evaluate how these choices help to represent or extend meaning.
- Provides students with opportunities to interpret events and ideas based on information from maps, charts, graphics, video segments, and technology presentations and to use media to compare ideas and points of view.
- Knows steps and procedures for producing visual images, messages, and meanings to communicate with others.
- Teaches students how to select, organize, and produce visuals to complement and extend meanings.
- Provides students with opportunities to use technology to produce various types of communications (e.g., class newspapers, multimedia reports, video reports) and helps students analyze how language, medium, and presentation contribute to the message.

Competency 009 (Study and Inquiry Skills)

The teacher understands the importance of study and inquiry skills as tools for learning in the content areas and promotes students' development in applying study and inquiry skills.

The beginning teacher:

- Understands study and inquiry skills (e.g., using text organizers; taking notes; outlining; drawing conclusions; applying test-taking strategies; previewing; setting purposes for reading; locating, organizing, evaluating, and communicating information; summarizing information; using multiple sources of information; interpreting and using graphic sources of information) and knows the significance of these skills for student learning and achievement.
- Knows grade-level expectations for study and inquiry skills in the Texas Essential Knowledge and Skills (TEKS) and procedures for assessing students' development and use of these skills.
- Knows and applies instructional practices that promote the acquisition and use of study and inquiry skills across the curriculum by all students, including English Language Learners.
- Knows how to provide students with varied and meaningful opportunities to learn and apply study and inquiry skills to enhance their achievement across the curriculum.
- Uses ongoing assessment and knowledge of grade-level expectations in the Texas Essential Knowledge and Skills (TEKS) to identify students' needs regarding study and inquiry skills, to determine when a student requires additional help or intervention, and to plan instruction.
- Responds to students' needs by providing direct, explicit instruction to promote the acquisition and use of study and inquiry skills.

DOMAIN II—MATHEMATICS

Competency 010

The teacher understands the structure of number systems, the development of a sense of quantity, and the relationship between quantity and symbolic representations.

The beginning teacher:

- Analyzes the structure of numeration systems and the roles of place value and zero in the base ten system.
- Understands the relative magnitude of whole numbers, integers, rational numbers, and real numbers.
- Demonstrates an understanding of a variety of models for representing numbers (e.g., fraction strips, diagrams, patterns, shaded regions, number lines).
- Demonstrates an understanding of equivalency among different representations of rational numbers.
- Selects appropriate representations of real numbers (e.g., fractions, decimals, percents, roots, exponents, scientific notation) for particular situations.

- Understands the characteristics of the set of whole numbers, integers, rational numbers, real numbers, and complex numbers (e.g., commutativity, order, closure, identity elements, inverse elements, density).
- Demonstrates an understanding of how some situations that have no solution in one number system (e.g., whole numbers, integers, rational numbers) have solutions in another number system (e.g., real numbers, complex numbers).

Competency 011

The teacher understands number operations and computational algorithms.

The beginning teacher:

- Works proficiently with real and complex numbers and their operations.
- Analyzes and describes relationships between number properties, operations, and algorithms for the four basic operations involving integers, rational numbers, and real numbers.
- Uses a variety of concrete and visual representations to demonstrate the connections between operations and algorithms.
- Justifies procedures used in algorithms for the four basic operations with integers, rational numbers, and real numbers, and analyzes error patterns that may occur in their application.
- Relates operations and algorithms involving numbers to algebraic procedures (e.g., adding fractions to adding rational expressions, division of integers to division of polynomials).
- Extends and generalizes the operations on rationals and integers to include exponents, their properties, and their applications to the real numbers.

Competency 012

The teacher understands ideas of number theory and uses numbers to model and solve problems within and outside of mathematics.

The beginning teacher:

- Demonstrates an understanding of ideas from number theory (e.g., prime factorization, greatest common divisor) as they apply to whole numbers, integers, and rational numbers, and uses these ideas in problem situations.
- Uses integers, rational numbers, and real numbers to describe and quantify phenomena such as money, length, area, volume, and density.
- Applies knowledge of place value and other number properties to develop techniques of mental mathematics and computational estimation.
- Applies knowledge of counting techniques such as permutations and combinations to quantify situations and solve problems.
- Applies properties of the real numbers to solve a variety of theoretical and applied problems.

Competency 013

The teacher understands and uses mathematical reasoning to identify, extend, and analyze patterns and understands the relationships among variables, expressions, equations, inequalities, relations, and functions.

The beginning teacher:

- Uses inductive reasoning to identify, extend, and create patterns using concrete models, figures, numbers, and algebraic expressions.
- Formulates implicit and explicit rules to describe and construct sequences verbally, numerically, graphically, and symbolically.
- Makes, tests, validates, and uses conjectures about patterns and relationships in data presented in tables, sequences, or graphs.
- Gives appropriate justification of the manipulation of algebraic expressions.
- Illustrates the concept of a function using concrete models, tables, graphs, and symbolic and verbal representations.
- Uses transformations to illustrate properties of functions and relations and to solve problems.

Competency 014

The teacher understands and uses linear functions to model and solve problems.

The beginning teacher:

- Demonstrates an understanding of the concept of linear function using concrete models, tables, graphs, and symbolic and verbal representations.
- Demonstrates an understanding of the connections among linear functions, proportions, and direct variation.
- Determines the linear function that best models a set of data.
- Analyzes the relationship between a linear equation and its graph.
- Uses linear functions, inequalities, and systems to model problems.
- Uses a variety of representations and methods (e.g., numerical methods, tables, graphs, algebraic techniques) to solve systems of linear equations and inequalities.
- Demonstrates an understanding of the characteristics of linear models and the advantages and disadvantages of using a linear model in a given situation.

Competency 015

The teacher understands and uses nonlinear functions and relations to model and solve problems.

The beginning teacher:

- Uses a variety of methods to investigate the roots (real and complex), vertex, and symmetry of a quadratic function or relation.
- Demonstrates an understanding of the connections among geometric, graphic, numeric, and symbolic representations of quadratic functions.
- Analyzes data and represents and solves problems involving exponential growth and decay.
- Demonstrates an understanding of the connections among proportions, inverse variation, and rational functions.
- Understands the effects of transformations such as $f(x \pm c)$ on the graph of a nonlinear function $f(x)$.
- Applies properties, graphs, and applications of nonlinear functions to analyze, model, and solve problems.
- Uses a variety of representations and methods (e.g., numerical methods, tables, graphs, algebraic techniques) to solve systems of quadratic equations and inequalities.
- Understands how to use properties, graphs, and applications of non-linear relations including polynomial, rational, radical, absolute value, exponential, logarithmic, trigonometric, and piecewise functions and relations to analyze, model, and solve problems.

Competency 016

The teacher uses and understands the conceptual foundations of calculus related to topics in middle school mathematics.

The beginning teacher:

- Relates topics in middle school mathematics to the concept of limit in sequences and series.
- Relates the concept of average rate of change to the slope of the secant line and instantaneous rate of change to the slope of the tangent line.
- Relates topics in middle school mathematics to the area under a curve.
- Demonstrates an understanding of the use of calculus concepts to answer questions about rates of change, areas, volumes, and properties of functions and their graphs.

Competency 017

The teacher understands measurement as a process.

The beginning teacher:

- Selects and uses appropriate units of measurement (e.g., temperature, money, mass, weight, area, capacity, density, percents, speed, acceleration) to quantify, compare, and communicate information.
- Develops, justifies, and uses conversions within measurement systems.
- Applies dimensional analysis to derive units and formulas in a variety of situations (e.g., rates of change of one variable with respect to another) and to find and evaluate solutions to problems.
- Describes the precision of measurement and the effects of error on measurement.
- Applies the Pythagorean theorem, proportional reasoning, and right triangle trigonometry to solve measurement problems.

Competency 018

The teacher understands the geometric relationships and axiomatic structure of Euclidean geometry.

The beginning teacher:

- Understands concepts and properties of points, lines, planes, angles, lengths, and distances.
- Analyzes and applies the properties of parallel and perpendicular lines.
- Uses the properties of congruent triangles to explore geometric relationships and prove theorems.
- Describes and justifies geometric constructions made using a compass and straight edge and other appropriate technologies.
- Applies knowledge of the axiomatic structure of Euclidean geometry to justify and prove theorems.

Competency 019

The teacher analyzes the properties of two- and three-dimensional figures.

The beginning teacher:

- Uses and understands the development of formulas to find lengths, perimeters, areas, and volumes of basic geometric figures.
- Applies relationships among similar figures, scale, and proportion and analyzes how changes in scale affect area and volume measurements.
- Uses a variety of representations (e.g., numeric, verbal, graphic, symbolic) to analyze and solve problems involving two- and three-dimensional figures such as circles, triangles, polygons, cylinders, prisms, and spheres.
- Analyzes the relationship among three-dimensional figures and related two-dimensional representations (e.g., projections, cross-sections, nets) and uses these representations to solve problems.

Competency 020

The teacher understands transformational geometry and relates algebra to geometry and trigonometry using the Cartesian coordinate system.

The beginning teacher:

- Describes and justifies geometric constructions made using a reflection device and other appropriate technologies.
- Uses translations, reflections, glide-reflections, and rotations to demonstrate congruence and to explore the symmetries of figures.
- Uses dilations (expansions and contractions) to illustrate similar figures and proportionality.
- Uses symmetry to describe tessellations and shows how they can be used to illustrate geometric concepts, properties, and relationships.
- Applies concepts and properties of slope, midpoint, parallelism, and distance in the coordinate plane to explore properties of geometric figures and solve problems.
- Applies transformations in the coordinate plane.
- Uses the unit circle in the coordinate plane to explore properties of trigonometric functions.

Competency 021

The teacher understands how to use graphical and numerical techniques to explore data, characterize patterns, and describe departures from patterns.

The beginning teacher:

- Organizes and displays data in a variety of formats (e.g., tables, frequency distributions, stem-and-leaf plots, box-and-whisker plots, histograms, pie charts).
- Applies concepts of center, spread, shape, and skewness to describe a data distribution.
- Supports arguments, makes predictions, and draws conclusions using summary statistics and graphs to analyze and interpret one-variable data.
- Demonstrates an understanding of measures of central tendency (e.g., mean, median, mode) and dispersion (e.g., range, interquartile range, variance, standard deviation).
- Analyzes connections among concepts of center and spread, data clusters and gaps, data outliers, and measures of central tendency and dispersion.
- Calculates and interprets percentiles and quartiles.

Competency 022

The teacher understands the theory of probability.

The beginning teacher:

- Explores concepts of probability through data collection, experiments, and simulations.
- Uses the concepts and principles of probability to describe the outcome of simple and compound events.
- Generates, simulates, and uses probability models to represent a situation.
- Determines probabilities by constructing sample spaces to model situations.
- Solves a variety of probability problems using combinations, permutations, and geometric probability (i.e., probability as the ratio of two areas).
- Uses the binomial, geometric, and normal distributions to solve problems.

Competency 023

The teacher understands the relationship among probability theory, sampling and statistical inference, and how statistical inference is used in making and evaluating predictions.

The beginning teacher:

- Applies knowledge of designing, conducting, analyzing, and interpreting statistical experiments to investigate real-world problems.
- Demonstrates an understanding of random samples, sample statistics, and the relationship between sample size and confidence intervals.
- Applies knowledge of the use of probability to make observations and draw conclusions from single variable data and to describe the level of confidence in the conclusion.
- Makes inferences about a population using binomial, normal, and geometric distributions.
- Demonstrates an understanding of the use of techniques such as scatter plots, regression lines, correlation coefficients, and residual analysis to explore bivariate data and to make and evaluate predictions.

Competency 024

The teacher understands mathematical reasoning and problem solving.

The beginning teacher:

- Demonstrates an understanding of proof, including indirect proof, in mathematics.
- Applies correct mathematical reasoning to derive valid conclusions from a set of premises.
- Demonstrates an understanding of the use of inductive reasoning to make conjectures and deductive methods to evaluate the validity of conjectures.
- Applies knowledge of the use of formal and informal reasoning to explore, investigate, and justify mathematical ideas.
- Recognizes that a mathematical problem can be solved in a variety of ways and selects an appropriate strategy for a given problem.
- Evaluates the reasonableness of a solution to a given problem.

- Applies content knowledge to develop a mathematical model of a real-world situation and analyzes and evaluates how well the model represents the situation.
- Demonstrates an understanding of estimation and evaluates its appropriate uses.

Competency 025

The teacher understands mathematical connections within and outside of mathematics and how to communicate mathematical ideas and concepts.

The beginning teacher:

- Recognizes and uses multiple representations of a mathematical concept (e.g., a point and its coordinates, the area of circle as a quadratic function in *r*, probability as the ratio of two areas).
- Uses mathematics to model and solve problems in other disciplines, such as art, music, science, social science, and business.
- Expresses mathematical statements using developmentally appropriate language, standard English, mathematical language, and symbolic mathematics.
- Communicates mathematical ideas using a variety of representations (e.g., numeric, verbal, graphic, pictorial, symbolic, concrete).
- Demonstrates an understanding of the use of visual media such as graphs, tables, diagrams, and animations to communicate mathematical information.
- Uses the language of mathematics as a precise means of expressing mathematical ideas.
- Understands the structural properties common to the mathematical disciplines.

Competency 026

The teacher understands how children learn and develop mathematical skills, procedures, and concepts.

The beginning teacher:

- Applies theories and principles of learning mathematics to plan appropriate instructional activities for all students.
- Understands how students differ in their approaches to learning mathematics with regards to diversity.
- Uses students' prior mathematical knowledge to build conceptual links to new knowledge and plans instruction that builds on students' strengths and addresses students' needs.
- Understands how learning may be assisted through the use of mathematics manipulatives and technological tools.
- Understands how to motivate students and actively engage them in the learning process by using a variety of interesting, challenging, and worthwhile mathematical tasks in individual, small-group, and large-group settings.

- Understands how to provide instruction along a continuum from concrete to abstract.
- Recognizes the implications of current trends and research in mathematics and mathematics education.

Competency 027

The teacher understands how to plan, organize, and implement instruction using knowledge of students, subject matter, and statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) to teach all students to use mathematics.

The beginning teacher:

- Demonstrates an understanding of a variety of instructional methods, tools, and tasks that promote students' ability to do mathematics described in the TEKS.
- Understands planning strategies for developing mathematical instruction as a discipline of interconnected concepts and procedures.
- Develops clear learning goals to plan, deliver, assess, and reevaluate instruction based on the TEKS.
- Understands procedures for developing instruction that establishes transitions between concrete, symbolic, and abstract representations of mathematical knowledge.
- Applies knowledge of a variety of instructional delivery methods, such as individual, structured small-group, and large-group formats.
- Understands how to create a learning environment that provides all students, including English Language Learners, with opportunities to develop and improve mathematical skills and procedures.
- Demonstrates an understanding of a variety of questioning strategies to encourage mathematical discourse and to help students analyze and evaluate their mathematical thinking.
- Understands how technological tools and manipulatives can be used appropriately to assist students in developing, comprehending, and applying mathematical concepts.
- Understands how to relate mathematics to students' lives and a variety of careers and professions.

Competency 028

The teacher understands assessment and uses a variety of formal and informal assessment techniques to monitor and guide mathematics instruction and to evaluate student progress.

The beginning teacher:

- Demonstrates an understanding of the purpose, characteristics, and uses of various assessments in mathematics, including formative and summative assessments.
- Understands how to select and develop assessments that are consistent with what is taught and how it is taught.
- Demonstrates an understanding of how to develop a variety of assessments and scoring procedures consisting of worthwhile tasks that assess mathematical understanding, common misconceptions, and error patterns.
- Understands how to evaluate a variety of assessment methods and materials for reliability, validity, absence of bias, clarity of language, and appropriateness of mathematical level.
- Understands the relationship between assessment and instruction and knows how to evaluate assessment results to design, monitor, and modify instruction to improve mathematical learning for all students, including English Language Learners.

DOMAIN III—SOCIAL STUDIES

Competency 029 (History)

The teacher understands and applies knowledge of significant historical events and developments, multiple historical interpretations and ideas, and relationships between the past, the present, and the future, as defined by the Texas Essential Knowledge and Skills (TEKS).

The beginning teacher:

- Understands traditional historical points of reference in the history of Texas, the United States, and the world.
- Analyzes how individuals, events, and issues shaped the history of Texas, the United States, and the world.
- Analyzes the influence of various factors (e.g., geographic contexts, processes of spatial exchange, science and technology) on the development of societies.
- Knows common characteristics of communities, past and present.
- Applies knowledge of the concept of chronology and its use in understanding history and historical events.
- Applies different methods of interpreting the past to understand, evaluate, and support multiple points of view, frames of reference, and the historical context of events and issues.
- Understands similarities and differences among Native-American groups in Texas, the United States, and the Western Hemisphere before European colonization.
- Understands the causes and effects of European exploration and colonization of Texas, the United States, and the Western Hemisphere.

- Understands the foundations of representative government in the United States, significant issues of the revolutionary era, and challenges confronting the U.S. government in the early years of the republic.
- Understands westward expansion and analyzes its effects on the political, economic, and social development of the United States.
- Analyzes ways in which political, economic, and social factors led to the growth of sectionalism and the Civil War.
- Knows individuals, issues, and events of the Civil War and analyzes the effects of Reconstruction on the political, economic, and social life of the nation.
- Demonstrates knowledge of major U.S. reform movements of the nineteenth century (e.g., abolitionist, women's suffrage, temperance).
- Understands important issues, events, and individuals of the twentieth century in Texas, the United States, and the world.
- Understands the contributions of people of various racial, ethnic, and religious groups in Texas, the United States, and the world.
- Analyzes ways in which particular contemporary societies reflect historical events (e.g., invasion, conquests, colonization, immigration).

Competency 030 (Geography)

The teacher understands and applies knowledge of geographic relationships involving people, places, and environments in Texas, the United States, and the world, as defined by the Texas Essential Knowledge and Skills (TEKS).

The beginning teacher:

- Understands and applies the geographic concept of region.
- Knows the location and the human and physical characteristics of places and regions in Texas, the United States, and the world.
- Analyzes ways in which humans adapt to, use, and modify the physical environment.
- Knows how regional physical characteristics and human modifications to the environment affect people's activities and settlement patterns.
- Analyzes ways in which location (absolute and relative) affects people, places, and environments.
- Demonstrates knowledge of physical processes (e.g., erosion, deposition, and weathering; plate tectonics; sediment transfer; the flows and exchanges of energy and matter in the atmosphere that produce weather and climate) and their effects on environmental patterns.
- Understands the characteristics, distribution, and migration of populations in Texas, the United States, and the world.
- Understands the physical environmental characteristics of Texas, the United States, and the world, past and present, and how humans have adapted to and modified the environment.

- Analyzes how geographic factors have influenced the settlement patterns, economic development, political relationships, and policies of societies and regions in Texas, the United States, and the world.
- Analyzes interactions between people and the physical environment and the effects of these interactions on the development of places and regions.

Competency 031 (Economics)

The teacher understands and applies knowledge of economic systems and how people organize economic systems to produce, distribute, and consume goods and services, as defined by the Texas Essential Knowledge and Skills (TEKS).

The beginning teacher:

- Understands that basic human needs are met in many ways.
- Understands and applies knowledge of basic economic concepts (e.g., goods and services, free enterprise, interdependence, needs and wants, scarcity, economic system, factors of production).
- Demonstrates knowledge of the ways in which people organize economic systems, and similarities and differences among various economic systems around the world.
- Understands the value and importance of work and purposes for spending and saving money.
- Demonstrates knowledge of patterns of work and economic activities in Texas, the United States, and the world, past and present.
- Understands the characteristics, benefits, and development of the free-enterprise system in Texas and the United States.
- Analyzes the roles of producers and consumers in the production of goods and services.
- Demonstrates knowledge of how businesses operate in the U.S. free-enterprise system.
- Applies knowledge of the effects of supply and demand on consumers and producers in a free-enterprise system.
- Demonstrates knowledge of categories of economic activities and methods used to measure a society's economic level.
- Uses economic indicators to describe and measure levels of economic activity.
- Understands major events and trends in economic history (e.g., factors leading societies to change from agrarian to urban, economic reasons for exploration and colonization, economic forces leading to the Industrial Revolution, processes of economic development in world areas, factors leading to the emergence of different patterns of economic activity in regions of the United States).
- Analyzes the interdependence of the Texas economy with the United States and the world.
- Applies knowledge of significant economic events and issues and their effects in Texas, the United States, and the world.

Competency 032 (Government and Citizenship)

The teacher understands and applies knowledge of government, democracy, and citizenship, including ways in which individuals and groups achieve their goals through political systems, as defined by the Texas Essential Knowledge and Skills (TEKS).

The beginning teacher:

- Understands the purpose of rules and laws; the relationship between rules, rights, and responsibilities; and the individual's role in making and enforcing rules and ensuring the welfare of society.
- Knows the basic structure and functions of the U.S. government, the Texas government, and local governments (including the roles of public officials) and relationships among national, state, and local governments.
- Demonstrates knowledge of key principles and ideas in major political documents of Texas and the United States (e.g., Declaration of Independence, U.S. Constitution, Texas Constitution) and relationships among political documents.
- Knows how people organized governments in colonial America and during the early development of Texas.
- Understands the political process in the United States and Texas and how the U.S. political system works.
- Demonstrates knowledge of types of government (e.g., constitutional, totalitarian) and their effectiveness in meeting citizens' needs.
- Knows the formal and informal process of changing the U.S. and Texas constitutions and the impact of changes on society.
- Understands the impact of landmark Supreme Court cases.
- Understands components of the democratic process (e.g., voluntary individual participation, effective leadership, expression of different points of view) and their significance in a democratic society.
- Demonstrates knowledge of important customs, symbols, and celebrations that represent American beliefs and principles and contribute to national unity.
- Analyzes the relationship among individual rights, responsibilities, and freedoms in democratic societies.
- Applies knowledge of the rights and responsibilities of citizens in Texas and the United States, past and present.
- Understands how the nature, rights, and responsibilities of citizenship vary among societies.

Competency 033 (Culture; Science, Technology, and Society)

The teacher understands and applies knowledge of cultural development, adaptation, and diversity, and understands and applies knowledge of interactions among science, technology, and society, as defined by the Texas Essential Knowledge and Skills (TEKS).

The beginning teacher:

- Understands basic concepts of culture and the processes of cultural adaptation, diffusion, and exchange.
- Analyzes similarities and differences in the ways various peoples at different times in history have lived and met basic human needs.
- Applies knowledge of the role of families in meeting basic human needs and how families and cultures develop and use customs, traditions, and beliefs to define themselves.
- Demonstrates knowledge of institutions that exist in all societies and how characteristics of these institutions may vary among societies.
- Understands how people use oral tradition, stories, real and mythical heroes, music, paintings, and sculpture to create and represent culture in communities in Texas, the United States, and the world.
- Understands the contributions of people of various racial, ethnic, and religious groups in Texas, the United States, and the world.
- Demonstrates knowledge of relationships among world cultures and relationships between and among people from various groups, including racial, ethnic, and religious groups, in the United States and throughout the world.
- Analyzes relationships among religion, philosophy, and culture, and the impact of religion on ways of life in the United States and world areas.
- Understands the concept of diversity within unity.
- Analyzes the effects of race, gender, and socioeconomic class on ways of life in the United States and throughout the world.
- Understands the various roles of men, women, children, and families in cultures past and present.
- Understands how the self develops and the dynamic relationship between self and social context.
- Applies knowledge of the effects of scientific discoveries and technological innovations on political, economic, social, and environmental developments and on everyday life in Texas, the United States, and the world.
- Analyzes how science and technology relate to political, economic, social, and cultural issues and events.
- Demonstrates knowledge of the origins, diffusion, and effects of major scientific, mathematical, and technological discoveries throughout history.
- Knows how developments in science and technology have affected the physical environment; the growth of economies and societies; and definitions of, access to, and use of physical and human resources.
- Knows how changes in science and technology affect moral and ethical issues.

Competency 034 (Social Studies Foundations and Skills)

The teacher understands the foundations of social studies education and applies knowledge of skills used in the social sciences.

The beginning teacher:

- Understands the philosophical foundations of the social science disciplines and knows how knowledge generated by the social sciences affects society and people's lives.
- Understands how social science disciplines relate to each other.
- Understands practical applications of social studies education.
- Relates philosophical assumptions and ideas to issues and trends in the social sciences.
- Knows characteristics and uses of various primary and secondary sources (e.g., databases, maps, photographs, media services, the Internet, biographies, interviews, questionnaires, artifacts), and uses information from a variety of sources to acquire social science information and answer social science questions.
- Knows how to formulate research questions and use appropriate procedures to reach supportable judgments and conclusions in the social sciences.
- Understands social science research and knows how social scientists locate, gather, organize, analyze, and report information using standard research methodologies.
- Evaluates the validity of social science information from primary and secondary sources regarding bias issues, propaganda, point of view, and frame of reference.
- Understands and evaluates multiple points of view and frames of reference relating to issues in the social sciences.
- Knows how to analyze social science information (e.g., by categorizing, comparing and contrasting, making generalizations and predictions, drawing inferences and conclusions).
- Communicates and interprets social science information in written, oral, and visual forms and translates information from one medium to another (e.g., written to visual, statistical to written or visual).
- Knows how to use problem-solving processes to identify problems, gather information, list and consider options, consider advantages and disadvantages, choose and implement solutions, and evaluate the effectiveness of solutions.
- Knows how to use decision-making processes to identify situations that require decisions, gather information, identify options, predict consequences, and take action to implement decisions.
- Knows how to create maps and other graphics to present geographic, political, historical, economic, and cultural features, distributions, and relationships.
- Analyzes social science data by using basic mathematical and statistical concepts and analytical methods.
- Knows how to apply skills for resolving conflict, including persuasion, compromise, debate, and negotiation.
- Understands and uses social studies terminology correctly.

Competency 035 (Social Studies Instruction and Assessment)

The teacher plans and implements effective instruction and assessment in social studies.

The beginning teacher:

- Knows state content and performance standards for social studies that comprise the Texas Essential Knowledge and Skills (TEKS).
- Understands the vertical alignment of the social sciences in the Texas Essential Knowledge and Skills (TEKS) from grade level to grade level, including prerequisite knowledge and skills.
- Understands the implications of stages of child growth and development for designing and implementing effective learning experiences in the social sciences.
- Understands the appropriate use of technology as a tool for learning and communicating social studies concepts.
- Selects and uses effective instructional practices, activities, technologies, and materials to promote students' knowledge and skills in the social sciences.
- Knows how to promote students' use of social science skills, vocabulary, and research tools, including technological tools.
- Knows how to communicate the value of social studies education to students, parents/caregivers, colleagues, and the community.
- Knows how to provide instruction that relates skills, concepts, and ideas in different social science disciplines.
- Provides instruction that makes connections between knowledge and methods in the social sciences and in other content areas.
- Demonstrates knowledge of forms of assessment appropriate for evaluating students' progress and needs in the social sciences.
- Uses multiple forms of assessment and knowledge of the Texas Essential Knowledge and Skills (TEKS) to determine students' progress and needs and to help plan instruction that addresses the strengths, needs, and interests of all students, including English Language Learners.

DOMAIN IV—SCIENCE

Competency 036

The teacher understands how to manage learning activities to ensure the safety of all students.

The beginning teacher:

- Understands safety regulations and guidelines for science facilities and science instruction.
- Knows procedures for and sources of information regarding the appropriate handling, use, disposal, care, and maintenance of chemicals, materials, specimens, and equipment.
- Knows procedures for the safe handling and ethical care and treatment of organisms and specimens.

Competency 037

The teacher understands the correct use of tools, materials, equipment, and technologies.

The beginning teacher:

- Selects and safely uses appropriate tools, technologies, materials, and equipment needed for instructional activities.
- Understands concepts of precision, accuracy, and error with regard to reading and recording numerical data from a scientific instrument.
- Understands how to gather, organize, display, and communicate data in a variety of ways (e.g., charts, tables, graphs, diagrams, written reports, oral presentations).
- Understands the international system of measurement (i.e., metric system) and performs unit conversions within measurement systems.

Competency 038

The teacher understands the process of scientific inquiry and the history and nature of science.

The beginning teacher:

- Understands the characteristics of various types of scientific investigations (e.g., descriptive studies, controlled experiments, comparative data analysis).
- Understands how to design, conduct, and communicate the results of a variety of scientific investigations.
- Understands the historical development of science and the contributions that diverse cultures and individuals of both genders have made to scientific knowledge.
- Understands the roles that logical reasoning, verifiable evidence, prediction, and peer review play in the process of generating and evaluating scientific knowledge.
- Understands principles of scientific ethics.
- Develops, analyzes, and evaluates different explanations for a given scientific result.
- Demonstrates an understanding of potential sources of error in inquiry-based investigation.
- Demonstrates an understanding of how to communicate and defend the results of an inquiry-based investigation.

Competency 039

The teacher understands how science impacts the daily lives of students and interacts with and influences personal and societal decisions.

The beginning teacher:

- Understands that decisions about the use of science are based on factors such as ethical standards, economics, and personal and societal needs.
- Applies scientific principles and the theory of probability to analyze the advantages of, disadvantages of, or alternatives to a given decision or course of action.
- Applies scientific principles and processes to analyze factors that influence personal choices concerning fitness and health, including physiological and psychological effects and risks associated with the use of substances and substance abuse.
- Understands concepts, characteristics, and issues related to changes in populations and human population growth.
- Understands the types and uses of natural resources and the effects of human consumption on the renewal and depletion of resources.
- Understands the role science can play in helping resolve personal, societal, and global challenges.

Competency 040

The teacher knows and understands the unifying concepts and processes that are common to all sciences.

The beginning teacher:

- Understands how the following concepts and processes provide a unifying explanatory framework across the science disciplines: systems, order, and organization; evidence, models, and explanation; change, constancy, and measurements; evolution and equilibrium; and form and function.
- Demonstrates an understanding of how patterns in observations and data can be used to make explanations and predictions.
- Analyzes interactions and interrelationships between systems and subsystems.
- Applies unifying concepts to explore similarities in a variety of natural phenomena.
- Understands how properties and patterns of systems can be described in terms of space, time, energy, and matter.
- Understands how change and constancy occur in systems.
- Understands the complementary nature of form and function in a given system.
- Understands how models are used to represent the natural world and how to evaluate the strengths and limitations of a variety of scientific models (e.g., physical, conceptual, mathematical).

Competency 041

The teacher understands forces and motion and their relationships.

The beginning teacher:

- Demonstrates an understanding of properties of universal forces (e.g., gravitational, electrical, magnetic).
- Understands how to measure, graph, and describe changes in motion using concepts of displacement, velocity, and acceleration.
- Understands the vector nature of force.
- Identifies the forces acting on a object and applies Newton's laws to describe the motion of an object.
- Analyzes the relationship between force and motion in a variety of situations (e.g., simple machines, blood flow, geologic processes).

Competency 042

The teacher understands physical properties of and changes in matter.

The beginning teacher:

- Describes the physical properties of substances (e.g., density, boiling point, solubility, thermal and electrical conductivity).
- Describes the physical properties and molecular structure of solids, liquids, and gases.
- Describes the relationship between the molecular structure of materials (e.g., metals, crystals, polymers) and their physical properties.
- Relates the physical properties of an element to its placement in the periodic table.
- Distinguishes between physical and chemical changes in matter.
- Applies knowledge of physical properties of and changes in matter to processes and situations that occur in life and earth/space science.

Competency 043

The teacher understands chemical properties of and changes in matter.

The beginning teacher:

- Describes the structure and components of the atom.
- Distinguishes among elements, mixtures, and compounds and describes their properties.
- Relates the chemical properties of an element to its placement in the periodic table.
- Describes chemical bonds and chemical formulas.
- Analyzes chemical reactions and their associated chemical equations.

- Explains the importance of a variety of chemical reactions that occur in daily life (e.g., rusting, burning of fossil fuels, photosynthesis, cell respiration, chemical batteries, digestion of food).
- Understands applications of chemical properties of matter in physical, life, and earth/space science and technology (e.g., materials science, biochemistry, transportation, medicine, telecommunications).

Competency 044

The teacher understands energy and interactions between matter and energy.

The beginning teacher:

- Describes concepts of work, power, and potential and kinetic energy.
- Understands the concept of heat energy and the difference between heat and temperature.
- Understands the principles of electricity and magnetism and their applications (e.g., electric circuits, motors, audio speakers, nerve impulses, lighting).
- Applies knowledge of properties of light (e.g., reflection, refraction, dispersion) to describe the function of optical systems and phenomena (e.g., camera, microscope, rainbow, eye).
- Demonstrates an understanding of the properties, production, and transmission of sound.
- Applies knowledge of properties and characteristics of waves (e.g., wavelength, frequency, interference) to describe a variety of waves (e.g., water, electromagnetic, sound).

Competency 045

The teacher understands energy transformations and the conservation of matter and energy.

The beginning teacher:

- Describes the processes that generate energy in the sun and other stars.
- Applies the law of conservation of matter to analyze a variety of situations (e.g., the water cycle, food chains, decomposition, balancing chemical equations).
- Describes sources of electrical energy and processes of energy transformation for human uses (e.g., fossil fuels, solar panels, hydroelectric plants).
- Understands exothermic and endothermic chemical reactions and their applications (e.g., hot and cold packs, energy content of food).
- Applies knowledge of the transfer of energy in a variety of situations (e.g., the production of heat, light, sound, and magnetic effects by electrical energy; the process of photosynthesis; weather processes; food webs; food/energy pyramids).
- Applies the law of conservation of energy to analyze a variety of physical phenomena (e.g., specific heat, nuclear reactions, efficiency of simple machines, collisions).
- Understands applications of energy transformations and the conservation of matter and energy in life and earth/space science.

Competency 046

The teacher understands the structure and function of living things.

The beginning teacher:

- Describes characteristics of organisms from the major taxonomic groups.
- Analyzes how structure complements function in cells.
- Analyzes how structure complements function in tissues, organs, organ systems, and organisms.
- Identifies human body systems and describes their functions.
- Describes how organisms obtain and use energy and matter.
- Applies chemical principles to describe the structure and function of the basic chemical components (e.g., proteins, carbohydrates, lipids, nucleic acids) of living things.

Competency 047

The teacher understands reproduction and the mechanisms of heredity.

The beginning teacher:

- Compares and contrasts sexual and asexual reproduction.
- Understands the organization of hereditary material (e.g., DNA, genes, chromosomes).
- Describes how an inherited trait can be determined by one or many genes and how more than one trait can be influenced by a single gene.
- Distinguishes between dominant and recessive traits and predicts the probable outcomes of genetic combinations.
- Evaluates the influence of environmental and genetic factors on the traits of an organism.
- Describes current applications of genetic research (e.g., related to cloning, reproduction, health, industry, agriculture).

Competency 048

The teacher understands adaptations of organisms and the theory of evolution.

The beginning teacher:

- Describes similarities and differences among various types of organisms and methods of classifying organisms.
- Describes traits in a population or species that enhance its survival and reproductive success.
- Describes how populations and species change through time.
- Applies knowledge of the mechanisms and processes of biological evolution (e.g., variation, mutation, environmental factors, natural selection).
- Describes evidence that supports the theory of evolution of life on Earth.

Competency 049

The teacher understands regulatory mechanisms and behavior.

The beginning teacher:

- Describes how organisms respond to internal and external stimuli.
- Applies knowledge of structures and physiological processes that maintain stable internal conditions.
- Demonstrates an understanding of feedback mechanisms that allow organisms to maintain stable internal conditions.
- Understands how evolutionary history affects behavior.

Competency 050

The teacher understands the relationships between organisms and the environment.

The beginning teacher:

- Identifies the abiotic and biotic components of an ecosystem.
- Analyzes the interrelationships among producers, consumers, and decomposers in an ecosystem.
- Identifies factors that influence the size and growth of populations in an ecosystem.
- Analyzes adaptive characteristics that result in a population's or species's unique niche in an ecosystem.
- Describes and analyzes energy flow through various types of ecosystems.
- Knows how populations and species modify and affect ecosystems.

Competency 051

The teacher understands the structure and function of earth systems.

The beginning teacher:

- Understands the structure of Earth and analyzes constructive and destructive processes that produce geologic change.
- Understands the form and function of surface and subsurface water.
- Applies knowledge of the composition and structure of the atmosphere and its properties.
- Demonstrates an understanding of the interactions that occur among the biosphere, geosphere, hydrosphere, and atmosphere.
- Applies knowledge of how human activity and natural processes, both gradual and catastrophic, can alter earth systems.
- Identifies the sources of energy (e.g., solar, geothermal) in earth systems and describes mechanisms of energy transfer (e.g., convection, radiation).

Competency 052

The teacher understands cycles in earth systems.

The beginning teacher:

- Understands the rock cycle and how rocks, minerals, and soils are formed.
- Understands the water cycle and its relationship to weather processes.
- Understands the nutrient (e.g., carbon, nitrogen) cycle and its relationship to earth systems.
- Applies knowledge of how human and natural processes affect earth systems.
- Understands the dynamic interactions that occur among the various cycles in the biosphere, geosphere, hydrosphere, and atmosphere.

Competency 053

The teacher understands the role of energy in weather and climate.

The beginning teacher:

- Understands the elements of weather (e.g., humidity, wind speed, pressure, temperature) and how they are measured.
- Compares and contrasts weather and climate.
- Analyzes weather charts and data to make weather predictions.
- Applies knowledge of how transfers of energy among earth systems affect weather and climate.
- Analyzes how Earth's position, orientation, and surface features affect weather and climate.

Competency 054

The teacher understands the characteristics of the solar system and the universe.

The beginning teacher:

- Understands the properties and characteristics of celestial objects.
- Applies knowledge of the earth-moon-sun system and the interactions among them (e.g., seasons, lunar phases, eclipses).
- Identifies properties of the components of the solar system.
- Recognizes characteristics of stars and galaxies and their distribution in the universe.
- Demonstrates an understanding of scientific theories of the origin of the universe.

Competency 055

The teacher understands the history of the earth system.

The beginning teacher:

- Understands the scope of the geologic time scale and its relationship to geologic processes.
- Demonstrates an understanding of theories about the earth's origin and geologic history.
- Demonstrates an understanding of how tectonic forces have shaped landforms over time.
- Understands the formation of fossils and the importance of the fossil record in explaining the earth's history.

Competency 056

The teacher has theoretical and practical knowledge about teaching science and about how students learn science.

The beginning teacher:

- Understands how the developmental characteristics, prior knowledge and experience, and attitudes of students influence science learning.
- Selects and adapts science curricula, content, instructional materials, and activities to meet the interests, knowledge, understanding, abilities, experiences, and needs of all students, including English Language Learners.
- Understands how to use situations from students' daily lives to develop instructional materials that investigate how science can be used to make informed decisions.
- Understands common misconceptions in science and effective ways to address these misconceptions.
- Understands the rationale for the use of active learning and inquiry processes for students.
- Understands questioning strategies designed to elicit higher-level thinking and how to use them to move students from concrete to more abstract understanding.
- Understands the importance of planning activities that are inclusive and accommodate the needs of all students.
- Understands how to sequence learning activities in a way that allows students to build upon their prior knowledge and challenges them to expand their understanding of science.

Competency 057

The teacher understands the process of scientific inquiry and its role in science instruction.

The beginning teacher:

- Plans and implements instruction that provides opportunities for all students to engage in nonexperimental and experimental inquiry investigations.
- Focuses inquiry-based instruction on questions and issues relevant to students and uses strategies to assist students with generating, refining, and focusing scientific questions and hypotheses.
- Instructs students in the safe and proper use of a variety of grade-appropriate tools, equipment, resources, technology, and techniques to access, gather, store, retrieve, organize, and analyze data.
- Knows how to guide students in making systematic observations and measurements.
- Knows how to promote the use of critical-thinking skills, logical reasoning, and scientific problem solving to reach conclusions based on evidence.
- Knows how to teach students to develop, analyze, and evaluate different explanations for a given scientific result.
- Knows how to teach students to demonstrate an understanding of potential sources of error in inquiry-based investigation.
- Knows how to teach students to demonstrate an understanding of how to communicate and defend the results of an inquiry-based investigation.

Competency 058

The teacher knows the varied and appropriate assessments and assessment practices to monitor science learning in laboratory, field, and classroom settings.

The beginning teacher:

- Understands the relationships among science curriculum, assessment, and instruction and bases instruction on information gathered through assessment of students' strengths and needs.
- Understands the importance of monitoring and assessing students' understanding of science concepts and skills on an ongoing basis.
- Understands the importance of carefully selecting or designing formative and summative assessments for the specific decisions they are intended to inform.
- Selects or designs and administers a variety of appropriate assessment methods (e.g., performance assessment, self-assessment, formal/informal, formative/summative) to monitor student understanding and progress.
- Uses formal and informal assessments of student performance and products (e.g., projects, lab journals, rubrics, portfolios, student profiles, checklists) to evaluate student participation in and understanding of the inquiry process.
- Understands the importance of sharing evaluation criteria and assessment results with students.

SECTION III

APPROACHES TO ANSWERING MULTIPLE-CHOICE ITEMS

The purpose of this section is to describe multiple-choice item formats that you will see on the Generalist 4–8 test and to suggest possible ways to approach thinking about and answering the multiple-choice items. The approaches described are meant as suggestions; you may want to try using them on the sample questions included in the next section. However, these approaches are not intended to replace test-taking strategies with which you are already comfortable and that work for you.

The Generalist 4–8 test is designed to include 120 scorable multiple-choice items and approximately 10 nonscorable items. Your final scaled score will be based only on scorable items. The nonscorable multiple-choice items are pilot tested by including them in the test in order to collect information about how these questions will perform under actual testing conditions. Nonscorable test items are not considered in calculating your score, and they are not identified on the test.

All multiple-choice questions on the Generalist 4–8 test are designed to assess your knowledge of the content described in the test framework. In most cases, you are expected to demonstrate more than just your ability to recall factual information. You may be asked to think critically about the information, to analyze it, consider it carefully, compare it with other knowledge you have, or make a judgment about it. You may be asked to solve a multistep problem; analyze and interpret mathematical information in a variety of formats; determine a mathematical function that models a given situation; or supply information needed to prove a mathematical statement.

When you are ready to answer a multiple-choice question, you must choose one of four *answer choices* labeled A, B, C, and D. Then you must mark your choice on a separate answer sheet.

Calculators. Scientific calculators will be provided at the test administration site. See the TExES registration bulletin for the brand and model of the calculator that will be available.

Definitions and Formulas. A set of definitions and formulas will be provided in your test booklet for use on mathematics items. A copy of those definitions and formulas is also provided in section IV of this preparation manual.

Periodic Table of Elements. A Periodic Table of Elements will be provided in your test booklet for use on science items. A copy of this periodic table is also provided in section IV of this preparation manual.

Item Formats

You may see the following two types of multiple-choice questions on the test.

- Single items
- Clustered items

Following the last item of a clustered item set containing two or more items, you will see the graphic illustrated below.

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

This graphic is used to separate these clustered items related to specific stimulus material from other items that follow.

On the following pages, you will find descriptions of these commonly used item formats, along with suggested approaches for answering each type of item. In the actual testing situation, you may mark the test items and/or write in the margins of your test booklet, **but your final response must be indicated on the answer sheet provided.**

NOTE: English Language Arts and Reading items are presented first, followed by sample items for Mathematics, Social Studies, and Science.

SINGLE ITEMS

In the single item format, a problem is presented as a direct question or an incomplete statement, and four answer choices appear below the question. The following four questions are examples of this type.

Sample Single Item #1

The following question tests knowledge of Generalist 4–8 competency 003: *The teacher understands the importance of word identification skills (including decoding, blending, structural analysis, and sight word vocabulary) and reading fluency and provides many opportunities for students to practice and improve word identification skills and reading fluency.*

> As a word identification strategy, structural analysis would be most effective in helping eighth graders determine the meaning of which of the following words?
>
> A. sartorial
>
> B. wisteria
>
> C. haberdasher
>
> D. bibliophile

Suggested Approach

Read the question carefully and critically. Think about what it is asking and the situation it is describing. Eliminate any obviously wrong answers, select the correct answer choice, and mark it on your answer sheet.

For example, as you read this question, recall that structural analysis is the technique of dividing an unfamiliar word into parts to help determine its meaning. Now look at the response options and consider how structural analysis might be applied to the word presented in each option.

The word presented in option A is *sartorial*. The word *sartorial* refers to men's clothing and the work of tailors. The word's root, *sartor,* derives from a Latin word meaning "to patch" and is not found in many common English words. Dividing the word *sartorial* into parts is therefore unlikely to provide students with significant clues about the word's meaning.

The word presented in option B is *wisteria*, which refers to a type of climbing vine. The word derives from the surname of an eighteenth-century American anatomist, Casper Wistar. Dividing the word *wisteria* into parts would not provide students with any significant clues about its meaning.

The word presented in option C is *haberdasher*, which refers to a person who sells items such as hats, shirts, and gloves. The word derives from the Middle English word *haberdashere*, and dividing the word *haberdasher* into parts provides no significant clues about its meaning.

The word presented in option D is *bibliophile*. The word *bibliophile* refers to a person who loves books. One approach to analyzing this word is to divide it into two parts: *biblio*, derived from the Greek word for "books," and *phile*, from the Greek word for "loving." Students are likely to be familiar with the root *biblio* through knowledge of the common English word *bibliography* and may therefore infer that *bibliophile* relates to books or other reading materials. Students may also have encountered *phile* in words such as *Anglophile*, meaning a person who loves English culture. In this way, structural analysis can provide students with significant clues about the meaning of the word *bibliophile*.

For eighth graders, structural analysis would be effective in analyzing only one of the four words presented in the response options, the word *bibliophile*. The correct response is option D.

Sample Single Item #2

The following question tests knowledge of Generalist 4–8 competency 019: *The teacher analyzes the properties of two- and three-dimensional figures.*

The Great Pyramid at Giza is approximately 150 meters high and has a square base approximately 230 meters on a side. What is the approximate area of a horizontal cross section of the pyramid taken 50 meters above its base?

A. 5,880 square meters

B. 11,760 square meters

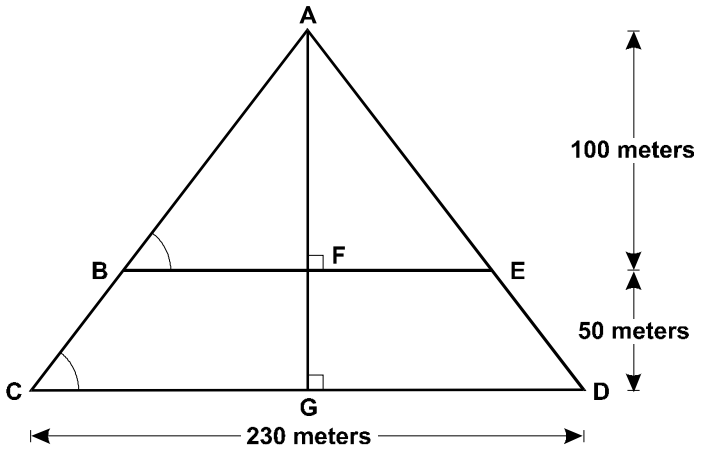
C. 23,510 square meters

D. 35,270 square meters

Suggested Approach

Read the question carefully and critically. Think about what it is asking and the situation it is describing. Eliminate any obviously wrong answers, select the correct answer choice, and mark it on your answer sheet.

The horizontal cross section will be a square in the plane parallel to the base of the pyramid and 50 meters above it. In order to estimate the area of the cross section, you will need to know the approximate length of one of its sides. This can be calculated using your knowledge of proportions and the properties of similar geometric figures. In solving problems that involve geometry, drawing a diagram is often helpful.



The figure shows a vertical cross section through the center of the square base of the pyramid perpendicular to a side of the base. The measurements given in the test question have been transferred to the diagram. Notice that since $AF + FG = 150$, and it is given that $FG = 50$, then $AF = 100$. You must find *BE,* the length of the sides of the square cross section. Also note that $\triangle ABE$ and $\triangle ACD$ are similar because they have two angles whose measures are equal; they share $\angle A$ and $m\angle B = m\angle C$ since they are corresponding angles formed by a transversal and two parallel lines. Because the two triangles are similar, their altitudes and sides must be proportional and you can write: $\frac{AF}{AG} = \frac{BE}{CD}$. Now substitute the values for the lengths of the line segments to get $\frac{100}{150} = \frac{BE}{230}$. Solving this gives $BE = 153.33$. Since the horizontal cross section is a square, its area is the square of the length of *BE*, or $(153.33)^2 = 23{,}511.11$ square feet. Now look at the response options. The correct response is option C, rounded to the nearest ten square meters.

Setting up the proportion incorrectly as $\frac{50}{150} = \frac{BE}{230}$ and using this value for the side of the cross section leads to option A. Option B results from assuming that the cross section is an isosceles right triangle instead of a square, and option D comes from assuming that the area of the cross section is $\frac{100}{150}$ or $\frac{2}{3}$ of the area of the base of the pyramid.

Sample Single Item #3

The following question tests knowledge of Generalist 4–8 competency 029: *The teacher understands and applies knowledge of significant historical events and developments, multiple historical interpretations and ideas, and relationships between the past, the present, and the future, as defined by the Texas Essential Knowledge and Skills (TEKS).*

Enlightenment thinkers most influenced subsequent developments in European history by:

A. restoring traditional ideals that emphasized the benefits of a hierarchical ordering of society.

B. championing reforms that extended political rights to people from all social classes.

C. applying reason and the scientific method to the study of all aspects of social and political life.

D. seeking to restore the religious unity that had been disrupted by the Protestant Reformation.

Suggested Approach

Read the question carefully and critically. Think about what it is asking and the situation it is describing. Eliminate any obviously wrong answers, select the correct answer choice, and mark it on your answer sheet.

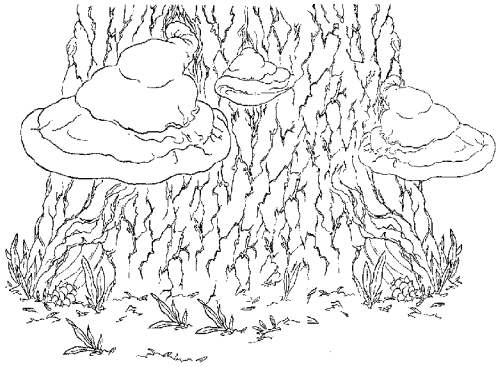
For example, as you read this question, think about ways in which the people and events of an important historical era influenced later developments in Europe. The main contributions of Enlightenment thinkers stemmed from their application of reason and the scientific method to the study and improvement of human society. Although Enlightenment philosophers were not social revolutionaries, their ideas did more to subvert than reinforce traditional social structures (option A). At the same time, most of these philosophers believed that the common people were incapable of self-government; thus, they had little desire to expand popular participation in politics (option B). The Enlightenment philosophers did, however, champion religious toleration, a stance that implicitly accepted the persistence of religious divisions arising from the Protestant Reformation (option D).

Now look at the response options. The correct response is option C.

Sample Single Item #4

The following question tests knowledge of Generalist 4–8 competency 046: *The teacher understands the structure and function of living things.*

Use the diagram below to answer the question that follows.



On a class field trip, students encounter some brightly colored shelf-like structures attached to the trunk of a dead tree. Which of the following is the best description of how this organism obtains matter and energy from its environment?

A. It obtains energy from the dead wood and absorbs carbon dioxide and water vapor from the air.

B. It obtains energy from sunlight, absorbs carbon from the dead wood, and obtains water vapor from the air.

C. It obtains energy from sunlight and obtains carbon and water from the dead wood.

D. It obtains energy, carbon, and water from the dead wood.

Suggested Approach

Read the question carefully and critically. Think about what it is asking and the situation it is describing. Eliminate any obviously wrong answers, select the correct answer choice, and mark it on your answer sheet.

For example, as you read this question, it should be clear from the diagram that the shelf-like structures are fungi. Think about the characteristics that distinguish fungi from other organisms. One important difference is how fungi obtain energy and nutrients. Unlike plants, fungi lack chlorophyll and do not photosynthesize, obtaining all their energy and nutrients from the absorption of organic matter.

Now look at the response options. The correct response is option D. All other options refer to some part of the photosynthetic cycle and therefore do not pertain to fungi.

CLUSTERED ITEMS

Some questions are preceded by stimulus material that relates to the question. Some examples of stimulus material included on the test are geometric and other diagrams, charts, data tables, graphs, equations, excerpts from historical documents, information presented graphically, descriptions of social studies instructional activities, passages, samples of student work, and descriptions of classroom situations. In such cases, you will generally be given information followed by an event to analyze, a problem to solve, or a decision to make.

Two or more items may be related to a single stimulus. You can use several different approaches to answer these types of questions. Some commonly used approaches are listed below.

Strategy 1 Skim the stimulus material to understand its purpose, its arrangement, and/or its content. Then read the item and refer again to the stimulus material to verify the correct answer.

Strategy 2 Read the item *before* considering the stimulus material. The theory behind this strategy is that the content of the item will help you identify the purpose of the stimulus material and locate the information you need to answer the question.

Strategy 3 Use a combination of both strategies; apply the "read the stimulus first" strategy with shorter, more familiar stimuli and the "read the item first" strategy with longer, more complex, or less familiar stimuli. You can experiment with the sample items in this manual and then use the strategy with which you are most comfortable when you take the actual test.

Whether you read the stimulus before or after you read the item, you should read it carefully and critically. You may want to underline its important points to help you answer the item.

As you consider items set in educational contexts, try to enter into the identified teacher's frame of mind and use that teacher's point of view to answer the items that accompany the stimulus. Be sure to consider the items in terms of only the information provided in the stimulus—not in terms of your own class or individual students you may have known.

Sample Clustered Item Set #1

Suggested Approach

First read the stimulus (a description of a classroom situation, a passage from a biology textbook, and an excerpt from two students' conversation about the passage).

Use the information below to answer the two questions that follow.

Carmen and Derrick, two students in Mr. Thompson's seventh-grade reading class, ask for help in understanding a passage from the biology textbook they use in their science class. Mr. Thompson suggests that they begin by discussing the text with each other—sharing their thoughts and questions about the passage. Shown below are the textbook passage and an excerpt from the two students' conversation about it.

> Certain conditions, including appropriate temperatures and proper amounts of water and oxygen, must be present for a seed to sprout and grow. For many seeds, a period of rest is necessary before a seed can germinate. A seed may lie dormant for a single year or many years, but when conditions are right, the seed will sprout. For some species of plants, the seed's own chemical inhibitors temporarily prevent it from germinating. These inhibitors may be washed away by rainwater or eliminated by prolonged exposure to cold.

Derrick: Most of this stuff is easy. Everyone knows that seeds need the right weather to grow. But I don't exactly get this word "germinate." You know what it means?

Carmen: I've heard it before . . . Doesn't it just mean sprout?

Derrick: How do you figure that?

Carmen: Look [points to text], some of the sentences say sprout and other sentences say germinate, and it seems like they're talking about the same thing. Then there's this other part about things that keep seeds from sprouting, like cold weather or pollution.

Derrick: I don't remember anything about pollution. Where did you read that?

Carmen: This part about chemicals.

Derrick: But look, it says the seed's *own* chemical inhibitors. I'm not sure what inhibitors are, but I think the chemicals come from the seed, not pollution.

Carmen: Oh, I get it. That's what keeps the seed dormant.

Derrick: And dormant is . . . ?

Carmen: Resting. You know, like when a bear hibernates.

Now you are prepared to address the first of the two questions associated with this stimulus. The first question measures competency 001: *The teacher understands the importance of oral language, knows the developmental processes of oral language, and provides a variety of instructional opportunities for students to develop listening and speaking skills.*

> Mr. Thompson's response to the request of Carmen and Derrick is likely to promote their reading development primarily by:
>
> A. facilitating their ability to identify and apply a variety of effective study strategies.
>
> B. encouraging them to explore reading materials on related subjects.
>
> C. facilitating their comprehension through peer scaffolding and oral language interaction.
>
> D. encouraging them to formulate and address their own reading goals.

Consider carefully the information presented in the stimulus, including the interaction between the teacher and students, the content of the textbook passage, and the two students' conversation about the passage. Then read and consider this first question, which asks how the teacher's response promotes the students' reading development. Recall that Mr. Thompson advised Carmen and Derrick to discuss the textbook passage and to share with each other their thoughts and questions about the passage.

Option A suggests that the students' conversation about the passage helps them identify and apply a variety of study strategies. Review the conversation and notice that it focuses on the meaning of particular words in the passage. There is no reference to multiple study strategies and no application of study skills other than discussion of key vocabulary.

Option B suggests that the students' conversation about the passage encourages them to explore reading materials on related subjects. While it is true, in general, that peer conversation often motivates students to explore reading materials, there is no evidence in the stimulus that Carmen and Derrick plan to consult other reading materials on related subjects.

Option C suggests that the students' conversation facilitates their reading comprehension through peer scaffolding and oral language interaction. Notice that the stimulus provides evidence that oral language interaction (i.e., Carmen and Derrick's conversation) does allow the two students to "scaffold" their understanding (i.e., assist each other in comprehending the textbook passage). For example, Carmen improves Derrick's comprehension of the passage by helping him understand that "germinate" means "sprout." Derrick also improves Carmen's comprehension by clarifying that "chemical inhibitors" refer not to pollution, as Carmen assumed, but to chemicals in the seed.

Option D suggests that the students' conversation promotes their reading development by encouraging the students to formulate and address their own reading goals. While it is true, in general, that peer interaction can help support the process of setting and addressing reading goals, there is no evidence in the stimulus that Carmen and Derrick are formulating such goals.

In this way, analysis of the four options should lead you to select option C as the best response.

Now you are ready to answer the next question. The second question measures competency 003: *The teacher understands the importance of word identification skills (including decoding, blending, structural analysis, and sight word vocabulary) and reading fluency and provides many opportunities for students to practice and improve word identification skills and reading fluency.*

> Carmen and Derrick's discussion of the word "germinate" is most likely to promote the students' reading proficiency by reinforcing their ability to:
>
> A. use context to support word identification and confirm word meanings.
>
> B. apply grammatical principles.
>
> C. analyze differing perspectives and points of view in informational texts.
>
> D. identify main ideas.

Again, consider carefully the information presented in the stimulus, including the content of the textbook passage and the two students' conversation about the passage. Read and consider this second question, which asks how the students' conversation about the word "germinate" is likely to promote their reading proficiency.

Option A suggests that the students' conversation about the word "germinate" is likely to reinforce their ability to use context to support word identification and confirm word meanings. Review the portion of the stimulus that describes Carmen and Derrick's conversation about the word "germinate." When Derrick asks how Carmen knows that "germinate" means "sprout," Carmen reexamines the text and explains to Derrick how her interpretation of other words and sentences in the passage helps her determine the meaning of "germinate." Carmen thus uses the context in which the unfamiliar word is found to help her determine its meaning.

Option B suggests that the students' conversation about the word "germinate" is likely to reinforce their ability to apply grammatical principles. A review of the stimulus reveals that Carmen and Derrick's conversation about the word "germinate" includes no explicit or implicit references to parts of speech or other aspects of grammar.

Option C suggests that the students' conversation about the word "germinate" is likely to reinforce their reading proficiency by reinforcing their ability to analyze differing perspectives and points of views in informational texts. In their conversation, Carmen and Derrick express different observations and opinions, but the purpose of their conversation is to clarify their literal comprehension of factual information, not to expand their awareness of different points of view presented in the text.

Option D suggests that the students' conversation about the word "germinate" is most likely to reinforce their ability to identify main ideas. In their conversation, Carmen and Derrick focus primarily on particular terms in the passage. Both students appear to understand the main ideas of the passage prior to their conversation. For example, Derrick's first comment is, "Everyone knows that seeds need the right weather to grow."

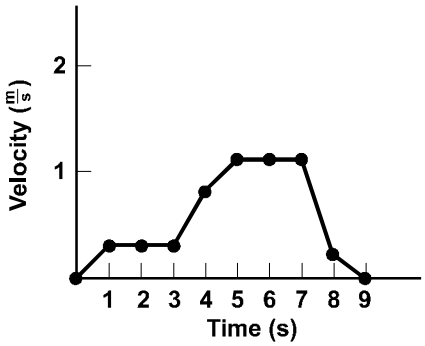
In this way, analysis of the four options should lead you to select option A as the best response.

Sample Clustered Item Set #2

Suggested Approach

First read the stimulus (a description of the concept being studied).

Use the diagram and the information below to answer the two questions that follow.



Students in a math class are investigating concepts related to motion in one dimension. The velocity-versus-time graph shows the velocity of a student walking in a straight line, collected at one-second intervals over a period of nine seconds.

Now you are prepared to address the first of the two questions associated with this stimulus. The first question measures competency 016: *The teacher uses and understands the conceptual foundations of calculus related to topics in middle school mathematics.*

Which of the following methods could be used to estimate the student's acceleration between $t = 3$ and $t = 5$ seconds?

A. Find the average of the velocities at $t = 3$ and $t = 5$ seconds.

B. Find the equation of the curve that best fits the data and evaluate it at $t = 4$ seconds.

C. Find the length of the line connecting the velocities between $t = 3$ and $t = 5$ seconds.

D. Find the slope of the line connecting the velocities at $t = 3$ and $t = 5$ seconds.

You are asked to estimate the acceleration of the student between 3 and 5 seconds, that is, the average acceleration over this time period. Average acceleration is the rate of change of velocity with respect to time, $\frac{\Delta v}{\Delta t} = \frac{v_2 - v_1}{t_2 - t_1}$. Therefore, divide the difference in the velocities at 5 and 3 seconds by the total time elapsed, here 5 – 3 = 2 seconds. You should recognize this expression as representing the slope of a line connecting two points, or the difference in the *y*-coordinates divided by the difference in the *x*-coordinates. Therefore option D is correct.

Option A finds the average velocity in the time interval, while option B finds an expression for velocity as a function of time and interpolates how fast the student is moving at $t = 4s$. Option C determines the length of the curve and has no physical significance.

Now you are ready to answer the next question. The second question also measures competency 016: *The teacher uses and understands the conceptual foundations of calculus related to topics in middle school mathematics.*

Which of the following methods could be used to estimate the total distance the student has traveled between $t = 0$ and $t = 5$ seconds?

A. Find the median value of the velocities from $t = 0$ to $t = 5$ seconds, inclusive.

B. Find the ratio of the velocities at $t = 0$ and $t = 5$ seconds.

C. Find the area under the curve between $t = 0$ and $t = 5$ seconds.

D. Find the average value of the velocity-over-time ratios for $t = 0$ and $t = 5$ seconds.

In order to calculate the distance traveled by the student during a particular time interval, multiply the rate of travel by the length of time the student is moving; in other words, $d = rt$ where d represents distance, r represents rate (velocity), and t represents time. For example, during the interval from $t = 1$ to $t = 2$ seconds, multiply the average velocity during the interval, approximately $0.25\frac{m}{s}$, by the length of the interval, $2 - 1 = 1$ second. This can be represented geometrically by the area of the rectangle of height = $0.25\frac{m}{s}$ and base = $1s$ under the curve between $t = 1s$ and $t = 2s$. To get an estimate of the total distance traveled by the student, you need to sum the distance traveled during each of the one-second intervals from 0 through 5 seconds. This is approximately equal to the area under the curve from $t = 0$ to $t = 5$ seconds. Therefore option C is correct.

Option A gives the median value for the velocity, which by itself cannot be used to estimate the distance traveled by the student. The ratio of the velocities (option B) is not helpful in determining the total distance covered. Finding the average of the velocities at $t = 0$ and $t = 5$ (option D) is not by itself sufficient for calculating the distance traveled between those times.

Sample Clustered Item Set #3

Suggested Approach

First read the stimulus (a discussion of recent developments in the world economy).

> **Read the passage below; then answer the two questions that follow.**
>
> Large U.S.-based multinational corporations have operations in many countries. For example, Gillette manufactures in 57 locations in 28 countries and markets in over 200 countries. Likewise, foreign companies—Honda and Toyota, for example—build factories in the United States. Partnerships between multinational companies are on the rise as companies look for new ways to compete in the global marketplace. For example, Hitachi, Ltd., and Texas Instruments have several joint ventures for research and development. Financial markets, small businesses, and service companies are also moving into international markets at an increasing rate.

Now you are prepared to address the first of the two questions associated with this stimulus. The first question measures competency 031: *The teacher understands and applies knowledge of economic systems and how people organize economic systems to produce, distribute, and consume goods and services, as defined by the Texas Essential Knowledge and Skills (TEKS).*

> During the 1990s, developments such as those described in the passage were a major force behind U.S. efforts to:
>
> A. enforce antitrust legislation.
>
> B. reduce the federal budget deficit.
>
> C. eliminate trade barriers.
>
> D. control the effects of inflation.

Consider carefully the developments described in the passage, paying particular attention to their implications for the U.S. economy. The increasing number of U.S. companies that construct overseas plants, establish joint ventures with foreign firms, and sell their products in international markets tend to pay close attention to any developments that might impede the free flow of capital and goods across international borders. Changes in U.S. trade policy are of particular concern, because laws restricting the importation of foreign goods may affect products made in U.S.-owned overseas plants, in addition to prompting retaliatory legislation by other countries. While efforts to enforce antitrust legislation, reduce federal budget deficits, and control inflation (options A, B, and D respectively) may have some influence on the overseas activities of multinational firms, the impact of such initiatives cannot be expected to be as direct or as significant as changes that would eliminate trade barriers. These considerations should lead you to select option C as the best response.

Now you are ready to answer the next question. The second question also measures competency 031: *The teacher understands and applies knowledge of economic systems and how people organize economic systems to produce, distribute, and consume goods and services, as defined by the Texas Essential Knowledge and Skills (TEKS).*

> The capacity of U.S. businesses to engage in activities such as those described in the passage has been most influenced by which of the following?
>
> A. advances in communications technology
>
> B. increased worker productivity
>
> C. improvements in business accounting procedures
>
> D. reduced taxation of corporate income

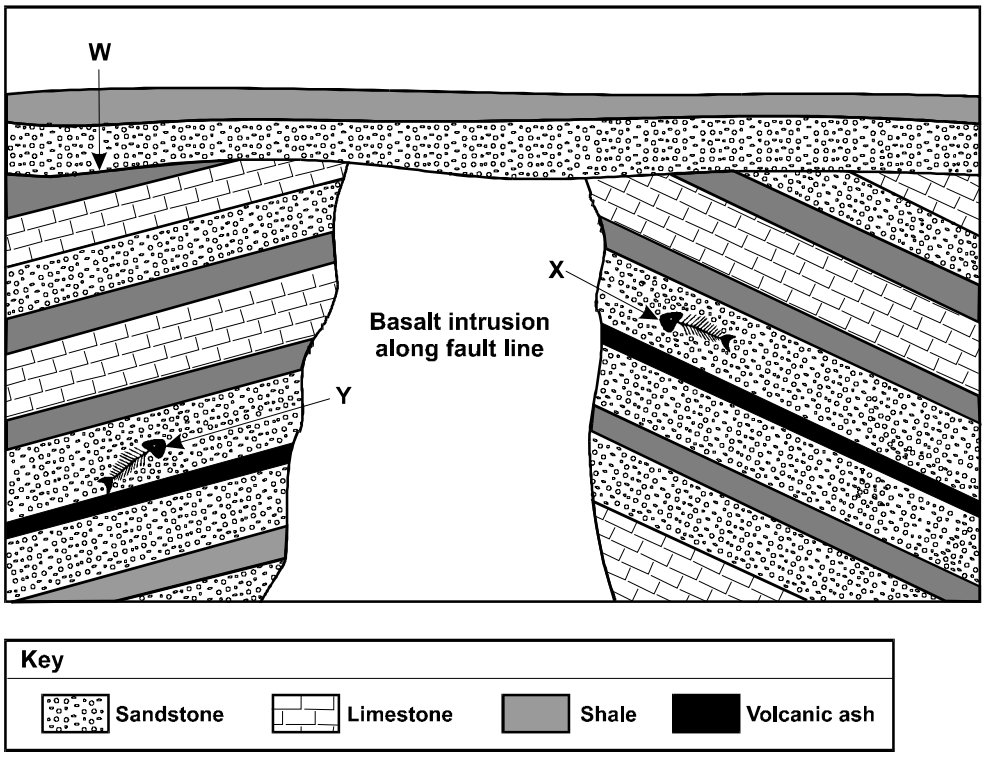
The second question requires you to analyze factors that have influenced the development of contemporary patterns of international economic activity. Companies engaged in the types of business operations described in the passage require vast amounts of information and must be able to communicate quickly with subsidiaries all over the globe. Without the Internet, fax machines, teleconferencing equipment, and other advances in communications technology, they would find it very difficult to meet these needs. Although these companies benefit from increased productivity, improved accounting procedures, and lower taxes (options B, C, and D respectively), the management of their overseas operations is not nearly as dependent on such factors as it is on the availability of advanced communications technology. Since the question asks you to identify the option that "most influenced" the capacity of U.S. businesses to function in international markets, option A is the best response.

Sample Clustered Item Set #4

Suggested Approach

First read the stimulus (a diagram of a stratigraphic section of rock).

Use the illustration below to answer the two questions that follow.



Now you are prepared to address the first of the two questions associated with this stimulus. The first question measures competency 055: *The teacher understands the history of the earth system.*

> The basalt intrusion in the illustration has been dated to be 13 million years old, and the volcanic ash layer has been dated to be 24 million years old. Which of the following statements about the ages of fossil X and fossil Y is most accurate?
>
> A. Fossil X is younger than fossil Y, and both fossils are older than 24 million years old.
>
> B. Fossil X and fossil Y are both between 13 million and 24 million years old.
>
> C. Fossil X is older than fossil Y, and both fossils are younger than 13 million years old.
>
> D. Fossil X is younger than 13 million years old, and fossil Y is older than 13 million years old.

First examine the figure in the stimulus, noting the positions of the rock layers and the fossils labeled X and Y. You should be able to create a combined stratigraphy for the entire section by matching up the pattern of layers on either side of the basalt intrusion. Locate the fossils labeled X and Y and consider their relationship in the combined stratigraphy. It is clear that the two fossils are found in the same stratigraphic layer located above the 24-million-year-old volcanic ash. Since the basaltic intrusion cut through the layer in which the fossils are located 13 million years ago, both fossils must be at least that old. Options A, C, and D all imply that one fossil is older than the other. Therefore, the correct response is option B.

Now you are ready to answer the next question. The second question also measures competency 055: *The teacher understands the history of the earth system.*

The discontinuity represented by the line labeled W in the illustration is most likely to be:

A. a thrust fault.

B. an igneous intrusion.

C. a transverse fault.

D. an erosion surface.

The second question requires you to recognize the characteristics of an unconformity in a stratigraphic section. Note that the unconformity in the diagram cuts across all the stratigraphic layers and the basalt intrusion and that these are missing above the unconformity. Options A, B, and C all refer to faults or intrusions. Faults result in the displacement of layers relative to other layers, while intrusions are characterized by the insertion of igneous rock through or between layers. In this case, the relationship of the layers to one another and to the sandstone above the unconformity indicates that the unconformity is an erosion surface and that option D is the correct response.

SECTION IV

SAMPLE ITEMS

This section presents some sample test items for you to review as part of your preparation for the test. To demonstrate how each competency may be assessed, each sample item is accompanied by the competency that it measures. While studying, you may wish to read the competency before and after you consider each sample item. Please note that the competency statements will not appear on the actual test form. Space has been provided for you to make notes on each item.

An answer key on pages 221–222 follows the sample items. The answer key lists the item number and correct answer for each sample test item. Please note that the answer key also lists the competency assessed by each item and that the sample items are not necessarily presented in competency order.

The sample items are included to illustrate the formats and types of items you will see on the test; however, your performance on the sample items should not be viewed as a predictor of your performance on the actual examination.

This section includes sample items for:

- English Language Arts and Reading
- Mathematics
- Social Studies
- Science

In preparing for the Generalist 4–8 test, you should review the sample items for all four areas listed above. As mentioned previously, the Generalist 4–8 test will consist of approximately 31% English Language Arts and Reading items, 23% Mathematics items, 23% Social Studies items, and 23% Science items.

Definitions and Formulas

CALCULUS

first derivative $f'(x) = \frac{dy}{dx}$

second derivative $f''(x) = \frac{d^2y}{dx^2}$

PROBABILITY

$p(A \text{ or } B) = p(A) + p(B) - p(A \ \& \ B)$

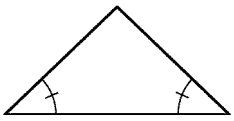
$p(A \ \& \ B) = p(A)\, p(B \mid A) = p(B)\, p(A \mid B)$

ALGEBRA

i	$i^2 = -1$
A^{-1}	inverse of matrix A
$A = P\left(1 + \frac{r}{n}\right)^{nt}$	Compound interest where A is the final value P is the principal r is the interest rate t is the term n is divisions within the term
$[x] = n$	Greatest integer function where n is the integer such that $n \le x < n + 1$

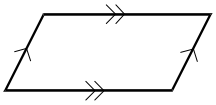
GEOMETRY

Congruent Angles



Congruent Sides

Parallel Sides



Circumference of a Circle

$C = 2\pi r$

VOLUME

Cylinder: (area of base) × height

Cone: $\frac{1}{3}$ (area of base) × height

Sphere: $\frac{4}{3}\pi$ (radius)^3

Prism: (area of base) × height

AREA

Triangle: $\frac{1}{2}$ base × height

Rhombus: $\frac{1}{2}$ (diagonal$_1$ × diagonal$_2$)

Trapezoid: $\frac{1}{2}$ height (base$_1$ + base$_2$)

Sphere: 4π (radius)^2

Circle: πr^2

Lateral surface area of cylinder: $2\pi rh$

TRIGONOMETRY

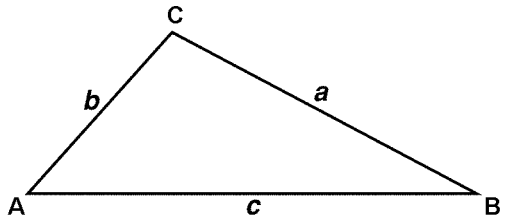
law of sines $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

law of cosines

$c^2 = a^2 + b^2 - 2ab \cos C$

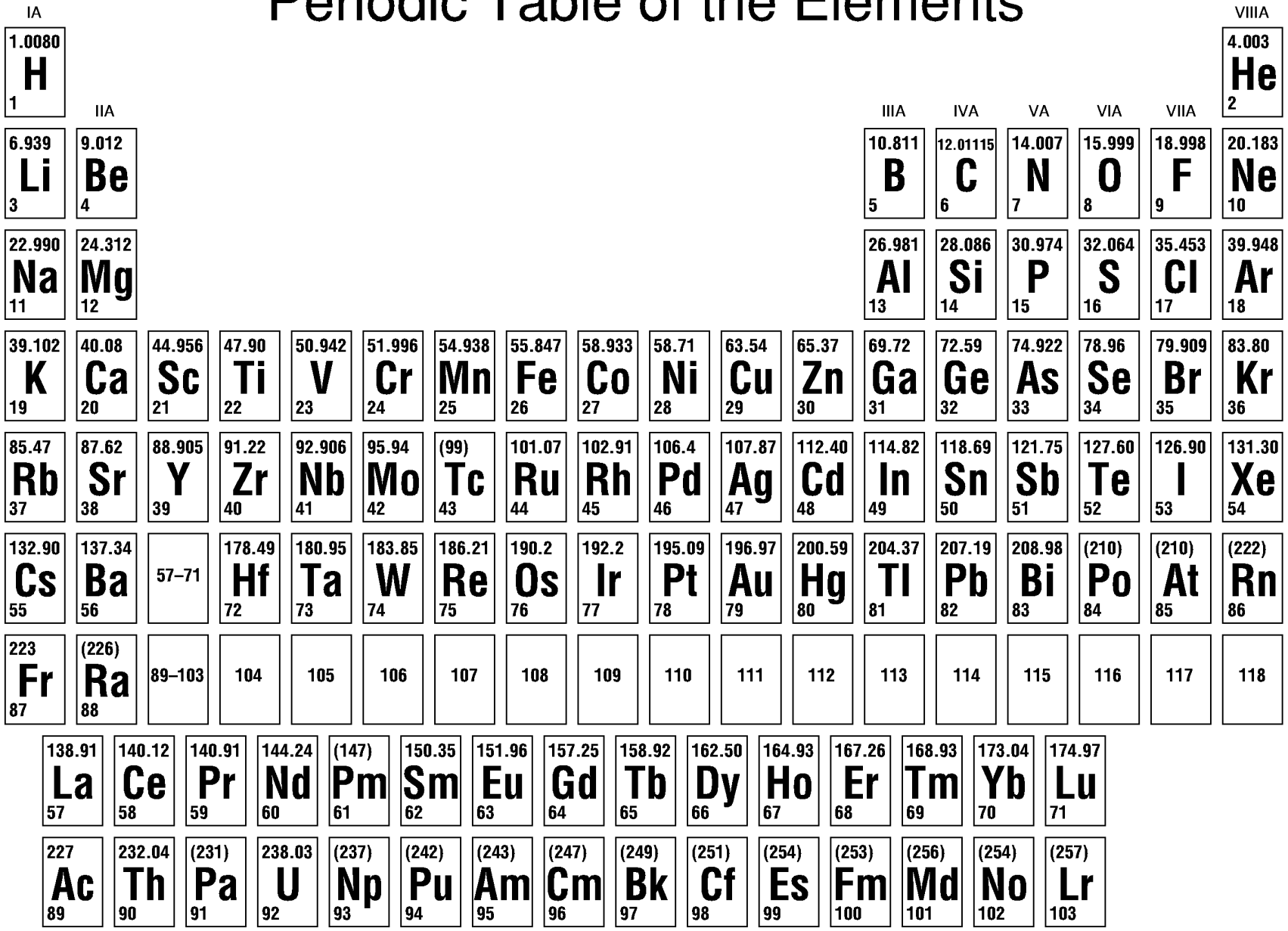
$b^2 = a^2 + c^2 - 2ac \cos B$

$a^2 = b^2 + c^2 - 2bc \cos A$



END OF DEFINITIONS AND FORMULAS

Periodic Table of the Elements



1. Students in a middle school class have been studying the battle of the Alamo. The teacher plans a role-playing activity to help structure whole-class discussion about the Alamo. During the discussion, one student will play the role of a newspaper reporter and interview other students who assume the roles of various historical figures (e.g., Santa Anna, Sam Houston, soldiers in the Mexican army). This instructional strategy is likely to promote students' oral language proficiency primarily by helping the students:

   A. understand how differing points of view affect spoken messages.

   B. recognize differences between spoken and written language.

   C. learn how to adapt spoken language for informal occasions.

   D. expand their speaking and listening vocabularies.

The item above measures competency 001:
The teacher understands the importance of oral language, knows the developmental processes of oral language, and provides a variety of instructional opportunities for students to develop listening and speaking skills.

2. A fourth-grade class has been reading folk tales from around the world. Which of the following oral language activities would be most effective in promoting students' multicultural awareness and appreciation?

   A. Students discuss folk tales from various countries and then read aloud and discuss descriptions of the geography and cultural characteristics of each country.

   B. The teacher guides students to discuss some features that folk tales of various countries have in common as well as some of the unique features of each culture's folk tales.

   C. Students read aloud "folk tales" they have written themselves and then review folk tales from various countries and decide which culture's folk tales most closely resemble their own.

   D. The teacher helps each student select a folk tale, present it to the class, and answer any questions that other students in the class may have about the folk tale's plot or characters.

The item above measures competency 001:
The teacher understands the importance of oral language, knows the developmental processes of oral language, and provides a variety of instructional opportunities for students to develop listening and speaking skills.

3. A teacher reads aloud a story to a student who is in the emergent literacy stage of reading development. The teacher wants to assess the student's literal comprehension of the sequence of events in the story. Which of the following assessment strategies would be most appropriate for this purpose?

   A. encouraging the student to begin by describing the beginning and the end of the story

   B. asking the student to identify the most important episode in the story

   C. providing the student with visual aids to use in explaining what happened in the story

   D. asking the student to explain the consequences of the characters' actions

The item above measures competency 002:
The teacher understands the foundations of early literacy development.

4. A teacher regularly analyzes the attempted spellings of emergent readers. In addition to providing information about students' spelling development, this approach would best help the teacher assess students':

   A. level of reading fluency.

   B. use of word identification strategies.

   C. ability to apply phonics skills.

   D. knowledge of comprehension strategies.

The item above measures competency 002:
The teacher understands the foundations of early literacy development.

5. A teacher reads aloud a story to emergent readers. The teacher guides students to discuss the story, focusing particular attention on students' understanding of the story's ending. Then the teacher asks students to imagine and describe another adventure that the main characters in the story might have. This final step of the activity is most likely to benefit students by:

   A. helping them identify text structures.

   B. promoting development of their evaluative comprehension skills.

   C. helping them identify story elements.

   D. promoting development of their inferential comprehension skills.

The item above measures competency 002:
The teacher understands the foundations of early literacy development.

6. A teacher is planning an activity in which students will count the phonemes contained within various words. The teacher begins by selecting words with varying numbers of phonemes. Which of following words selected by the teacher contains five phonemes?

   A. stamp

   B. trail

   C. brush

   D. grape

The item above measures competency 002:
The teacher understands the foundations of early literacy development.

7. A teacher is working with a group of students in the emergent literacy stage of reading development who have had little experience with books. Which of the following instructional activities would best promote the students' understanding of the relationship between written and spoken words?

   A. Each student pretends to read a picture book by telling a story while turning the pages.

   B. The teacher displays a big book and points to each word as she reads the book aloud.

   C. Each student points to each word in a written sentence, and then the teacher reads aloud the sentence.

   D. The teacher models for students how to move manipulatives to count the words in a spoken sentence.

The item above measures competency 002:
The teacher understands the foundations of early literacy development.

8. Which of the following strategies would best promote beginning readers' automatic recognition of high-frequency, irregular sight words?

   A. strengthening students' phonemic awareness skills

   B. having the students engage in repeated readings of familiar texts at their independent reading levels

   C. reinforcing students' knowledge of letter-sound correspondence

   D. helping the students identify each word by dividing it into separate syllables or clusters of letters

The item above measures competency 003:
The teacher understands the importance of word identification skills (including decoding, blending, structural analysis, and sight word vocabulary) and reading fluency and provides many opportunities for students to practice and improve word identification skills and reading fluency.

9. To promote students' reading fluency, a fifth-grade teacher plans activities in which students and their assigned partners will engage in repeated oral readings. When the teacher assembles reading materials for this purpose, it would be most important to assign each pair of students passages from a text that:

   A. both partners are capable of reading aloud with no more than 5 word recognition errors per 100 words of text.

   B. the students have previewed and selected themselves.

   C. both partners are capable of reading aloud with no more than 25 word recognition errors per 100 words of text.

   D. the students have been reading in connection with content-area study.

The item above measures competency 003:
The teacher understands the importance of word identification skills (including decoding, blending, structural analysis, and sight word vocabulary) and reading fluency and provides many opportunities for students to practice and improve word identification skills and reading fluency.

10. Students in a middle school class are learning about the westward movement of pioneers in the United States during the nineteenth century. The teacher plans to have students read several selections on this topic and then prepare reports. The teacher is concerned about how meaningful the assignment will be for Alicia, a student whose family moved to the United States from Venezuela a year ago. Alicia's speaking and oral reading skills in English are strong, but she sometimes has comprehension difficulties. The teacher believes that these difficulties often reflect lack of familiarity with the topic of the selection. Which of the following strategies most likely would be effective in helping Alicia complete the assignment successfully and make it a meaningful learning experience for her?

    A. urging Alicia to take detailed notes as she reads to reinforce her understanding of the historical context depicted in the text

    B. providing Alicia with opportunities to talk about how her own experience of moving to the United States compares with the pioneers' experiences described in the assigned readings

    C. drawing Alicia's attention to facts and concepts that feature prominently in more than one of the assigned selections to help her recognize which ideas are most important

    D. encouraging Alicia to write her first draft of the assigned report in Spanish and then translate it into English

The item above measures competency 004:
The teacher understands the importance of reading for understanding, knows components and processes of reading comprehension, and teaches students strategies for improving their comprehension.

11. Ms. Lennox, a social studies teacher, and Mr. Vale, a reading teacher, work with a group of middle school students. Early in the school year, Ms. Lennox mentions that the students are having difficulty retaining information from their geography textbook. Which of the following would be the most appropriate suggestion for Mr. Vale to offer Ms. Lennox?

    A. Have the students concentrate on transitional words to keep track of the relationship among ideas.

    B. Encourage the students to focus on the last sentence of each paragraph to extract summary information.

    C. Have the students read each assignment slowly, looking up definitions of unfamiliar terms.

    D. Encourage the students to preview the text to anticipate its content and recall related knowledge.

The item above measures competency 005:
The teacher understands reading skills and strategies appropriate for various types of texts and contexts and teaches students to apply these skills and strategies to enhance their reading proficiency.

12. A middle school teacher wants to improve students' comprehension of informational texts by helping the students analyze comparison/contrast text structures. Which of the following instructional strategies would best address this goal?

    A. Students read two different texts that address the same topic and then meet in small discussion groups to compare/contrast the two texts.

    B. The teacher models for students how to write a complex sentence that compares/contrasts two different items or ideas.

    C. Each student outlines the main ideas and significant details in two comparison/contrast texts on a given subject.

    D. The teacher helps students create a Venn diagram to summarize a comparison/contrast text.

The item above measures competency 005:
The teacher understands reading skills and strategies appropriate for various types of texts and contexts and teaches students to apply these skills and strategies to enhance their reading proficiency.

13. Students in a middle school class have been learning about active and passive verbs. Which of the following instructional activities would best help students recognize and understand differences between the active and passive voice?

A. Working with partners, students convert passive sentences to the active voice; then the teacher guides students to discuss how these changes affect tone and meaning.

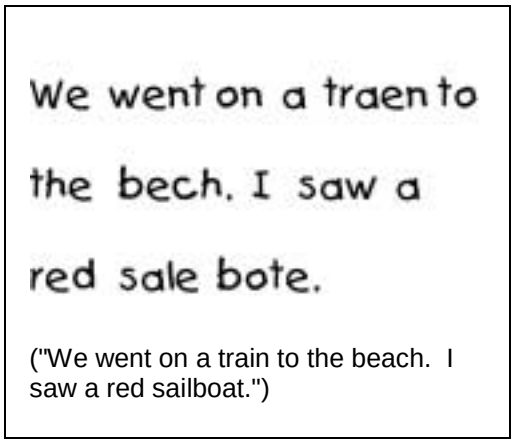
B. Students write a paragraph on an assigned topic and then identify whether each sentence in the paragraph is in the active or the passive voice.

C. Working in small groups, students use active and passive sentences provided by the teacher as models to develop their own sets of active and passive sentences.

D. Students keep ongoing lists of memorable sentences they encounter over several days and decide whether each sentence is in the active or passive voice.

The item above measures competency 006:
The teacher understands the conventions of writing in English and provides instruction that helps students develop proficiency in applying writing conventions.

14. **Use the student writing sample below to answer the question that follows.**



("We went on a train to the beach. I saw a red sailboat.")

The writing sample illustrated above most strongly suggests that the student:

A. is in the transitional stage of spelling development and would benefit from instruction on vowel digraphs.

B. lacks an understanding of letter-sound correspondence and would benefit from basic phonics instruction.

C. is in the phonetic stage of spelling development and would benefit from phonemic awareness instruction.

D. lacks the ability to distinguish vowel sounds and would benefit from varied oral language activities.

The item above measures competency 006:
The teacher understands the conventions of writing in English and provides instruction that helps students develop proficiency in applying writing conventions.

15. Which of the following upper-elementary students would benefit most from the use of word processing equipment for writing?

A. Alice, who often needs the teacher's help in choosing a topic to write about

B. Bernardo, who repeatedly confuses words that have the same pronunciation but are spelled differently

C. Delia, who has difficulty making logical transitions between paragraphs

D. Neil, who is often discouraged by the time-consuming process of revision

The item above measures competency 007:
The teacher understands that writing to communicate is a developmental process and provides instruction that promotes students' competence in written communication.

16. For the past week, students in Ms. Burgess's fifth-grade class have been writing original stories. Ms. Burgess observes that some students are spending their daily writing period adding on to their stories, making them longer but not necessarily better, and making no revisions except occasional corrections of misspelled words. She wants to encourage these students to take a broader, more exploratory approach to revision—to review and evaluate their work and then reshape it based on new insights. Which of the following teaching strategies would be most effective in achieving this goal?

A. asking students to think about what parts of their story are most important and whether they have described these parts clearly and effectively

B. encouraging each student to place an appropriate limit on the length of his or her story based on the number of characters and events the student intends to include

C. having students brainstorm words related to the subject of the stories they are writing and decide which words might be incorporated in their work

D. suggesting that students begin each writing period by drawing an illustration that depicts the main story idea they wish to convey in their writing for that day

The item above measures competency 007:
The teacher understands that writing to communicate is a developmental process and provides instruction that promotes students' competence in written communication.

17. A middle school teacher wants to help students learn how to offer constructive feedback when they confer with their partners during the initial stage of a writing project. Which of the following guidelines for students would be most appropriate in this context?

A. Comment briefly on the content, form, and mechanics of your partner's writing.

B. Concentrate on helping your partner develop clear and concise topic sentences for every paragraph.

C. Suggest improvements in the mechanics of writing, but avoid criticizing your partner's ideas.

D. Respond to your partner's planning so far, and suggest ideas that he or she may not have considered.

The item above measures competency 007:
The teacher understands that writing to communicate is a developmental process and provides instruction that promotes students' competence in written communication.

18. An eighth-grade teacher plans the following activities in connection with a field trip to view a photojournalism exhibit at a local museum.

- Before the trip, students study how elements of design and photographic techniques express ideas and communicate meaning.
- The teacher gives students a list of questions to read and consider as they view the exhibit.
- After the trip, students work in small groups to write answers to the questions.
- In a whole-class discussion, students share their reactions to the exhibit and their groups' answers to the questions.

Which of the following additional activities would best help the teacher informally assess students' understanding of the way visual images and elements of design create meaning?

A. Students work in small groups to prepare their own exhibits by using photographs from newspapers and magazines to tell a story.

B. Each student researches one photojournalist featured at the exhibit and presents a brief report on his or her work in the field.

C. Students write an essay about the photojournalism exhibit at the museum, analyzing particular photographs they liked.

D. Each student writes a simulated magazine article and creates a drawing or illustration to accompany the article.

The item above measures competency 008:
The teacher understands skills for interpreting, analyzing, evaluating, and producing visual images and messages in various media and provides students with opportunities to develop skills in this area.

19. A middle school teacher designs an activity in which students watch a twenty-minute film with the sound turned off. Periodically, the teacher stops the film, and students discuss what they have seen. This instructional activity is most likely to promote students' critical-viewing skills in which of the following ways?

A. focusing students' attention on differences between visual messages and oral communication

B. helping students identify common film cliches by focusing attention on key images in short film segments

C. focusing students' attention on the relationship between visual imagery and narration in film

D. helping students interpret and evaluate visual images in film by focusing attention on visual details

The item above measures competency 008:
The teacher understands skills for interpreting, analyzing, evaluating, and producing visual images and messages in various media and provides students with opportunities to develop skills in this area.

20. Which of the following instructional strategies would best help fourth-grade students learn to self-monitor their reading comprehension?

A. Students take detailed notes while reading texts written at their instructional reading levels and then answer comprehension questions.

B. The teacher models the process of applying word identification strategies while reading aloud a grade-appropriate text.

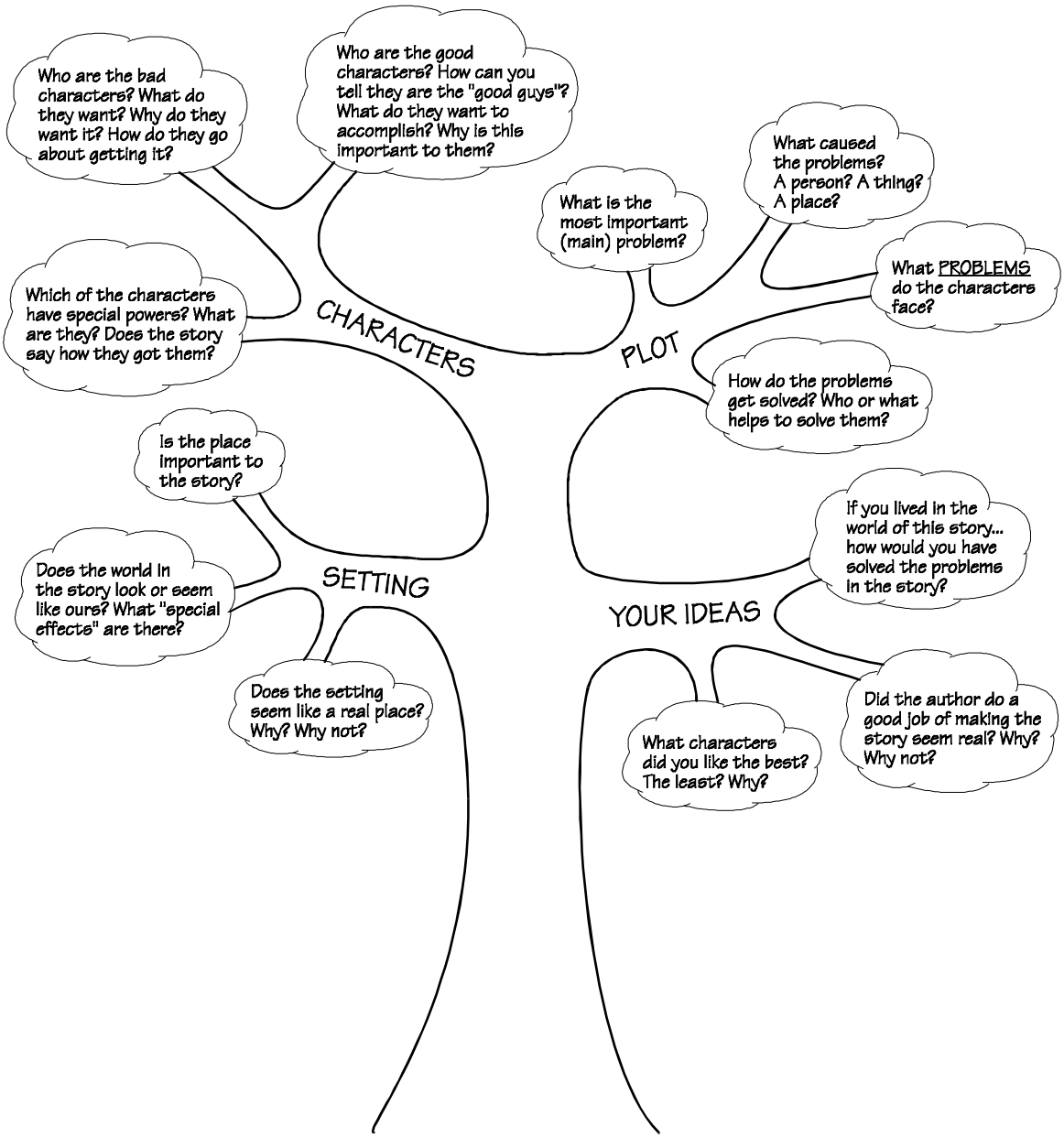
C. Students read an age-appropriate story and then create a story map to describe the plot, characters, and setting of the story.

D. The teacher displays a passage, reads it aloud, and models a think-aloud approach by pausing to question herself about the meaning of what she is reading.

The item above measures competency 004:
The teacher understands the importance of reading for understanding, knows components and processes of reading comprehension, and teaches students strategies for improving their comprehension.

Use the information and the "story tree" below to answer the four questions that follow.

Students in Mr. Wiggins's fifth-grade class study different types of literature over the course of the school year. Their first unit was on fantasy. As part of the introduction for that unit, Mr. Wiggins put up a large blank outline of a tree in the library corner of the classroom. He explained to his students that this was a "story tree" and that each of its major branches represented something different to think about when reading a literary work. As the unit progressed, Mr. Wiggins used guided discussion to challenge his students to label each major branch of the tree. He also encouraged them to think of questions they should ask themselves as they read to help them evaluate all the components of a particular selection. These questions were added to appropriate parts of the tree in the shape of clumps of leaves. The completed tree created by the class during the fantasy unit is pictured below.



21. The questions on the "characters" branch of the story tree are most likely to strengthen students' inferential comprehension by prompting the students to:

    A. distinguish fact from opinion.

    B. compare the effectiveness of different courses of action.

    C. evaluate motives behind actions.

    D. distinguish alternative solutions to problems.

The item above measures competency 004:
The teacher understands the importance of reading for understanding, knows components and processes of reading comprehension, and teaches students strategies for improving their comprehension.

22. Mr. Wiggins's use of the story tree is most likely to help students develop which of the following reading skills?

A. critical analysis of literature

B. understanding of historical trends in literary forms

C. analysis of the effects of word choice on readers' responses

D. understanding of literary devices such as caricature and foreshadowing

The item above measures competency 005:
The teacher understands reading skills and strategies appropriate for various types of texts and contexts and teaches students to apply these skills and strategies to enhance their reading proficiency.

23. Which of the following uses of the story tree would best help students apply metacognitive skills to enhance their comprehension?

A. Encourage students to ask themselves questions similar to those in the story tree when reading or writing stories independently.

B. Have students check to make sure that the book reports they write reflect the format outlined in the story tree.

C. Advise students to copy the story tree into their reading journal so they can refer to it when reading independently.

D. Help students create concept webs to analyze stories, and then guide the students to compare the webs with the story tree.

The item above measures competency 004:
The teacher understands the importance of reading for understanding, knows components and processes of reading comprehension, and teaches students strategies for improving their comprehension.

24. After finishing the unit on fantasy, Mr. Wiggins's class is now moving on to a unit on historical fiction. Which of the following questions should Mr. Wiggins ask his students in order to promote most effectively their understanding of the relationship between these two types of literature?

A. Should the branches of a story tree for historical fiction contain more questions than the branches of a story tree for fantasy?

B. How would you rearrange the questions in the fantasy story tree to make a story tree for historical fiction?

C. Do you think it will be easier or more difficult to construct a story tree for historical fiction than it was to make a fantasy story tree?

D. Which branch or branches of the fantasy story tree contain questions that could also be applied to a story tree for historical fiction?

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

The item above measures competency 005:
The teacher understands reading skills and strategies appropriate for various types of texts and contexts and teaches students to apply these skills and strategies to enhance their reading proficiency.

25. According to the Texas Essential Knowledge and Skills (TEKS), students in the sixth grade should be able to use graphic sources of information to address research questions. Students are most likely to develop these skills if they have had opportunities to:

A. locate graphic information about a specific topic in an encyclopedia or other reference book.

B. create their own tables and charts summarizing the results of a peer survey on an age-appropriate topic.

C. collaborate with a partner to make an outline summarizing the features of different graphic formats.

D. make accurate copies of tables, charts, maps, and other graphic information provided by the teacher.

The item above measures competency 009:
The teacher understands the importance of study and inquiry skills as tools for learning in the content areas and promotes students' development in applying study and inquiry skills.

Read the worksheet below, completed by a fourth grader; then answer the two questions that follow.

Name: Brendan W Date: Nov.6

Read the following passage and answer the questions.

The Birthday

Hank woke up very excited on Saturday morning because it was his birthday. His family was planning a big party for him, with lots of good food, balloons, and a cake with nine candles. It wasn't the party that Hank was most excited about, though. He was sure this would be the day when he finally got the remote-control car he wanted more than anything. He first saw the shiny red car in the front window of Mitchell's Toy Store a month ago. Since then, it was all he could think about.

Later in the day, it finally was time for Hank to open his presents. His parents gave him a basketball and sneakers. From his sisters, he received a book about making paper airplanes. His little brother gave him a special rock he had found. Finally, there was only the present from his grandfather left to open. This was his last hope. He ripped off the paper and opened the box. Inside there was a T-shirt that said "Number One Grandson." Hank almost groaned out loud, but instead he put a smile on his face and politely thanked his grandfather for the shirt.

Then he said silently to himself, "Maybe next year."

1. How does Hank feel when he wakes up? Why does he feel this way?

Excited cause its his birthday.

2. What does Hank want most for his birthday?

A remote-control car.

3. What presents does Hank get for his birthday?

shirt that says Number One Grandson, basketball, sneekers, book, rock

4. How does Hank probably feel when he opens the present from his grandfather and sees what is inside? What clue in the story tells you he feels this way?

Happy. It says he smiles and says thank you.

26. Brendan's performance on this worksheet suggests that he would benefit most from reading instruction to strengthen his:

A. literal comprehension.

B. inferential comprehension.

C. word-recognition skills.

D. vocabulary development.

The item above measures competency 004:
The teacher understands the importance of reading for understanding, knows components and processes of reading comprehension, and teaches students strategies for improving their comprehension.

27. Given Brendan's responses to the questions on the worksheet, which strategy would most likely have improved his comprehension of this passage?

A. stopping after he had read the title and setting a purpose for reading the selection

B. asking himself if he understood what was meant by the last sentence in the selection

C. going back and rereading any sentence that contained an unfamiliar word to see if he could determine the word's meaning

D. reminding himself to read more slowly when he came to portions of the text he found difficult to understand

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

The item above measures competency 005:
The teacher understands reading skills and strategies appropriate for various types of texts and contexts and teaches students to apply these skills and strategies to enhance their reading proficiency.

28. Students in a middle school class work together in small groups using the chart illustrated below as a study guide. The students fill in the first two columns after briefly previewing an assigned text and then complete the third column after reading the text.

What We Already Know About This Topic	What We Want To Find Out About This Topic	What We Have Learned About This Topic

Which of the following modifications to the chart would best promote development of students' study and inquiry skills?

A. dividing the chart into numbered rows to clarify the organization of information related to the assigned text

B. adding a fourth column labeled "What We Still Want To Learn About This Topic"

C. dividing the chart into rows that are prelabeled by the teacher with key words reflecting important concepts in the assigned text

D. relabeling the first column to read "What We Learned About This Text By Previewing It"

The item above measures competency 009:
The teacher understands the importance of study and inquiry skills as tools for learning in the content areas and promotes students' development in applying study and inquiry skills.

Use the paper below, written by a fourth-grade student about a favorite memory, to answer the two questions that follow.

I think my best year was when I was five. My friend Edwin and I had adventures together. We had to run away, all the time! We use to sneak around in the garden and pretend we were spy's. We spyed on people. We lived right next door to Edwin's house. There was a nice gardener named Tony. But there was another man who chased us, we called him BRUTUS! He yelled to come back but we ran away fast! Sometimes we saw mean dogs, we ran away from them, alright! There was a mean big kid named Toby Wolf. One day he chased us all the way to the garden! But we hid and then he couldnt find us. That was scary! Tony said, be careful of the flowers. Edwin was seven years old. Then we moved away. I was sad.

29. When reviewing this paper with the student, the teacher should suggest which of the following revisions?

A. reorganizing the paper to make the sequence of ideas more logical

B. adding specific details in support of the main idea of the paper

C. enriching the paper with an extended description of the setting

D. establishing a clear audience and purpose for the paper

The item above measures competency 007:
The teacher understands that writing to communicate is a developmental process and provides instruction that promotes students' competence in written communication.

30. Generally speaking, which of the following prewriting activities would be most effective in helping fourth graders write coherently about a favorite memory or other personal experience?

A. Individual students read an age-appropriate biography of a famous person before beginning to write.

B. The teacher provides students with a checklist of guidelines for organizing their personal essay.

C. Individual students describe their experiences to a partner before beginning to write.

D. The teacher prepares students for the essay by providing a mini-lesson on the use of written language conventions.

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

The item above measures competency 007:
The teacher understands that writing to communicate is a developmental process and provides instruction that promotes students' competence in written communication.

31. A middle school teacher frequently has students perform semantic mapping activities before and after assigned readings. Which of the following statements best explains the primary rationale for this instructional strategy?

A. Presenting textual information in several visual formats makes the information more accessible to students by accommodating diverse learning styles.

B. Diagramming textual information improves students' writing skills by promoting their use of effective text structures and accurate writing conventions.

C. Organizing reading material in new ways highlights connections among ideas and enhances students' short-term and long-term recall of the material.

D. Arranging textual information in graphic formats encourages students to use context cues to clarify the meaning of content-specific vocabulary in the text.

The item above measures competency 009:
The teacher understands the importance of study and inquiry skills as tools for learning in the content areas and promotes students' development in applying study and inquiry skills.

Use the information below to answer the two questions that follow.

Students in an eighth-grade class are preparing brief oral presentations as the culminating activity in an English language arts project. Students' parents/guardians, as well as classmates and teachers, will form the audience for the oral presentations. The teacher helps students analyze the purpose of their presentations, the expectations of the audience, the logical structure and wording of their presentations, the use of visual aids, elements of effective speech delivery, and response strategies for follow-up questions.

32. As students begin drafting scripts for their oral presentations, the teacher hands out and discusses the guidelines listed below.

- Begin by providing an overview of the main points that will be covered in your oral presentation.
- End with a summary of the main points that were presented.
- Ensure that the oral presentation follows a logical progression.
- Use transitions to indicate where one idea ends and the next begins.

Which of the following additional guidelines for scripting oral presentations would be most important for the teacher to include in this list?

A. Document your main ideas by pausing periodically to describe the sources you consulted when preparing your oral presentation.

B. Vary the sentence structure of your oral presentation by incorporating complex sentences whenever possible.

C. Summarize information from relevant literary texts rather than including any direct quotations in your oral presentation.

D. Provide strong supporting examples to clarify and illustrate the main ideas of your oral presentation.

The item above measures competency 001:
The teacher understands the importance of oral language, knows the developmental processes of oral language, and provides a variety of instructional opportunities for students to develop listening and speaking skills.

33. Which of the following recommendations would be most appropriate for the teacher to make when advising students about visual aids for their oral presentations?

A. Avoid visual distractions by limiting visual aids to the opening and closing sections of your oral presentation.

B. Minimize the use of text in visual aids and use concrete, precise wording to facilitate readability.

C. Maintain visual continuity by using no more than two different colors in the visual aids.

D. Make sure to introduce a different visual aid for each new idea in your oral presentation.

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

The item above measures competency 008:
The teacher understands skills for interpreting, analyzing, evaluating, and producing visual images and messages in various media and provides students with opportunities to develop skills in this area.

34. Students in a middle school class are working in small groups to produce and videotape mock newscasts. To help students prepare for this activity, the teacher leads a class discussion about videotaped excerpts from nationally televised news programs. During the discussion, the teacher asks, "Why do you think newscasters are often shown in front of recognizable buildings, such as the Capitol or White House?" This question is likely to promote students' understanding of visual media primarily by prompting the students to:

A. analyze the relationship between news and politics in television newscasts.

B. consider how visual images can be used to highlight ideas and influence viewers' perceptions.

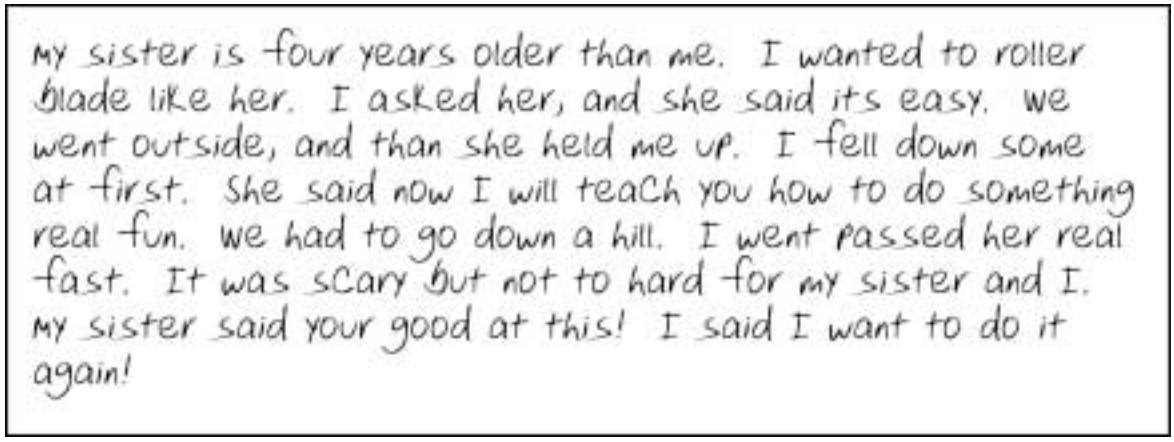
C. identify design elements and analyze their function in television newscasts.

D. understand the importance of ensuring that background images are visually appealing.

The item above measures competency 008:
The teacher understands skills for interpreting, analyzing, evaluating, and producing visual images and messages in various media and provides students with opportunities to develop skills in this area.

Use the information below to answer the two questions that follow.

A fifth-grade teacher asks students to write about a personal experience. Shown below is the writing of one student in the class.


my sister is four years older than me. I wanted to roller blade like her. I asked her, and she said its easy. we went outside, and than she held me up. I fell down some at first. She said now I will teach you how to do something real fun. we had to go down a hill. I went passed her real fast. It was scary but not to hard for my sister and I. my sister said your good at this! I said I want to do it again!

35. The writing sample shown above demonstrates the student's correct use of commas to separate:

A. two independent clauses joined by a coordinate conjunction.

B. two or more phrases that appear in a series.

C. a dependent phrase from an independent clause that follows it.

D. nonrestrictive phrases from the rest of the sentence.

The item above measures competency 006:
The teacher understands the conventions of writing in English and provides instruction that helps students develop proficiency in applying writing conventions.

36. Based on this writing sample, which of the following types of spelling instruction would be most effective in promoting the student's spelling development?

A. helping the student spell words containing vowel digraphs

B. teaching the student to recognize and spell words that are pronounced the same but spelled differently

C. helping the student spell words containing consonant blends

D. teaching the student to recognize and spell words containing common affixes

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

The item above measures competency 006:
The teacher understands the conventions of writing in English and provides instruction that helps students develop proficiency in applying writing conventions.

37. A middle school teacher designs the instructional activity described below.

- Students read a passage from an informational text.
- Using an overhead projector, the teacher divides a piece of paper into two columns by drawing a line down the center.
- The teacher models how to write in the first column significant information and quotations from the passage. Next, she comments on each of these entries by writing her thoughts about it in the second column. She then discusses with students the rationale for this divided-page method of note taking.
- Working in pairs, students read a second informational passage and use the divided-page method to take notes on the passage.

This instructional activity is most likely to promote development of students' study and inquiry skills by:

A. prompting students to recognize and describe the difference between main ideas and supporting details.

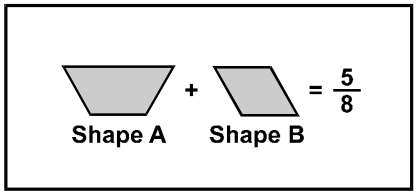
B. guiding students to identify and describe the logical structure of an informational text.

C. helping students understand the difference between recording and analyzing information.

D. providing students with a method for double checking the accuracy of their notes.

The item above measures competency 009:
The teacher understands the importance of study and inquiry skills as tools for learning in the content areas and promotes students' development in applying study and inquiry skills.

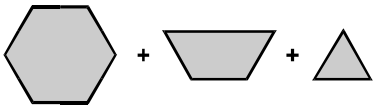
38. A fifth-grade class is using pattern blocks in the shape of congruent equilateral triangles to devise and solve problems involving fractions. One group devises the problem illustrated below.



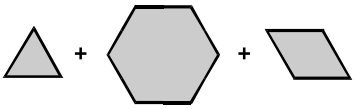
Given that the sum of Shapes A and B represents $\frac{5}{8}$, which of the following represents $1\frac{1}{4}$?

A.

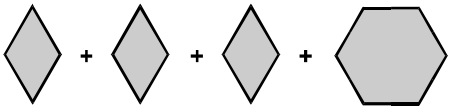
B.



C.



D.



The item above measures competency 010:
The teacher understands the structure of number systems, the development of a sense of quantity, and the relationship between quantity and symbolic representations.

39. **Use the information below to answer the question that follows.**

The Sahara Desert covers about 8.3×10^{13} square feet.
The average depth of the sand in the Sahara Desert is 200 feet.
A grain of sand has a volume of approximately 1.3×10^{-9} cubic feet.

Which of the following is the best estimate of the number of grains of sand in the Sahara Desert?

A. 10^{22}

B. 10^{23}

C. 10^{24}

D. 10^{25}

The item above measures competency 010:
The teacher understands the structure of number systems, the development of a sense of quantity, and the relationship between quantity and symbolic representations.

40. **Use the information below to answer the question that follows.**

$$\begin{array}{r} 12 \\ 29 \\ 88 \\ \underline{+11} \end{array}$$

When given the addition problem above, a student quickly said "140." When asked how she solved the problem, the student replied, "I added 88 and 12 to get 100, and 29 and 11 to get 40. Then I added these two numbers together." Which two number properties of addition did the student use in solving this problem?

A. associative and commutative

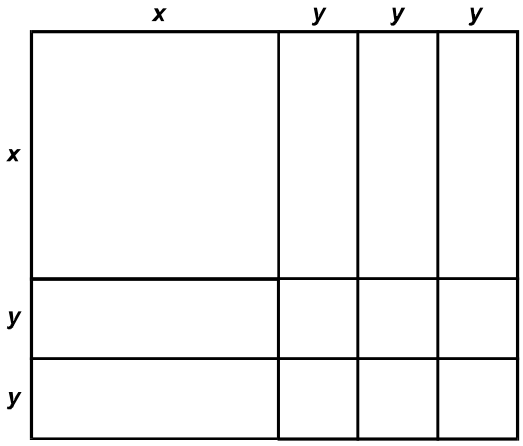
B. associative and additive identity

C. commutative and additive identity

D. distributive and additive inverse

The item above measures competency 011:
The teacher understands number operations and computational algorithms.

41. **Use the diagram below to answer the question that follows.**



Which of the following expressions is represented by the areas of the rectangles in the diagram above?

A. $xy^3 + xy^2$

B. $x^2 + 5xy + 6y^2$

C. $2x + y^3 + y^2$

D. $2x + 5xy + 6y$

The item above measures competency 011:
The teacher understands number operations and computational algorithms.

42. **Use the theorem below to answer the question that follows.**

> If the sum of a number's digits is divisible by three, the number is divisible by three.

Which of the following ways of expressing a three-digit number, n, best demonstrates why this theorem is true?

A. $n = a(10^2) + b(10) + c$

B. $n = a(100) + b(10) + c$

C. $n = a(99 + 1) + b(9 + 1) + c$

D. $n = a(300 - 200) + b(30 - 20) + c(9 - 8)$

The item above measures competency 012:
The teacher understands ideas of number theory and uses numbers to model and solve problems within and outside of mathematics.

43. The density of gold is 19.3 grams per cubic centimeter. What is the mass of a cube made of gold that measures 1.2 cm on a side?

A. 0.09 gram

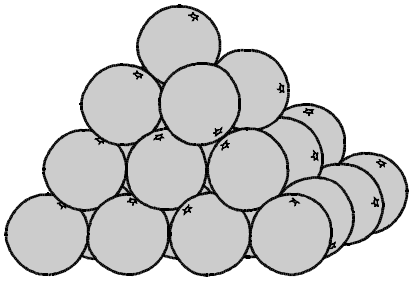
B. 1.73 grams

C. 23.16 grams

D. 33.35 grams

The item above measures competency 012:
The teacher understands ideas of number theory and uses numbers to model and solve problems within and outside of mathematics.

44. **Use the diagram below to answer the question that follows.**



In a store display, grapefruit are stacked 4 levels high in the shape of a pyramid with a square base. Which of the following expressions can be used to determine how many grapefruit can be stacked in a pyramid n layers high?

A. $1 \bullet 2 \bullet 3 \bullet 4 \bullet \ldots \bullet n = n!$

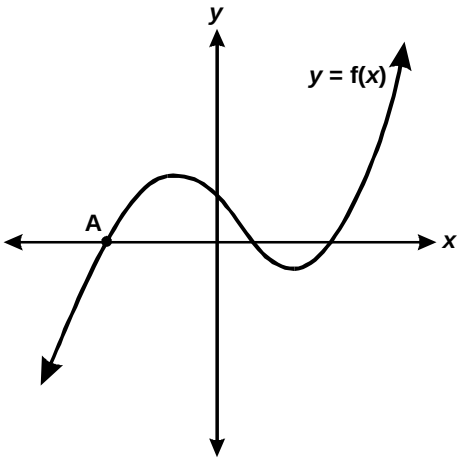
B. $1 + 3 + 5 + \ldots + (2n - 1) = n^2$

C. $\left(1 + 2 + 3 + \ldots + n = \frac{n(n+1)}{2}\right)$

D. $\left(1 + 4 + 9 + \ldots + n^2 = \frac{n(n+1)(2n+1)}{6}\right)$

The item above measures competency 013:
The teacher understands and uses mathematical reasoning to identify, extend, and analyze patterns and understands the relationships among variables, expressions, equations, inequalities, relations, and functions.

45. The curve in the graph below is given by $y = f(x)$.



Which of the following equations could be solved to find the x-coordinate of point A?

A. $f(x) = 0$

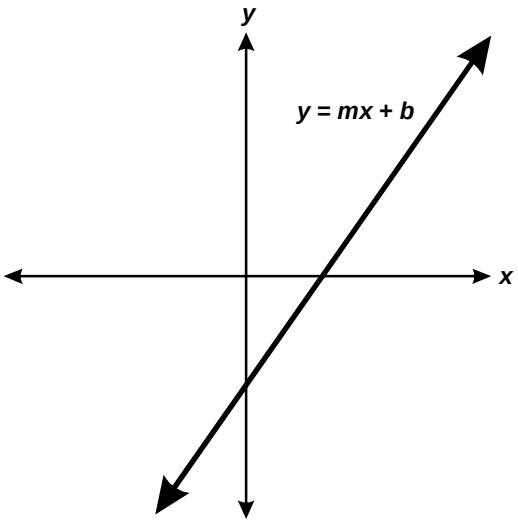
B. $f(0) = 0$

C. $f(0) = x$

D. $f(x) = f(0)$

The item above measures competency 013:
The teacher understands and uses mathematical reasoning to identify, extend, and analyze patterns and understands the relationships among variables, expressions, equations, inequalities, relations, and functions.

46. **Use the graph below to answer the question that follows.**



The graph represents an equation of the form $y = mx + b$. Which of the following statements about m and b are true?

A. $m > 0$ and $b > 0$

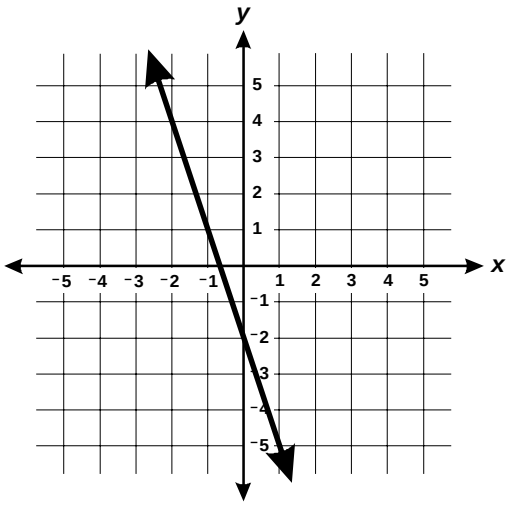
B. $m > 0$ and $b < 0$

C. $m < 0$ and $b > 0$

D. $m < 0$ and $b < 0$

The item above measures competency 014:
The teacher understands and uses linear functions to model and solve problems.

47. **Use the graph below to answer the question that follows.**



Which of the following lines has the same slope as the line above and passes through the point (6, 12)?

A. $y - 2x = 0$

B. $y + 3x = 30$

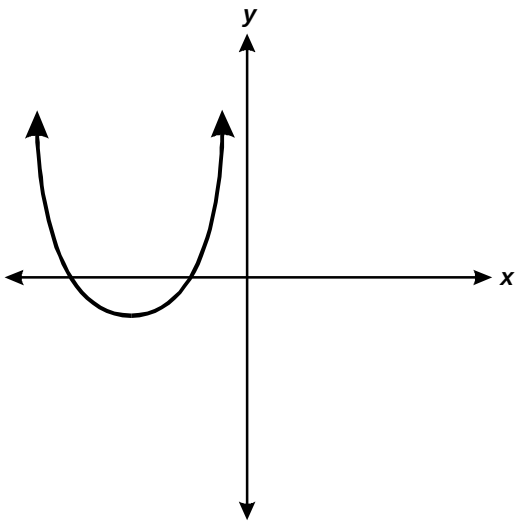
C. $y - 3x = -6$

D. $y + 3x = 42$

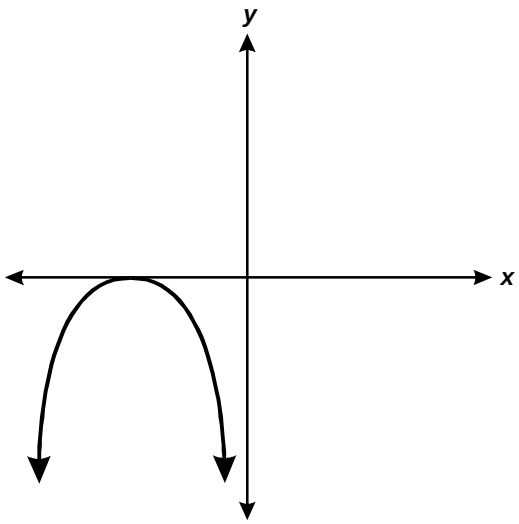
The item above measures competency 014:
The teacher understands and uses linear functions to model and solve problems.

48. A quadratic function has imaginary zeros. Which of the following could be the graph of the function?

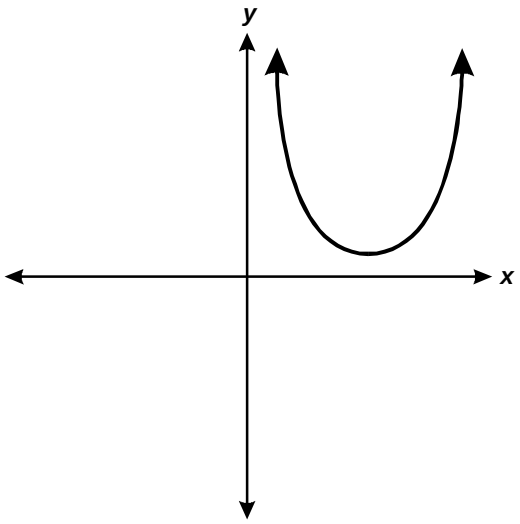
A.



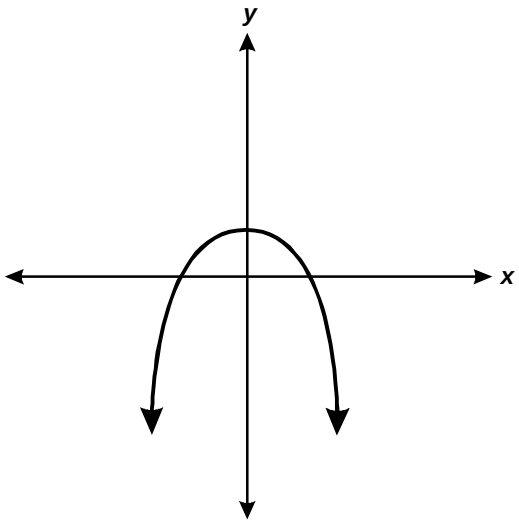
B.



C.



D.



The item above measures competency 015:
The teacher understands and uses nonlinear functions and relations to model and solve problems.

49. For what value of c will the function below have exactly one vertical asymptote?

$$y = \frac{4}{x^2 - cx + 9}$$

A. 0

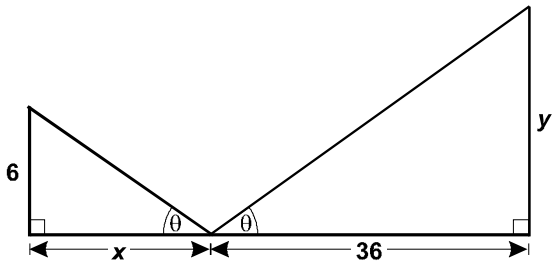
B. 4

C. 6

D. 9

The item above measures competency 015:
The teacher understands and uses nonlinear functions and relations to model and solve problems.

50. **Use the diagram below to answer the question that follows.**



Which of the following statements describes how the value of *y* depends on the value of *x* in the triangles above?

A. *y* is directly proportional to *x*.

B. *y* is directly proportional to the square of *x*.

C. *y* is inversely proportional to *x*.

D. *y* is inversely proportional to the square of *x*.

The item above measures competency 015:
The teacher understands and uses nonlinear functions and relations to model and solve problems.

51. One acre is 4840 square yards. Which of the following could be the dimensions, in feet, of a one-acre rectangular building lot?

A. 40 feet × 363 feet

B. 120 feet × 363 feet

C. 120 feet × 484 feet

D. 420 feet × 2000 feet

The item above measures competency 017:
The teacher understands measurement as a process.

52. Using a protractor, a student measures the sum of the interior angles in a triangle and obtains 176°. What is the percent error of this measurement?

A. 0.04%

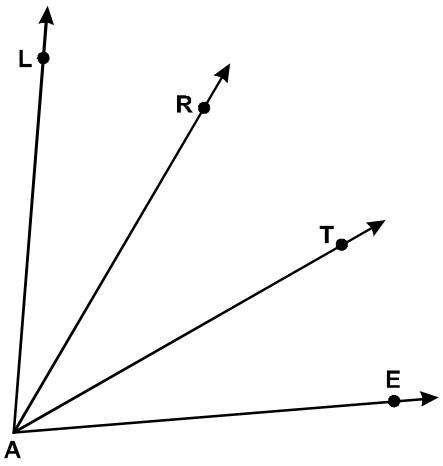
B. 2.22%

C. 2.27%

D. 4.00%

The item above measures competency 017:
The teacher understands measurement as a process.

53. **Use the diagram below to answer the question that follows.**



In this diagram, m∠*LAT* = m∠*RAE*. Which property is most likely to be used in proving that m∠*LAR* = m∠*TAE*?

A. the multiplication property of equality

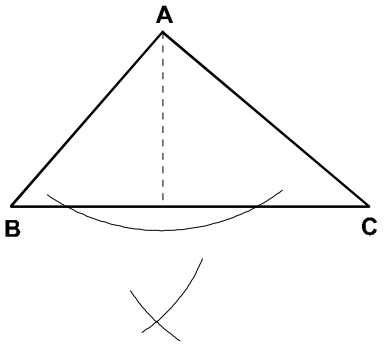
B. the addition property of equality

C. the distributive property

D. the properties of complementary angles

The item above measures competency 018:
The teacher understands the geometric relationships and axiomatic structure of Euclidean geometry.

54. **Use the diagram below to answer the question that follows.**



The diagram shows the markings for constructing the altitude of $\triangle ABC$. This is based on which of the following constructions?

A. Construct a ray that bisects a given angle.

B. Construct the perpendicular bisector of a given line segment.

C. Construct a point equidistant from the endpoints of a given line segment.

D. Construct a line through a given point and perpendicular to a given line segment.

The item above measures competency 018:
The teacher understands the geometric relationships and axiomatic structure of Euclidean geometry.

55. **Use the diagrams below to answer the question that follows.**

The diagrams show the first three regular polygons and their central angles. Which of the following gives the measure of the central angle of a regular polygon, $\theta(n)$, as a function of n, its number of sides, n ($n > 2$)?

A. $\theta(n) = \frac{360}{n}$

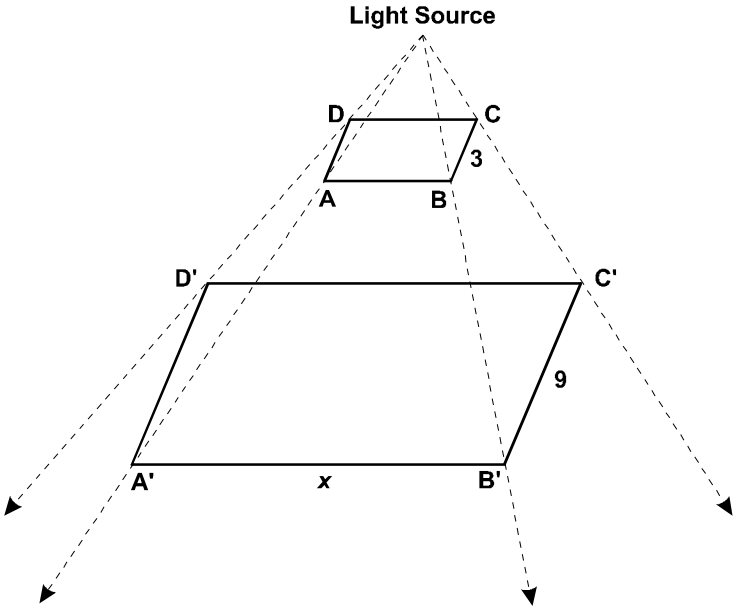
B. $\theta(n) = 360 - \frac{360}{n}$

C. $\theta(n) = 360 - n$

D. $\theta(n) = 360 - n^2$

The item above measures competency 019:
The teacher analyzes the properties of two- and three-dimensional figures.

56. **Use the diagram below to answer the question that follows.**



An overhead light source projects parallelogram *ABCD* to *A'B'C'D'*. Given that the projection is a dilation, which of the following expressions represents the perimeter of the smaller figure, *ABCD*, in terms of *x*?

A. $2x - 6$

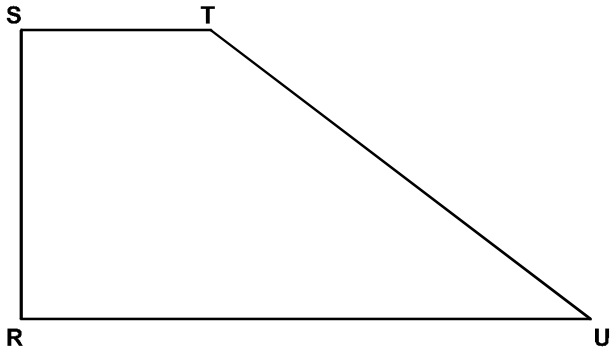
B. $3 + \frac{x}{3}$

C. $3x - 18$

D. $6 + \frac{2}{3}x$

The item above measures competency 020:
The teacher understands transformational geometry and relates algebra to geometry and trigonometry using the Cartesian coordinate system.

57. **Use the diagram below to answer the question that follows.**



A student places a flat mirror along each of the edges of the shape above, one edge at a time. Along which edge will the composite shape created by the image and the original shape form a quadrilateral?

A. *RS*

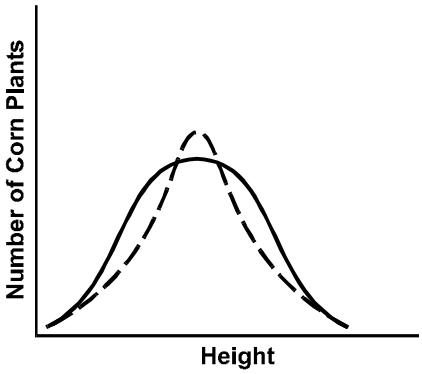
B. *ST*

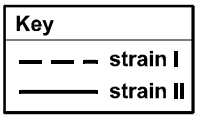
C. *TU*

D. *UR*

The item above measures competency 020:
The teacher understands transformational geometry and relates algebra to geometry and trigonometry using the Cartesian coordinate system.

58. The graph below shows the distribution in height of two different strains of corn. Which of the following statements about the strains of corn is true?





A. The mean height of strain I is greater than the mean height of strain II.

B. The median height of strain I is greater than the median height of strain II.

C. The mode height of strain I is less than the mode height of strain II.

D. The variation in height of strain I is less than the variation in height of strain II.

The item above measures competency 021:
The teacher understands how to use graphical and numerical techniques to explore data, characterize patterns, and describe departures from patterns.

59. The amount of money, after taxes, spent by a family on various expenses during one month is given in the table below.

Type of expense	Amount spent in one month
Rent	$ 750
Food	$ 575
Utilities	$ 120
Car loan, gas, and repairs	$ 450
Medical expenses	$ 65
Entertainment	$ 120
Credit card payment	$ 350
Miscellaneous expenses	$ 95
Total expenses	$ 2525

If the family constructs a pie chart using these figures, what is the approximate measure of the central angle of the sector used to represent the percentage of total expenses spent on food?

A. 23°

B. 63°

C. 77°

D. 82°

The item above measures competency 021:
The teacher understands how to use graphical and numerical techniques to explore data, characterize patterns, and describe departures from patterns.

60. Two teams meet in a playoff series at the end of the regular season. Team A won 55 of 81 games played in its home stadium during the regular season, while Team B won 48 of 81 games played in its home stadium. The first two games of the series will be played in Team A's home stadium, the next two games in Team B's home stadium. In the absence of any other information, which expression is equal to the probability that Team A will win the first four games in a row?

A. $\frac{55}{81} \times \frac{55}{81} \times \frac{55}{81} \times \frac{55}{81}$

B. $\frac{55}{81} \times \frac{55}{81} \times \frac{48}{81} \times \frac{48}{81}$

C. $\frac{55}{81} \times \frac{55}{81} \times \frac{33}{81} \times \frac{33}{81}$

D. $\frac{55}{81} \times \frac{55}{81} \times \frac{26}{81} \times \frac{26}{81}$

The item above measures competency 022:
The teacher understands the theory of probability.

61. **Use the table below to answer the question that follows.**

Cuts of Beef	High Fat Content	Low Fat Content	Total
Flank Steaks Rump Roasts	74 258	386 142	460 400
Total	332	528	860

A USDA inspector is grading cuts of beef at a meat packing plant. If a piece of beef is selected at random, what is the probability that it will be a flank steak with high fat content?

A. 0.0860

B. 0.1609

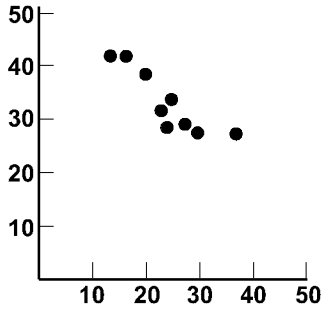
C. 0.2229

D. 0.3860

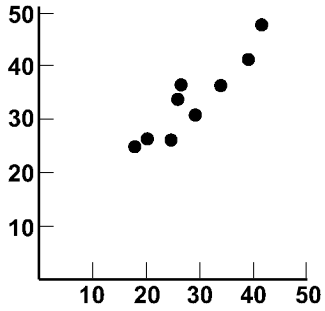
The item above measures competency 022:
The teacher understands the theory of probability.

62. The relationship between two variables has a correlation coefficient of approximately 0.95. Which of the following scatterplots best represents these data?

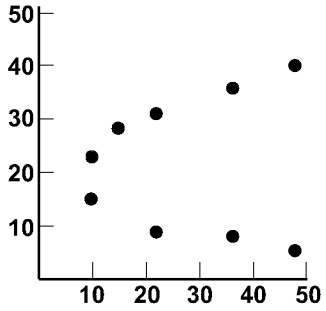
A.



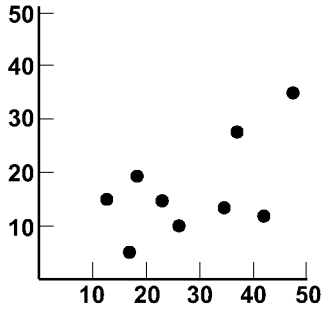
B.



C.



D.



The item above measures competency 023:
The teacher understands the relationship among probability theory, sampling, and statistical inference, and how statistical inference is used in making and evaluating predictions.

63. A company claims that less than 2% of its electronic components are faulty. Tests on a random sample of 50 components find 4 faulty components. How would statistical principles be used to evaluate the company's claim?

A. by repeating the tests on a random sample of 25 components to see if 2 faulty components are found

B. by examining the components to determine the reason for their failure

C. by assuming the sample is not random and rejecting the results of the test

D. by determining the probability of finding 4 faulty components in a random sample of 50

The item above measures competency 023:
The teacher understands the relationship among probability theory, sampling, and statistical inference, and how statistical inference is used in making and evaluating predictions.

64. While investigating the properties of parallelograms using a dynamic geometry software program, a student notices that the diagonals of a parallelogram seem to bisect each other. The student conjectures that this statement is true for all parallelograms. Which of the following would be the most reasonable next step for the student to take to evaluate the validity of this conjecture?

A. Try to find more examples supporting the conjecture.

B. Try to find a counterexample to the conjecture.

C. Try to prove the conjecture using mathematical induction.

D. Try to generalize the conjecture to apply to other quadrilaterals.

The item above measures competency 024:
The teacher understands mathematical reasoning and problem solving.

65. Which of the following best characterizes a mathematical theorem?

A. a mathematical statement deductively derived from axioms, definitions, and previously proven statements

B. a mathematical statement assumed to be true and from which additional mathematical statements are proven

C. a mathematical statement that can only be proven true by indirect deductive methods

D. a mathematical statement that has neither been proven nor disproven

The item above measures competency 024:
The teacher understands mathematical reasoning and problem solving.

66. A shopper sees some gloves on sale for 20% off their original price of $28. The next week the gloves have been reduced another 15% off the sale price. If there is a 6% sales tax, how much would the shopper now pay for the gloves?

A. $16.52

B. $17.11

C. $19.29

D. $20.18

The item above measures competency 025:
The teacher understands mathematical connections within and outside of mathematics and how to communicate mathematical ideas and concepts.

67. A theorem is expressed in the form below.

If *A* then *B*.

How can both the above theorem and its converse be expressed?

A. If *B* then *A*.

B. If not *B* then not *A*.

C. If not *A* then not *B*.

D. *A* if and only if *B*.

The item above measures competency 025:
The teacher understands mathematical connections within and outside of mathematics and how to communicate mathematical ideas and concepts.

68. Which of the following activities would best foster sixth-grade students' development of the mathematical concept of function?

A. Each student uses 30 one-inch squares to make a variety of different shapes with the same area. The class then makes a table showing characteristics of each figure, and students discuss which shape has the smallest perimeter.

B. Students measure various properties (e.g., mass, length) of a number of three-dimensional objects. They then discuss the number of quantitative descriptions that can be assigned to each object.

C. Students measure the perimeters of six squares of different sizes and fill in a table with the headings "Length of side" and "Perimeter." They then attempt to predict values for larger and smaller squares given the data they have obtained.

D. Students measure the perimeter and determine the area of each of a number of regular geometric figures. They then enter the data in a table and discuss any patterns they observe.

The item above measures competency 026:
The teacher understands how children learn and develop mathematical skills, procedures, and concepts.

69. A seventh-grade mathematics teacher notices that several students are having difficulty remembering definitions for math terms discussed in class. Which of the following independent exercises would be most useful to ensure that all the students in the class understand and remember mathematical vocabulary?

A. Ask students to keep personal lists of definitions of mathematical terms they don't understand and periodically discuss the lists with the students.

B. Provide all students with a list of definitions that is copied from the main text for all mathematical terms used in the class.

C. Ask students who are familiar with the mathematical vocabulary used in the class to informally tutor those students who are having difficulty.

D. Provide extra time at the end of each class for students to ask questions about the mathematical vocabulary used during that day's lesson.

The item above measures competency 026:
The teacher understands how children learn and develop mathematical skills, procedures, and concepts.

70. Which of the following best illustrates an application of Piaget's theory of intellectual development in a lesson on the number *pi* for sixth-grade students at the concrete operational stage?

A. A teacher has students measure the circumference and diameter of a variety of circular objects. The students then compare the ratios of circumference to diameter.

B. A teacher presents a lecture on the development and use of the number *pi* during Babylonian and Egyptian times. The teacher concludes by discussing Archimedes's method for calculating *pi*.

C. A teacher defines *pi* as the ratio of the circumference to the diameter of a circle and solves several different problems. Students are then asked to solve a series of similar problems with different numbers.

D. A teacher has students work in groups of two to solve a series of problems involving *pi*. The teachers tells students that a prize will be given to members of the first three groups that successfully solve all of the problems.

The item above measures competency 027:
The teacher understands how to plan, organize, and implement instruction using knowledge of students, subject matter, and statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) to teach all students to use mathematics.

71. A teacher is planning a unit on proportional relationships. Which of the following topics could the teacher include in the unit?

A. properties of similar triangles

B. solving quadratic equations

C. finding formulas for the perimeters of figures

D. solving problems with the Pythagorean theorem

The item above measures competency 027:
The teacher understands how to plan, organize, and implement instruction using knowledge of students, subject matter, and statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) to teach all students to use mathematics.

72. Two groups of students are using a dynamic geometry software program to investigate the properties of quadrilaterals. The first group has concluded that the diagonals of a quadrilateral always bisect each other. The second group of students is not convinced. Which of the following should the teacher encourage the students to do to resolve the apparent contradiction?

A. Assume that the diagonals of a quadrilateral don't bisect each other and derive a contradiction.

B. Find an example of a quadrilateral with diagonals that do not bisect each other.

C. Formally prove that if the diagonals of a quadrilateral bisect each other, the quadrilateral is a parallelogram.

D. Use informal reasoning to show that the diagonals of a quadrilateral create two triangles with an adjacent side.

The item above measures competency 027:
The teacher understands how to plan, organize, and implement instruction using knowledge of students, subject matter, and statewide curriculum (Texas Essential Knowledge and Skills [TEKS]) to teach all students to use mathematics.

73. Students in a seventh-grade mathematics class have completed an activity in which they designed nets and identified and measured their faces. Which of the following would be the most valid method for the teacher to use to assess the students' application of this material?

A. Ask students to identify characteristics and names of various three-dimensional shapes and solids.

B. Ask students to demonstrate translations, rotations, and reflections of various geometric shapes.

C. Ask students to calculate the total surface area for a variety of three-dimensional shapes and solids.

D. Ask students to construct tessellations using a variety of geometric shapes.

The item above measures competency 028:
The teacher understands assessment and uses a variety of formal and informal assessment techniques to monitor and guide mathematics instruction and to evaluate student progress.

74. A fifth-grade teacher is beginning a new unit on geometry. The teacher would like to identify which aspects of the new topic are most difficult for students to understand in order to be able to adjust her lesson plans as the unit progresses. Which of the following assessment methods would be most appropriate for achieving this goal?

A. periodic surprise quizzes

B. regular peer reviews of other students' work

C. performance assessments at the beginning and end of the unit

D. informal observations and interviews during each class

The item above measures competency 028:
The teacher understands assessment and uses a variety of formal and informal assessment techniques to monitor and guide mathematics instruction and to evaluate student progress.

75. The American Revolution most influenced political developments in Mexico and other parts of Latin America during the next half century by:

A. demonstrating that it was possible to overthrow European colonial rule.

B. providing a model for the creation of a federal political structure that eliminated barriers to unity among Latin American countries.

C. exposing the limitations of parliamentary government.

D. creating a form of government that prevented any one person or group from obtaining excessive power.

The item above measures competency 029:
The teacher understands and applies knowledge of significant historical events and developments, multiple historical interpretations and ideas, and relationships between the past, the present, and the future, as defined by the Texas Essential Knowledge and Skills (TEKS).

76. In his well-known 1893 essay, "The Significance of the Frontier in American History," Frederick Jackson Turner declared:

"The legislation which most developed the powers of the national government, and played the largest part in its activity, was conditioned on the frontier."

The strongest support for Turner's assertion is found in legislation that was created to:

A. establish and maintain a national postal service.

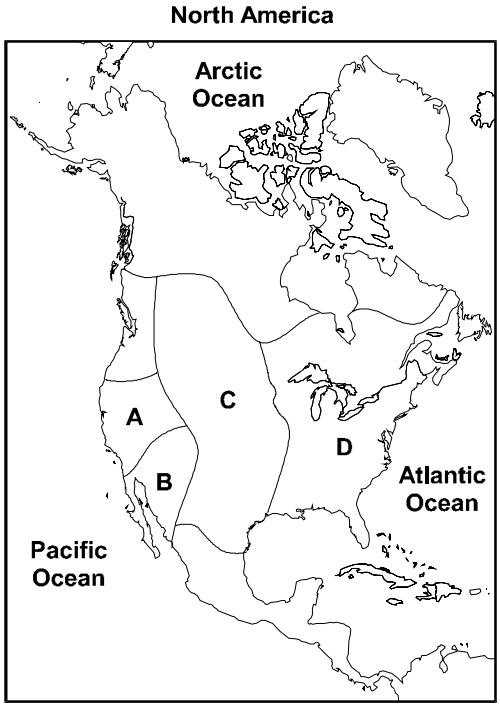
B. regulate commerce with foreign nations and among the states.

C. assume state debts and charter a national bank.

D. create railroads and other forms of domestic transportation.

The item above measures competency 029:
The teacher understands and applies knowledge of significant historical events and developments, multiple historical interpretations and ideas, and relationships between the past, the present, and the future, as defined by the Texas Essential Knowledge and Skills (TEKS).

77. **Use the map below to answer the question that follows.**



In which of the lettered regions on the map did the European introduction of horses and firearms have the greatest impact on Native American life?

A. Region A

B. Region B

C. Region C

D. Region D

The item above measures competency 029:
The teacher understands and applies knowledge of significant historical events and developments, multiple historical interpretations and ideas, and relationships between the past, the present, and the future, as defined by the Texas Essential Knowledge and Skills (TEKS).

78. Which of the following landforms most facilitated the emergence of early civilizations in Asia and Africa?

A. coastal areas that provided abundant supplies of various types of seafood and easy access to salt for food preservation

B. elevated plateaus that had a mild climate and furnished ample grazing land for pastoral activities

C. mountainous areas that were easily defensible and contained an abundance of resources that could be used as building materials

D. river valleys that supported trade and provided fresh water for crop growing and human consumption

The item above measures competency 029:
The teacher understands and applies knowledge of significant historical events and developments, multiple historical interpretations and ideas, and relationships between the past, the present, and the future, as defined by the Texas Essential Knowledge and Skills (TEKS).

79. The civil rights movement of the 1960s sought to address unresolved issues that had been major topics of national debate during the:

A. Reconstruction era following the Civil War.

B. Gilded Age of the late nineteenth century.

C. Progressive Era of the early twentieth century.

D. Great Depression of the 1930s.

The item above measures competency 029:
The teacher understands and applies knowledge of significant historical events and developments, multiple historical interpretations and ideas, and relationships between the past, the present, and the future, as defined by the Texas Essential Knowledge and Skills (TEKS).

80. The rate of soil erosion is most likely to exceed the rate of soil formation in areas where people have:

A. planted two or more crops simultaneously on the same land.

B. terraced hillsides to create new cropland.

C. cut down forests to increase the amount of land under cultivation.

D. grazed animals on land once used for growing crops.

The item above measures competency 030:
The teacher understands and applies knowledge of geographic relationships involving people, places, and environments in Texas, the United States, and the world, as defined by the Texas Essential Knowledge and Skills (TEKS).

81. The concept of *region* facilitates the examination of geographic phenomena mainly by providing geographers with:

A. a means of distinguishing between the human and physical causes of environmental modifications.

B. a convenient and manageable unit for studying the earth's human and natural environments.

C. a framework for evaluating the feasibility of solutions to most geographic problems.

D. a means of establishing criteria for assessing human modifications of the natural environment.

The item above measures competency 030:
The teacher understands and applies knowledge of geographic relationships involving people, places, and environments in Texas, the United States, and the world, as defined by the Texas Essential Knowledge and Skills (TEKS).

82. Coastal beaches, sand dunes found in desert areas, and landforms created by glaciers all result from which of the following physical processes?

A. deposition

B. sea floor spreading

C. faulting

D. tectonic processes

The item above measures competency 030:
The teacher understands and applies knowledge of geographic relationships involving people, places, and environments in Texas, the United States, and the world, as defined by the Texas Essential Knowledge and Skills (TEKS).

83. Which of the following is a result of the hydrosphere being a closed system?

A. Only a relatively small proportion of all of the water on earth is available for use by humans, animals, and plants.

B. The total amount of salt water on earth is gradually increasing while the amount of fresh water is continually decreasing.

C. The earth operates on a water budget in which deficits in one part are balanced by gains in another part.

D. Nearly all of the water on the surface of the earth ultimately empties into the oceans.

The item above measures competency 030:
The teacher understands and applies knowledge of geographic relationships involving people, places, and environments in Texas, the United States, and the world, as defined by the Texas Essential Knowledge and Skills (TEKS).

84. **Read the passage below about aquaculture in Asia; then answer the question that follows.**

Throughout Asia, people have long known the benefits of aquaculture. Pond farming techniques allow traditional mainland farmers to raise a rich source of dietary protein as well as produce an excellent natural fertilizer from harvested fish droppings. In land-poor Japan, the shallow coastal areas become the pond. Today, Japanese farmers of the sea, or mariculturists, grow increasing amounts of the sea plants and shellfish that are a regular part of the Japanese diet.

The pattern of resource distribution and exploitation described in the passage affects regional development mainly by:

A. making regional agriculture less labor-intensive.

B. encouraging economic over-dependence on a single resource.

C. increasing the self-sufficiency of food suppliers.

D. encouraging investment by outside developers.

The item above measures competency 030:
The teacher understands and applies knowledge of geographic relationships involving people, places, and environments in Texas, the United States, and the world, as defined by the Texas Essential Knowledge and Skills (TEKS).

85. **Read the passage below; then answer the question that follows.**

During the first half of the 1800s, Eli Whitney and others had developed interchangeable parts. This development in turn called for a division of labor. For instance, a shoemaker no longer made an entire shoe. Instead, in a large shoe factory, one worker might run a machine that cut only heels. Another might run a machine that shaped soles. All the different parts were then brought together at a central location and assembled by other workers into a shoe.

One result of the developments described in the passage was to:

A. decrease the importance of workers in the production process.

B. expand the variety of goods that a factory could produce.

C. increase the amount of satisfaction that workers derived from their labor.

D. reduce the price of goods produced using the new methods.

The item above measures competency 031:
The teacher understands and applies knowledge of economic systems and how people organize economic systems to produce, distribute, and consume goods and services, as defined by the Texas Essential Knowledge and Skills (TEKS).

86. Application of the principle of opportunity cost will most likely lead consumers to:

A. seek credit opportunities.

B. decrease total spending.

C. establish purchasing priorities.

D. make long-term investments.

The item above measures competency 031:
The teacher understands and applies knowledge of economic systems and how people organize economic systems to produce, distribute, and consume goods and services, as defined by the Texas Essential Knowledge and Skills (TEKS).

87. Which of the following international economic developments would most likely have the greatest effect on the Texas economy?

A. The World Trade Organization uses its power to reduce the tariff rates placed on clothing imports by member nations.

B. The president of the United States signs a trade bill granting the People's Republic of China most-favored-nation status.

C. The International Monetary Fund loans the Mexican government money needed to stabilize the national currency.

D. Member nations of the Organization of Petroleum Exporting Countries agree to limit output in order to increase world oil prices.

The item above measures competency 031:
The teacher understands and applies knowledge of economic systems and how people organize economic systems to produce, distribute, and consume goods and services, as defined by the Texas Essential Knowledge and Skills (TEKS).

88. One can best distinguish between a command economy and a market economy by:

A. examining the relative importance of international commerce in the two systems.

B. analyzing the use of technology by producers in the two systems.

C. comparing basic production processes in the two systems.

D. determining how decisions about basic economic questions are made in the two systems.

The item above measures competency 031:
The teacher understands and applies knowledge of economic systems and how people organize economic systems to produce, distribute, and consume goods and services, as defined by the Texas Essential Knowledge and Skills (TEKS).

89. Which of the following excerpts from the U.S. Constitution best embodies the concept of federalism?

A. "The powers not delegated to the United States by the Constitution, nor prohibited by it to the states, are reserved to the states respectively, or to the people."

B. "The judicial power of the United States shall be vested in one Supreme Court, and in such inferior courts as the Congress may from time to time ordain."

C. "The citizens of each state shall be entitled to all privileges and immunities of citizens in the several states."

D. "All bills for raising revenue shall originate in the House of Representatives; but the Senate may propose or concur with amendments as on other bills."

The item above measures competency 032:
The teacher understands and applies knowledge of government, democracy, and citizenship, including ways in which individuals and groups achieve their goals through political systems, as defined by the Texas Essential Knowledge and Skills (TEKS).

90. The main effect of formal changes to the U.S. Constitution has been to:

A. determine the specific meaning of language contained in the Constitution.

B. reinforce the system of checks and balances.

C. make the Constitution more democratic than the original document.

D. expand the powers of the executive branch of government.

The item above measures competency 032:
The teacher understands and applies knowledge of government, democracy, and citizenship, including ways in which individuals and groups achieve their goals through political systems, as defined by the Texas Essential Knowledge and Skills (TEKS).

91. Which of the following best describes the significance of the U.S. Supreme Court's decision in *Marbury* v. *Madison* (1803)?

A. It established the principle of constitutional supremacy.

B. It was the first case in which the Court recognized the right of executive privilege.

C. It set a precedent for the doctrine of judicial review.

D. It was the first case in which the Court ruled a state law unconstitutional.

The item above measures competency 032:
The teacher understands and applies knowledge of government, democracy, and citizenship, including ways in which individuals and groups achieve their goals through political systems, as defined by the Texas Essential Knowledge and Skills (TEKS).

92. The rights and responsibilities of citizenship are likely to be most expansive in a society where:

A. citizens are committed to common goals established by the government.

B. there are constitutional limits on the power of government.

C. there is a close relationship between the legislative and executive branches of government.

D. political power is shared by national and regional governments.

The item above measures competency 032:
The teacher understands and applies knowledge of government, democracy, and citizenship, including ways in which individuals and groups achieve their goals through political systems, as defined by the Texas Essential Knowledge and Skills (TEKS).

93. In which of the following ways can the federal executive branch check the power of the federal judicial branch?

A. The president appoints Supreme Court justices.

B. The Department of Justice may impeach federal judges.

C. The president may overturn Supreme Court decisions.

D. The attorney general selects cases for the Supreme Court.

The item above measures competency 032:
The teacher understands and applies knowledge of government, democracy, and citizenship, including ways in which individuals and groups achieve their goals through political systems, as defined by the Texas Essential Knowledge and Skills (TEKS).

94. Voters can best make an informed decision in an electoral contest by:

A. determining the number and types of media sources that support each of the candidates.

B. observing and analyzing the campaign strategies used by each of the candidates.

C. using varied sources of information to examine the candidates' political backgrounds and beliefs.

D. reading the candidates' campaign literature and examining their television advertisements.

The item above measures competency 032:
The teacher understands and applies knowledge of government, democracy, and citizenship, including ways in which individuals and groups achieve their goals through political systems, as defined by the Texas Essential Knowledge and Skills (TEKS).

95. The ways in which scientific breakthroughs influenced broader social developments in nineteenth-century Europe can best be seen in the effect:

A. Louis Pasteur's germ theory of disease had on demographic trends.

B. Charles Darwin's theory of evolution had on attitudes toward gender relations.

C. Michael Faraday's work on magnetism had on manufacturing processes.

D. Gregor Mendel's discovery of the laws of heredity had on educational trends.

The item above measures competency 033:
The teacher understands and applies knowledge of cultural development, adaptation, and diversity, and understands and applies knowledge of interactions among science, technology, and society, as defined by the Texas Essential Knowledge and Skills (TEKS).

96. **Read the excerpt below from a Cherokee oral tradition; then answer the question that follows.**

At first the earth was flat and very soft and wet. The animals were anxious to get down, and sent out different birds to see if it was yet dry, but they found no place to alight and came back again to Găluñ´lătĭ. At last it seemed to be time, and they sent out the Buzzard and told him to go and make ready for them. This was the Great Buzzard, the father of all the buzzards we see now. He flew all over the earth, low down near the ground, and it was still soft. When he reached the Cherokee country, he was very tired, and his wings began to flap and strike the ground, and wherever they struck the earth there was a valley, and where they turned up again there was a mountain. When the animals above saw this, they were afraid that the whole world would be mountains, so they called him back, but the Cherokee country remains full of mountains to this day.

What was the main purpose of this oral tradition in Cherokee culture?

A. to describe important features of the physical environment

B. to show how geographic factors affect human migration patterns

C. to explain the formation of the natural world

D. to show how people adapt to the physical environment

The item above measures competency 033:
The teacher understands and applies knowledge of cultural development, adaptation, and diversity, and understands and applies knowledge of interactions among science, technology, and society, as defined by the Texas Essential Knowledge and Skills (TEKS).

97. Which of the following best describes a major difference between contemporary U.S. families and families in colonial America during the eighteenth century?

A. Contemporary families are more likely to function as integrated parts of a broader kin network.

B. Contemporary families are more likely to view children as consumers rather than as producers.

C. The members of contemporary families are more likely to share common interests.

D. Contemporary families are likely to assume a broader range of community responsibilities.

The item above measures competency 033:
The teacher understands and applies knowledge of cultural development, adaptation, and diversity, and understands and applies knowledge of interactions among science, technology, and society, as defined by the Texas Essential Knowledge and Skills (TEKS).

98. **Read the passage below; then answer the question that follows.**

We wash ourselves with soap invented by the ancient Gauls and clothe ourselves with fabrics made using processes developed by weavers in the Middle East. The ancient Egyptians invented the glass we put in our windows as well as the tanning techniques we use to produce the leather in our shoes. And the books and newspapers we read might not exist without the paper invented in China and the printing press developed by a fifteenth-century German artisan.

This passage best illustrates how a society's traits may emerge as a result of which of the following processes?

A. socialization

B. cultural diffusion

C. assimilation

D. cultural integration

The item above measures competency 033:
The teacher understands and applies knowledge of cultural development, adaptation, and diversity, and understands and applies knowledge of interactions among science, technology, and society, as defined by the Texas Essential Knowledge and Skills (TEKS).

99. Throughout history, a major effect of technological innovation on the production process has been to:

A. reduce the amount of human labor required to produce a given quantity of goods.

B. increase the complexity of productive tasks.

C. increase the level of satisfaction that workers derive from their productive activities.

D. reduce the amount of raw materials used in productive activities.

The item above measures competency 033:
The teacher understands and applies knowledge of cultural development, adaptation, and diversity, and understands and applies knowledge of interactions among science, technology, and society, as defined by the Texas Essential Knowledge and Skills (TEKS).

100. **Read the passage below; then answer the question that follows.**

The Soviet model for economic development that was used in Eastern Europe was disastrous for the environment. Success was measured by the output of goods, usually with a limited investment and virtually no concern for any environmental degradation that might accompany a successful venture. Natural resources were usually wasted because the system underpriced their value. A continuing example of such waste is the great amounts of water used in Poland, Hungary, the Czech Republic, Romania, and Bulgaria, where consumption rates are double those in Western Europe.

Information contained in the passage can best be used to explore which of the following questions?

A. Who decides what should be produced in a command economy?

B. What measures should be used to calculate the costs of economic growth?

C. Which natural resources are most deserving of protection?

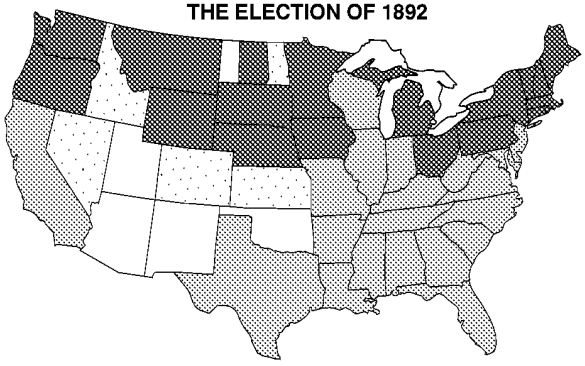
D. What is the proper balance between government aims and consumer needs?

The item above measures competency 034:
The teacher understands the foundations of social studies education and applies knowledge of skills used in the social sciences.

Use the maps below to answer the two questions that follow.

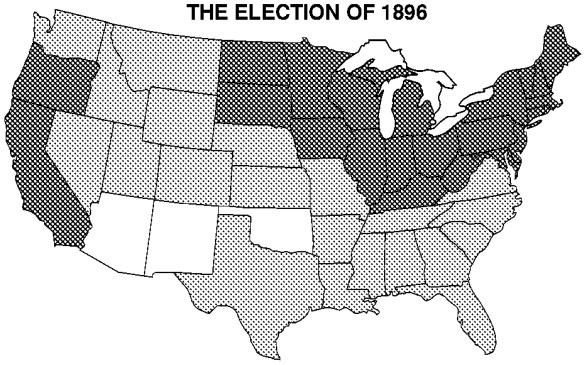
U.S. ELECTION RESULTS

THE ELECTION OF 1892



	Electoral	Popular
Cleveland (Dem.)	277	5,556,918
Harrison (Rep.)	145	5,176,108
Weaver (Populist)	22	1,041,028
Territory. No returns, unsettled, etc.		

THE ELECTION OF 1896



	Electoral	Popular
McKinley (Rep.)	271	7,104,779
Bryan (Dem.)	176	6,502,925
Territory. No returns, unsettled, etc.		

101. Based on the results of these two elections, which of the following generalizations could reasonably be made about U.S. politics during the 1890s?

A. Politics in the United States divided along class lines, pitting wealthy industrialists and middle-class businessmen against immigrant laborers and poor farmers.

B. Thirty years after the Civil War, sectional politics remained a major factor in national elections.

C. In a situation in which both parties claimed almost equal numbers of loyal supporters, ideological differences between candidates were minimized.

D. Northeastern states, composed of both financial and industrial interests, held the key to political success for the Republican party.

The item above measures competency 034:
The teacher understands the foundations of social studies education and applies knowledge of skills used in the social sciences.

102. An examination of the voting patterns in U.S. national elections during the 1890s reveals that the:

A. Republican party could not win without strong support from Southern voters.

B. issues raised by the Populists divided Republicans but had little effect on Democratic voters.

C. new states of the West were strongly committed to the Democratic party.

D. voters in states with large urban populations tended to support the Republican party.

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

The item above measures competency 034:
The teacher understands the foundations of social studies education and applies knowledge of skills used in the social sciences.

103. A student has generated the table below to organize and present data about a number of Latin American countries.

Population Information About Six Latin American Nations

Nation	Population	Population Density	Population Growth Rate	Capital City	Urban Population
Argentina	27,874,000	10	1.6	Buenos Aires	82%
Brazil	123,388,000	14	2.3	Brasilia	61%
Chile	11,091,000	15	1.5	Santiago	81%
Mexico	68,236,000	34	2.4	Mexico City	67%
Peru	17,843,000	14	2.6	Lima	67%
Venezuela	15,284,000	17	3.3	Caracas	75%

In providing the student with feedback regarding the effectiveness of this table, it would be most important for a teacher to advise the student to:

A. make sure that the title will be clear and informative to readers.

B. avoid mixing nonnumerical information (e.g., capital cities) with numerical information in a single table.

C. make sure the numbers in the columns are consistently presented in either ascending or descending order.

D. indicate the unit of measurement used in some of the columns.

The item above measures competency 034:
The teacher understands the foundations of social studies education and applies knowledge of skills used in the social sciences.

104. While conducting research on U.S. politics of the late nineteenth century, a historian considers consulting the autobiography of a prominent politician of that period. Using an autobiography for this type of research is most likely to help the historian:

A. evaluate the long-term consequences of decisions made in the past.

B. determine the precise sequence in which a series of historical events occurred.

C. obtain insight into contemporary values and beliefs.

D. establish criteria for distinguishing historical fact from opinion.

The item above measures competency 034:
The teacher understands the foundations of social studies education and applies knowledge of skills used in the social sciences.

105. Members of a city council are considering a change in local zoning that would allow the creation of commercial establishments in a residential area of the city. One group of councilors believes the change is necessary to expand the local tax base; an opposing group feels the change would adversely affect residents of the area. After lengthy discussion of the issue, the council agrees to open a few clearly defined sections of the residential area to forms of commercial development that are compatible with the neighborhood's character. The council's action best illustrates which of the following?

A. the use of compromise to resolve policy differences

B. the use of arbitration to settle a dispute in which two parties feel strongly about an issue

C. the use of debate to clarify complex policy questions

D. the use of negotiation to obtain an equitable settlement of an economic issue

The item above measures competency 034:
The teacher understands the foundations of social studies education and applies knowledge of skills used in the social sciences.

106. A middle school social studies teacher is aware that many students use the World Wide Web to locate information for social studies assignments and projects. The teacher wishes to ensure that students are able to use the Web effectively as a research tool. The teacher can best achieve this goal by teaching students to ask which of the following questions about any document on the Web that they may wish to use?

A. How many links to other related sites are contained within this document?

B. Is the information contained in this document also available in paper-based texts or other media?

C. Is the author of this document a reliable source of information about the topic in question?

D. Is the material in this document protected by copyright and am I able to quote from it if I wish?

The item above measures competency 035:
The teacher plans and implements effective instruction and assessment in social studies.

107. An eighth-grade teacher could best help his or her students understand the role of interest groups in political decision making by having the students:

A. analyze and compare national news broadcasts in terms of the amount of time they spend reporting on issues of concern to various groups, such as environmentalists or business-people.

B. use newspaper articles, editorials, and guest speakers to analyze the arguments and influence of various groups concerned about a local issue, such as where to locate a new airport.

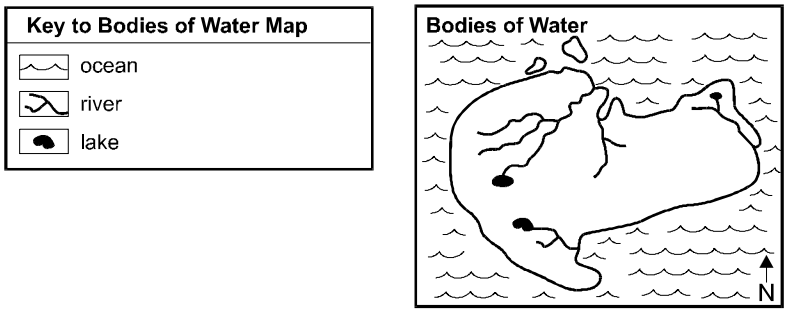
C. analyze recent political party platforms to determine each party's priorities and the types of policies it is most likely to support.

D. write letters to a local newspaper or politician in which they present their views on an issue of interest to them, such as a proposed change in the school curriculum.

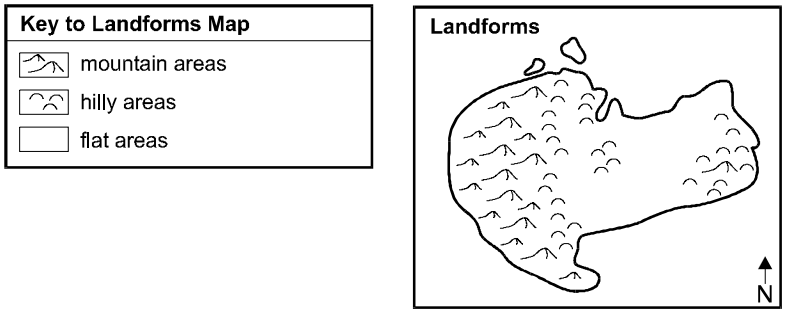
The item above measures competency 035:
The teacher plans and implements effective instruction and assessment in social studies.

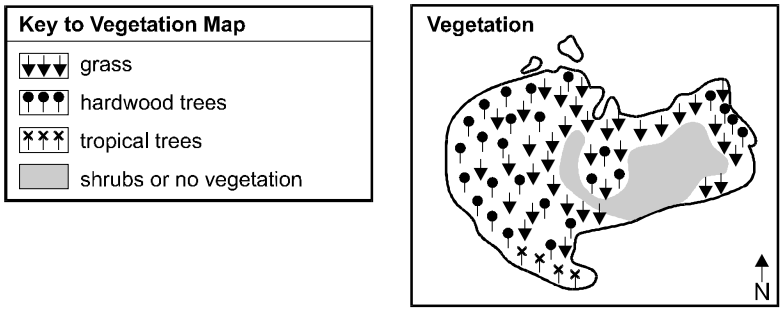
Use the information below to answer the two questions that follow.

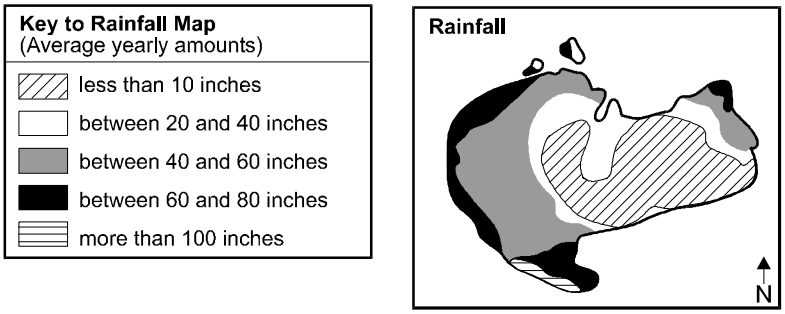
To begin a geography lesson, a sixth-grade teacher gives groups of students the map below and asks them to determine where they would choose to locate a settlement if they were just arriving on the island.



After each group has had an opportunity to choose a settlement location and to discuss the reasons for their choice, the teacher gives the students the following three maps, one at a time. With each new map they are given, the students must determine whether they want to change their original choice based on the new information they have.







108. This lesson would most clearly illustrate for students which of the following geographic concepts?

A. The environment may play an important role in encouraging or limiting a region's activities and population patterns.

B. To understand human activity patterns within a region, it is often necessary to investigate interrelationships between that region and other regions of the world.

C. Geographic regions may be defined in a great many ways; how they are defined depends on the particular variables being considered.

D. The parts of a region are often economically interrelated as a result of transportation, communication, and trade.

The item above measures competency 035:
The teacher plans and implements effective instruction and assessment in social studies.

109. This activity would be particularly useful for promoting students' ability to:

A. use primary source materials.

B. distinguish between relevant and irrelevant information.

C. apply decision-making steps and procedures.

D. evaluate the reliability of information presented in various formats.

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

The item above measures competency 035:
The teacher plans and implements effective instruction and assessment in social studies.

110. As part of a history unit on urbanization in the nineteenth-century United States, a middle school teacher emphasizes ways in which farmers from surrounding areas met the food needs of city dwellers while purchasing goods produced in urban workshops and factories. The teacher could best reinforce instruction on this topic by relating it to which of the following economic concepts?

A. competitive markets

B. interdependence

C. factors of production

D. supply and demand

The item above measures competency 035:
The teacher plans and implements effective instruction and assessment in social studies.

111. According to the Texas Essential Knowledge and Skills (TEKS), sixth-grade students are expected to be able to identify different points of view about an issue or topic. To meet this expectation, it will be most important for sixth graders to have developed the ability to:

A. differentiate between primary and secondary sources.

B. apply procedures for problem solving and decision making.

C. interpret material by comparing and contrasting.

D. translate information from one medium to another.

The item above measures competency 035:
The teacher plans and implements effective instruction and assessment in social studies.

112. A student will be using an alcohol lamp to heat a test tube containing a liquid. Using a test tube holder, it would be safest for the student to position the test tube:

A. directly above the flame, shaking it gently and keeping it loosely corked at all times during heating.

B. in an upright position, while moving it slowly in a circular motion around the flame.

C. at about a 45° angle with its mouth pointed away from people, while moving it slowly back and forth through the flame.

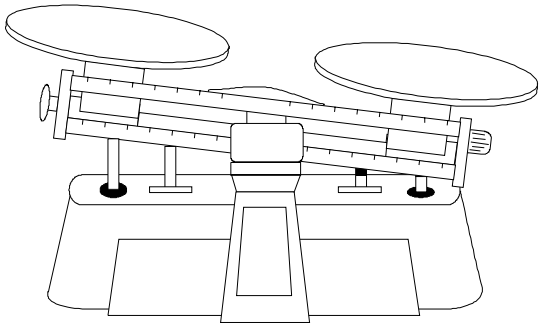
D. in a vertical position, keeping the bottom of the tube in the blue part of the flame at all times.

The item above measures competency 036:
The teacher understands how to manage learning activities to ensure the safety of all students.

113. Laboratory instructions for measuring the mass of a dry chemical on a balance, as shown below, are as follows:

Instructions:

(1) Remove any mass from the balance.
(2) Move the riders to zero.
(3) If the pointer does not read zero, rotate the adjustment knob until it does.
(4) _____ .
(5) _____ .
(6) _____ .



Which of the following should be steps 4, 5, and 6 in these instructions?

A. (4) Place the dry chemical on the balance.
(5) Add counterweights until the pointer reads zero.
(6) Read the mass of the chemical from the measurement bar.

B. (4) Measure the mass of a watch glass.
(5) Place the dry chemical on the watch glass and measure the combined mass.
(6) Subtract the mass of the watch glass from the combined mass to find the mass of the chemical.

C. (4) Place the dry chemical on the balance.
(5) Rotate the adjustment knob until the pointer reads zero.
(6) Read the mass of the chemical from the measurement bar.

D. (4) Place a watch glass on the balance.
(5) Move the riders to balance the beam.
(6) Place the dry chemical on the watch glass and re-adjust the riders until the beam is again balanced.

The item above measures competency 037:
The teacher understands the correct use of tools, materials, equipment, and technologies.

114. The table below lists measurement tasks included in laboratory activities conducted by students in a middle school science class. Which line of the table matches a measurement activity with the correct measurement tools?

Line	Measurement Activity	Tools Provided
1	Add 5 g of salt to 250 mL of water and stir.	triple-beam balance, 25 mL capacity beaker marked in 1 mL intervals
2	Add 15 mL of rubbing alcohol to 50 mL of water.	250 mL capacity Erlenmeyer flask marked in 50 mL intervals
3	Add 2 mL of peppermint oil to 8 g of powdered sugar.	5 mL capacity pipette marked in 1 mL intervals, pan balance with masses, petri dish
4	Add 20 g of sugar to 10 mL of water and heat until the sugar dissolves.	100 mL capacity graduated cylinder marked in 25 mL intervals, spring scale, mortar

A. Line 1

B. Line 2

C. Line 3

D. Line 4

The item above measures competency 037:
The teacher understands the correct use of tools, materials, equipment, and technologies.

115. **Use the information below to answer the question that follows.**

At the beginning of the year, students in a middle school science class are given the following form, outlining a problem analysis procedure.

Problem Analysis Form

1. What is the problem? _____
   _____
2. What are the causes of this problem? _____
   _____
3. What are the effects of this problem? _____
   _____
4. How could this problem be solved? _____
   _____

After students have become familiar with the problem analysis procedure, they work in small groups to use the procedure to explore information in several research papers on global warming. Each paper presents a different perspective on the problem, its causes, its effects, and possible solutions. Groups then share and discuss what they have discovered and are surprised to find that the papers present so many different perspectives. This activity is best for helping students recognize that:

A. science has few absolute answers to the world's problems.

B. making new scientific discoveries requires interaction among many different scientific disciplines.

C. new scientific theories must be tested before they are accepted.

D. scientists cannot draw conclusions about a phenomenon until they have observed it many times.

The item above measures competency 039:
The teacher understands how science impacts the daily lives of students and interacts with and influences personal and societal decisions.

116. **Use the statements below to answer the question that follows.**

Earth Science	Biology	Astronomy
Most scientists predict that over the next few decades global warming will lead to rising sea levels; devastation of coral reefs by warming waters; and an increase in droughts, hurricanes, winter storms and other disruptive weather patterns.	A person who travels rapidly from low altitude to altitudes above 10,000 feet often hyperventilates in an attempt to compensate for the reduced amount of oxygen in the air. If this response does not provide enough oxygen to the body, muscle fatigue, light-headedness, nausea, and irritability can occur.	The most spectacular phenomenon related to sunspot activity is solar flares, which are massive amounts of energy released near the sunspot. The energy from solar flares disrupts radio communication and interacts with the Earth's magnetic field to cause intensified displays of the *aurora borealis*.

Which of the following unifying concepts in science is illustrated by the statements given above?

A. how complex systems can change and evolve in unpredictable patterns

B. how changes in any one subsystem can affect changes in other subsystems within the system

C. how negative feedback acts to maintain stability in a system over time

D. how changes in the input of matter and energy of a system affect the output of matter and energy in the system

The item above measures competency 040:
The teacher knows and understands the unifying concepts and processes that are common to all sciences.

Use the passage below to answer the two questions that follow.

More than half of the world's population cooks and heats with biomass fuels: wood, dung, or crop wastes. Such fuels are inexpensive and available in remote rural locations, but they produce smoke containing large amounts of soot and cancer-causing agents. Research in the United States and Zimbabwe suggests that people could improve their health and their cooking efficiency by using roots and gourds as fuels instead of other types of biomass. The roots and gourds, which are native to and grow well in arid climates, ignite more easily than other biomass fuels and give off virtually no smoke. This cleaner burning is a result of more thorough and efficient combustion. More efficient burning means people burn less roots and gourds than they do other fuels.

117. Scientists could best test the hypothesis of improved health by:

A. comparing a population that uses roots and gourds with a similar population that uses other biomass fuels.

B. developing a computer simulation to compare the burning processes of roots and gourds with those of other biomass fuels.

C. analyzing the chemical structure of roots and gourds to determine what features cause them to burn more cleanly.

D. analyzing the efficiency of roots and gourds as a fuel by comparing their masses before and after burning.

The item above measures competency 038:
The teacher understands the process of scientific inquiry and the history and nature of science.

118. Based on current theories about the effects of human activities on the environment, and assuming the research results described in the passage are correct, it is most likely that a worldwide switch from traditional biomass fuels to the roots and gourds in the study would:

A. slow global warming due to reduced emission of greenhouse gases.

B. rebuild the ozone layer by reducing hydrocarbon emissions.

C. increase erosion of topsoil from farmlands due to loss of ground cover in rural areas.

D. worsen acid rain problems by increasing reliance on biomass fuels.

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

The item above measures competency 051:
The teacher understands the structure and function of earth systems.

119. **Use the passage below to answer the question that follows.**

Scientists long thought that carbon existed in only two pure forms, graphite and diamond. Graphite, the soft, black substance used in pencils, is formed of loosely linked chains of carbon atoms. Diamonds are very hard crystals of closely packed carbon atoms. Recently, however, scientists discovered a new form of pure carbon they dubbed *buckminster-fullerenes*, or *buckyballs*. Buckyballs are hollow, spherical cages of carbon atoms that are very different from either graphite or diamond.

This passage best illustrates the relationship between the:

A. number of isotopes of an element and the ways in which that element can be used.

B. length of the atomic bonds in a substance and the strength of those bonds.

C. atomic structure of a substance and the properties of that substance.

D. abundance of an element in nature and the number of compounds that can be formed by that element.

The item above measures competency 042:
The teacher understands physical properties of and changes in matter.

120. Which of the following lines correctly matches a type of chemical bond with a description of some of its characteristics?

Line	Bond Type	Bond Characteristics
1	Hydrogen	a strong bond in which two atoms of hydrogen share a single electron
2	Ionic	a weak bond in which atoms become charged by the loss or gain of protons in their nuclei
3	Covalent	a strong bond in which atoms share paired electrons
4	Metallic	a weak bond in which atoms of metals are held together by the mutual attraction of their nuclei

A. Line 1

B. Line 2

C. Line 3

D. Line 4

The item above measures competency 043:
The teacher understands chemical properties of and changes in matter.

121. Which of the following equations is balanced?

A. $CaBr_2 + Na_2CO_3 \longrightarrow 2\ CaCO_3 + NaBr$

B. $CaBr_2 + Na_2CO_3 \longrightarrow CaCO_3 + 2\ NaBr$

C. $CaBr_2 + Na_2CO_3 \longrightarrow 2\ CaCO_3 + 2\ NaBr$

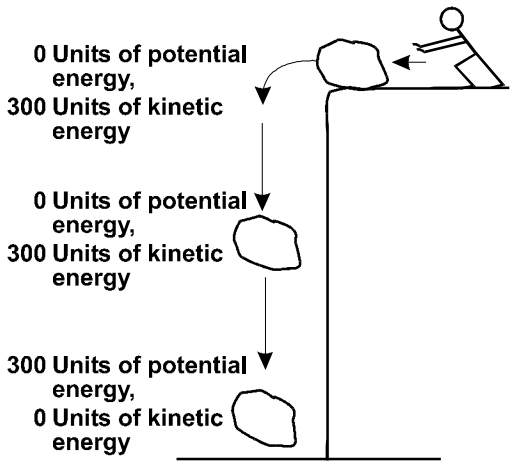
D. $CaBr_2 + Na_2CO_3 \longrightarrow CaCO_3 + NaBr$

The item above measures competency 043:
The teacher understands chemical properties of and changes in matter.

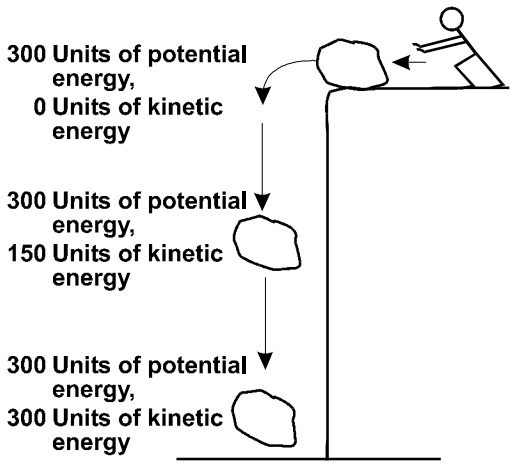
122. A boulder at the top of a cliff has 300 units of energy. A person pushes the boulder over the edge. Which of the following diagrams correctly shows how much total kinetic and potential energy the boulder has:

- at the top of the cliff just before it goes over the edge,
- halfway to the bottom, and
- just before hitting the ground?

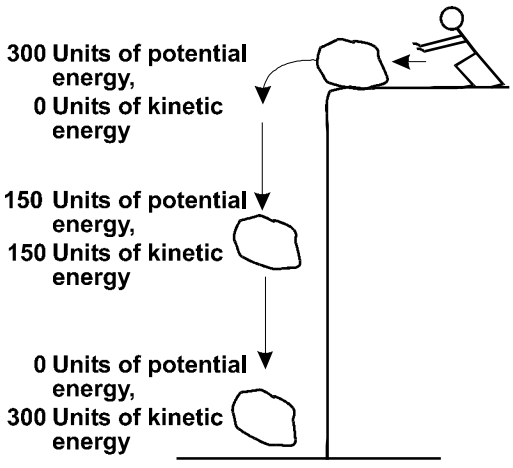
A.



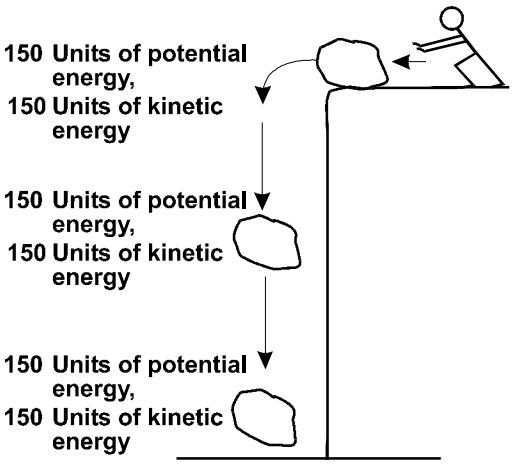
B.



C.



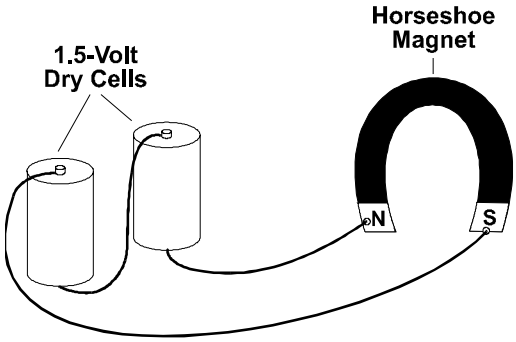
D.



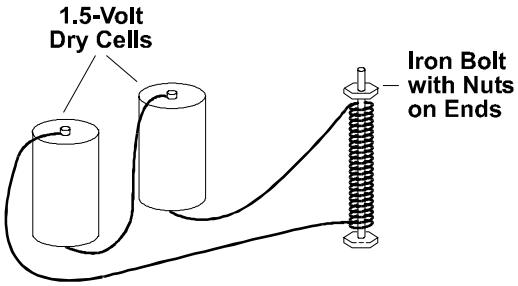
The item above measures competency 044:
The teacher understands energy and interactions between matter and energy.

123. Which of the following shows a correct method for using shielded copper wire to construct an electromagnet?

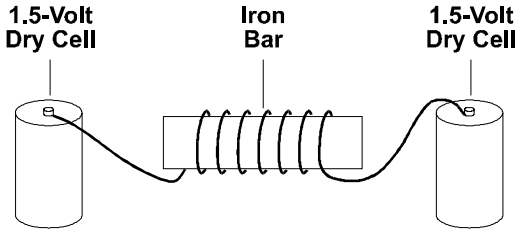
A.



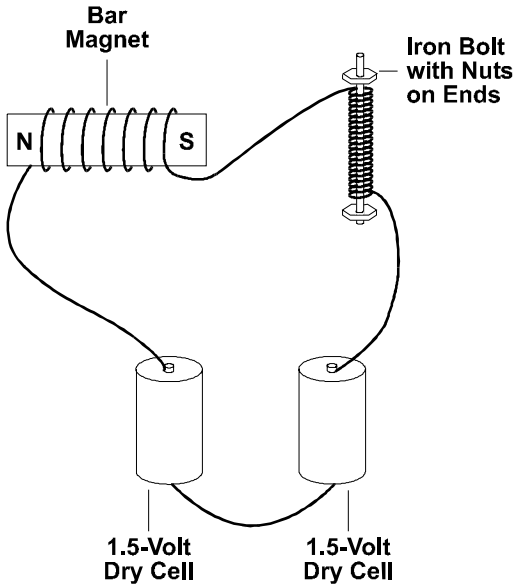
B.



C.



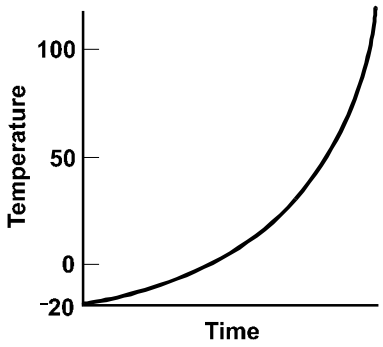
D.



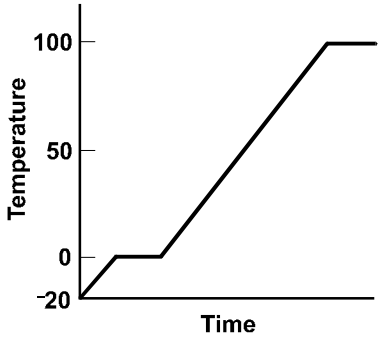
The item above measures competency 044:
The teacher understands energy and interactions between matter and energy.

124. A student fills a beaker with ice and places it on a hot plate. As the ice melts, the temperature (degrees Celsius) of the ice water mixture is recorded at fifteen-second intervals. The temperature is then graphed with respect to time. Which of the following graphs is most likely to result from this experiment?

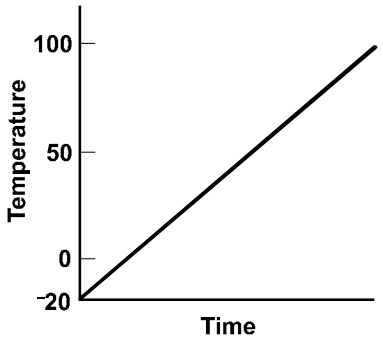
A.



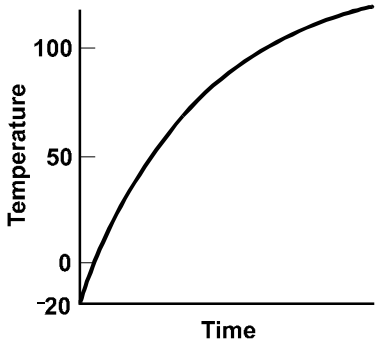
B.



C.



D.



The item above measures competency 045:
The teacher understands energy transformations and the conservation of matter and energy.

125. A bottle of juice is submerged in a lake. The temperature of the lake water is a few degrees warmer than that of the juice. According to the second law of thermodynamics, which of the following statements is true?

A. Heat will flow from the bottle to the lake until the two are at the same temperature.

B. Heat will flow from the bottle to the lake until the bottle is cooler than the lake.

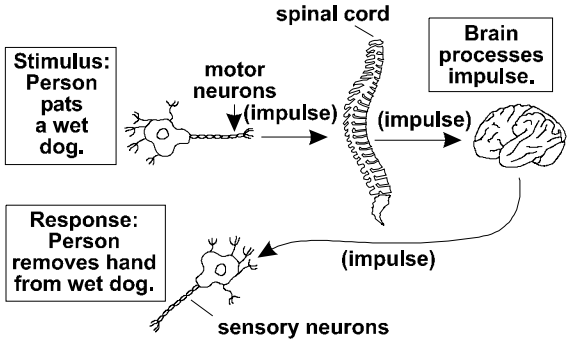
C. Heat will flow from the lake to the bottle until the two are at the same temperature.

D. Heat will flow from the lake to the bottle until the bottle is warmer than the lake.

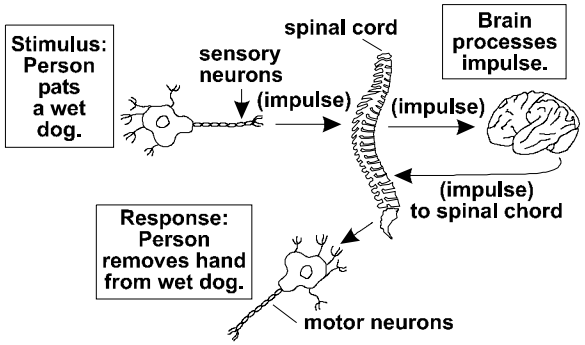
The item above measures competency 045:
The teacher understands energy transformations and the conservation of matter and energy.

126. A teacher wants to prepare a model to illustrate the operation of the human nervous system. Which of the following models is most accurate?

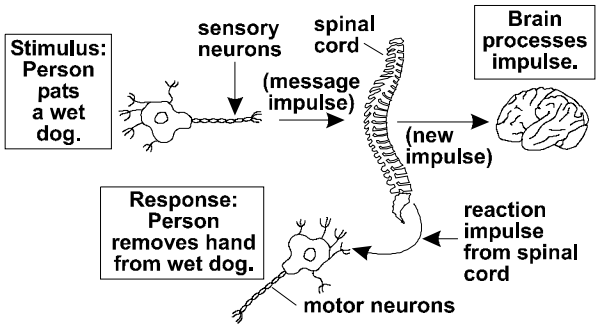
A.



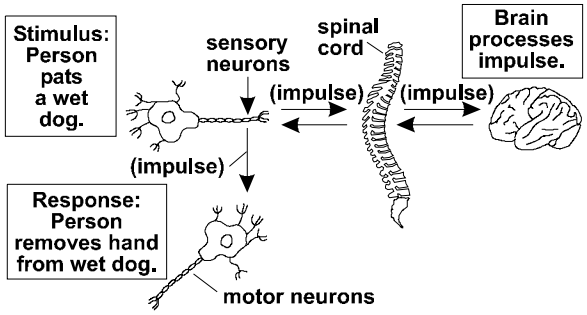
B.



C.



D.



The item above measures competency 046:
The teacher understands the structure and function of living things.

Use the information below to answer the two questions that follow.

Students in a science class cross-pollinate potato plant A with potato plant B. The resulting seeds are collected and planted as plot I. The class also cuts several eyes from potatoes harvested from potato plant A and plants them as plot II.

127. Which of the following statements best describes the type of reproduction used to produce offspring in plot I and plot II?

A. Potato plants in plot I are produced by sexual reproduction, and potato plants in plot II are produced by asexual reproduction.

B. Potato plants in plot I are produced by asexual reproduction, and potato plants in plot II are produced by sexual reproduction.

C. The potato plants in both plot I and plot II are produced by asexual reproduction.

D. The potato plants in both plot I and plot II are produced by sexual reproduction.

The item above measures competency 047:
The teacher understands reproduction and the mechanisms of heredity.

128. Which of the following statements about the genetic makeup of the potato plants grown by the class is most accurate?

A. All potato plants grown from seeds (plot I) will be genetically identical to each other but different from both potato plant A and potato plant B.

B. All potato plants grown from seeds (plot I) will have half as many chromosomes as do the potato plants grown from potato pieces (plot II).

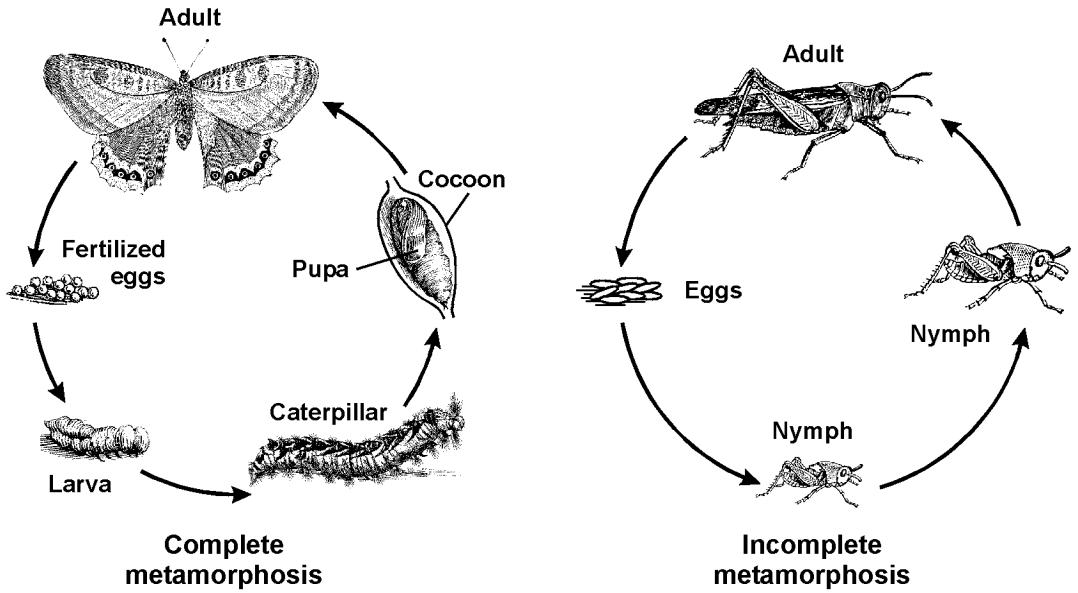
C. All potato plants grown from potato pieces (plot II) will be genetically identical to potato plant A.

D. All potato plants grown from potato pieces (plot II) will have half as many chromosomes as do the potato plants grown from seeds (plot I).

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

The item above measures competency 047:
The teacher understands reproduction and the mechanisms of heredity.

129. **Use the illustrations below to answer the question that follows.**



Compared to incomplete metamorphosis, complete metamorphosis in an insect species most likely contributes to the survival and reproductive success of the species in which of the following ways?

A. In species with complete metamorphosis, immature members of the species can avoid predators more easily.

B. In species with complete metamorphosis, growth and development occurs more rapidly and the individual reaches sexual maturity at an earlier age.

C. In species with complete metamorphosis, immature members of the species can disperse over a wider area after hatching.

D. In species with complete metamorphosis, immature and adult life stages can utilize different parts of the larger environment.

The item above measures competency 048:
The teacher understands adaptations of organisms and the theory of evolution.

130. Which of the following is the most accurate method for classifying two organisms according to their degree of relationship?

A. Compare similarities and differences in the DNA of both organisms.

B. Identify traits shared by both organisms during early embryonic development.

C. Compare similarities and differences in the behavior of both organisms.

D. Count the number of adaptive morphological traits shared by both organisms.

The item above measures competency 048:
The teacher understands adaptations of organisms and the theory of evolution.

131. When a person is confronted with a dangerous situation, the adrenal medulla secretes epinephrine (adrenaline), which triggers a "fight or flight" response. Which line in the table below most accurately summarizes some of the physiological changes characteristic of this response?

Line	Physiological Changes	
1	*Increases:*	heart rate; force of contraction of heart; blood flow to muscles, heart, brain, and viscera
	Decreases:	respiratory rate; blood sugar level; rate of digestion
2	*Increases:*	heart rate; respiratory rate; force of contraction of heart; blood flow to muscles
	Decreases:	blood flow to heart, viscera, and brain; blood sugar level; rate of digestion
3	*Increases:*	blood flow to muscles and viscera; rate of digestion; blood sugar level
	Decreases:	heart rate; respiratory rate; force of contraction of heart; blood flow to heart and brain
4	*Increases:*	heart rate; respiratory rate; force of contraction of heart; blood flow to muscles, heart, and brain; blood sugar level
	Decreases:	blood flow to viscera; rate of digestion

A. Line 1

B. Line 2

C. Line 3

D. Line 4

The item above measures competency 049:
The teacher understands regulatory mechanisms and behavior.

132. A middle school science teacher presents the following model to students.

> As you probably know, escalators are moving stairs. Imagine a person walking up an escalator that is going down. If the person walks up at the same speed as the escalator is moving down, she will remain in one spot. If she walks faster than the escalator, she moves up. If she walks slower, the escalator carries her down.

This model would be most appropriate for helping students discover which of the following science concepts?

A. Newton's law relating gravity to mass and distance

B. the process of erosion due to flowing water

C. the process of maintaining homeostasis in the human body

D. the energy changes that occur during photosynthesis

The item above measures competency 049:
The teacher understands regulatory mechanisms and behavior.

133. When an agricultural field is abandoned, it usually undergoes ecological succession involving a sequence of changes in vegetation. In most of North America, species of pine trees tend to be characteristic of early stages of succession, while hardwoods such as oak, beech, and maple are more often found in later stages. Which of the following best explains this pattern of succession?

A. Pines are better adapted to the nutrient levels characteristic of abandoned fields. Hardwoods eventually replace the pines when nutrient levels return to more normal levels.

B. Pine seeds and seedlings germinate and grow more rapidly in open, sunny areas. The shade from the mature pine trees eventually favors the establishment and growth of the hardwood species.

C. Pine needles are better able to resist the many plant pests initially present in a field ecosystem. Hardwoods are eventually able to grow as the insect population decreases.

D. Pine seeds are more abundant than seeds of hardwoods in abandoned fields. The slow influx of hardwood seeds eventually allows these species to overtake the pines.

The item above measures competency 050:
The teacher understands the relationships between organisms and the environment.

134. Which of the following changes in an ecosystem would most likely lead to an increase in the population of a given plant species?

A. an increase in herbivory of that species

B. an increase in intraspecific competition for space

C. a decrease in the population of a species occupying a similar niche

D. a decrease in the population of a major insect pollinator

The item above measures competency 050:
The teacher understands the relationships between organisms and the environment.

135. Which of the following is the most significant cause of the spread of deserts in arid regions of the Earth?

A. construction of large hydroelectric projects to generate electricity

B. diversion of underground water sources to supply cities and towns

C. use of surface water to provide intensive irrigation for agriculture

D. removal of native vegetation due to overgrazing and farming

The item above measures competency 051:
The teacher understands the structure and function of earth systems.

136. **Use the information below to answer the question that follows.**

Students in a science class are experimenting with a tablet that releases carbon dioxide when placed in water. The students place a tablet in 100 mL of water and measure how long it takes until the tablet stops producing gas bubbles. The students repeat the experiment using a whole tablet broken into halves, a whole tablet broken into quarters, and a whole tablet crushed into powder.

Which of the following questions is most closely related to this experiment?

A. What kind of chemical reactions produce the gases released from volcanoes?

B. How does increasing the surface area of rock by mechanical weathering affect the rate of chemical weathering?

C. How much carbon dioxide gas can be dissolved in 100 mL of ocean water at room temperature?

D. How much carbon dioxide is stored in a given mass of sedimentary rock?

The item above measures competency 052:
The teacher understands cycles in earth systems.

137. As part of its plan for reducing greenhouse gases in the atmosphere, the U.S. government has called for the planting of millions of fast-growing trees. The primary goal of this program is to reduce atmospheric carbon dioxide. Based on current understanding of the Earth's oxygen-carbon dioxide cycle, which of the following is the best analysis of the likely long-term effectiveness of this program?

A. The trees will remove carbon from the soil during growth, which will permanently increase the soil's ability to absorb atmospheric carbon dioxide.

B. The trees will remove carbon dioxide from the air during photosynthesis, but some of that carbon dioxide will later be returned to the atmosphere after the trees die and decompose.

C. The trees will remove some carbon dioxide from the air during photosynthesis, but will release more carbon dioxide during transpiration.

D. The trees will remove both carbon dioxide and oxygen from the air, so the ratio of these two gases will remain constant.

The item above measures competency 052:
The teacher understands cycles in earth systems.

138. Under which of the following conditions are thunderstorms most likely to form?

A. Two fronts meet and prevent each other from moving.

B. Heavy, moist air overtakes light, dry air, causing the lighter air to sink rapidly toward the ground.

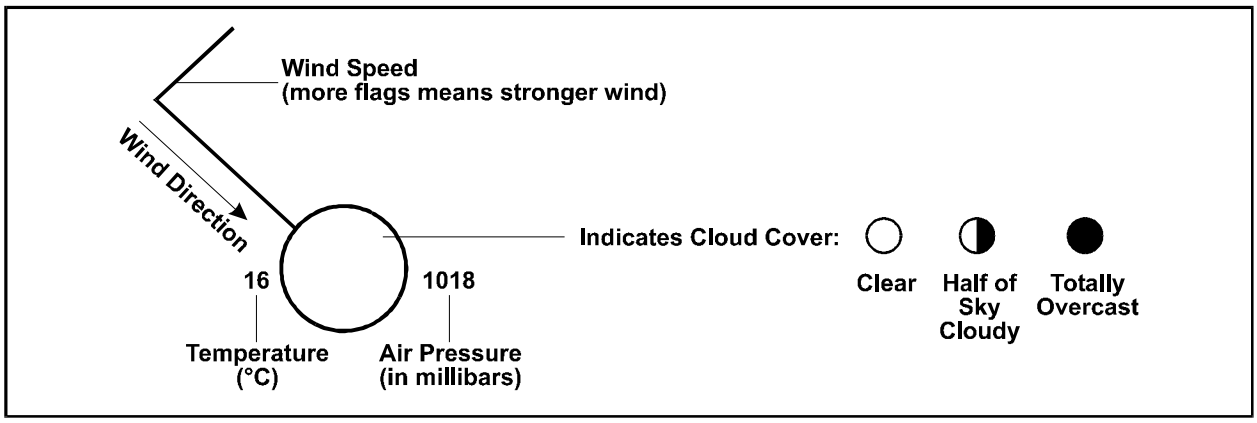
C. Warm air meets a stationary front and causes it to begin rapidly advancing.

D. A fast-moving cold front enters an area in which there is a warm, humid air mass.

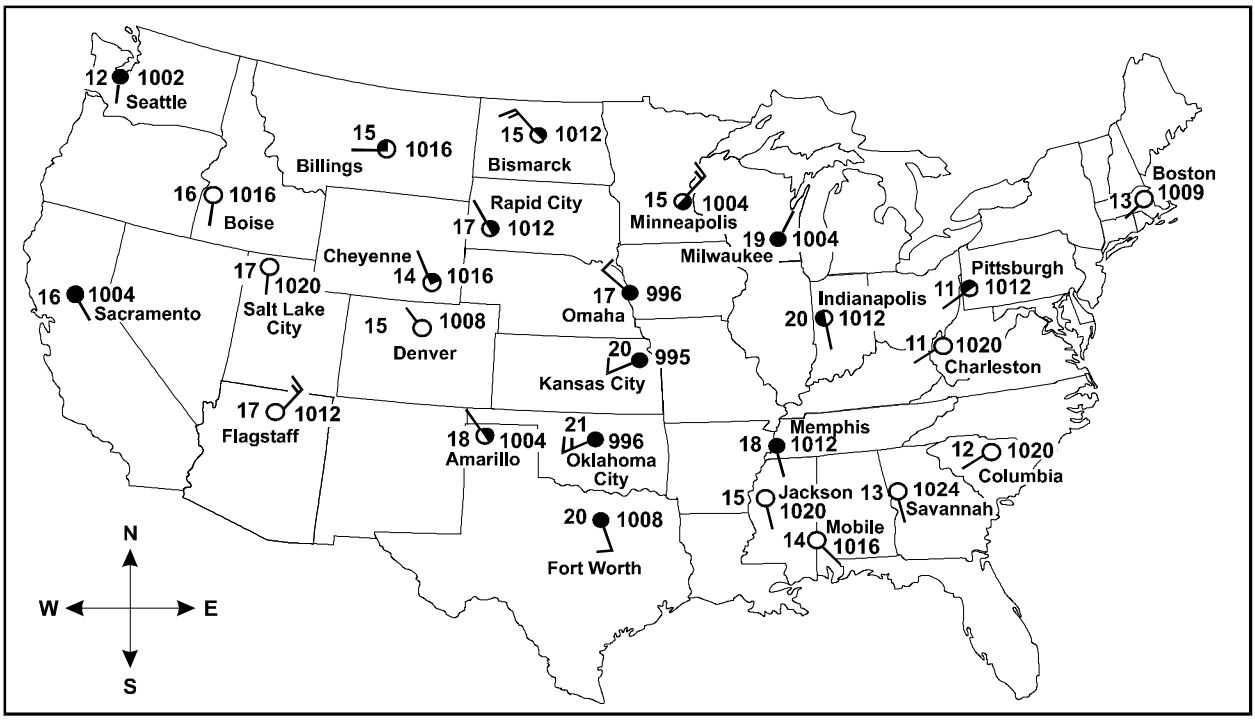
The item above measures competency 053:
The teacher understands the role of energy in weather and climate.

139. **Use the information below to answer the question that follows.**

Weather Symbol Chart



Weather Forecast Map



Based on the information in the map, which of the following weather forecasts is most accurate?

A. Denver, Colorado, will have showers and light winds out of the southeast.

B. Kansas City, Kansas, will have periods of rain with a light southwest breeze.

C. Columbia, South Carolina, will experience heavy rain and very strong winds.

D. Fort Worth, Texas, will have an overcast and hot day with high winds out of the northwest.

The item above measures competency 053:
The teacher understands the role of energy in weather and climate.

140. Which of the following observations best supports the big bang theory of the origin of the universe?

A. Galaxies may be clumped or clustered in a region of space.

B. New stars are being formed continuously from cosmic dust clouds.

C. Microwave background radiation is evenly distributed across space.

D. Large black holes have been found at the centers of some galaxies.

The item above measures competency 054:
The teacher understands the characteristics of the solar system and the universe.

141. **Use the passage below to answer the question that follows.**

In a unit on the solar system, a science teacher uses a beach ball to represent the sun while the students brainstorm everyday objects that are of appropriate relative sizes to represent each planet. Students then create a model of the solar system in which the distance from the sun to Pluto is 100 meters. Next, the class determines how many meters are required in their model to represent the distances between planets, based on actual distances in the solar system. Finally, the class sets up its model on the school's athletic field, measures distances, and places the object representing each planet on the ground to show the relative positions of the planets.

The activities described in the passage are effective for communicating information about the solar system primarily because they provide students with:

A. an opportunity to re-create the process by which Kepler derived the laws of planetary motion.

B. a conceptual model of the effects that the movement of other planets has on the motion of the Earth.

C. a framework for understanding processes involved in the formation and evolution of the solar system.

D. a concrete way of visualizing abstract ideas about the relationships of the planets in the solar system.

The item above measures competency 056:
The teacher has theoretical and practical knowledge about teaching science and about how students learn science.

142. A science teacher wants to build students' ability to use scientific reasoning and procedures in classifying living things. Of the following, the best activity for achieving this goal is to:

A. discuss mechanisms of evolution and how the evolutionary process leads to adaptation of species to their environments.

B. dissect preserved specimens of two closely related insect species and discuss morphological differences between them.

C. compare the similarities and differences of living and fossil specimens of related insect species.

D. examine a wide variety of living things and organize them into groups according to criteria established by the class.

The item above measures competency 056:
The teacher has theoretical and practical knowledge about teaching science and about how students learn science.

143. Students in a science class are doing a research project on a small pond near their school. The students know from a microfilm archive of the local newspaper that the pond once supported a healthy fish population. There are currently no fish in the pond. Which of the following activities could the teacher use to help students understand the concept of developing a scientific hypothesis?

A. Have students brainstorm possible reasons for why the pond no longer supports a fish population.

B. Ask students to develop a list of possible sources of chemical pollution that could have killed the fish in the pond.

C. Have students search the newspaper archives for stories dealing with the declining fish population to see if a trend emerges.

D. Ask students to use the Internet to find a method for measuring the oxygen content of the water in the pond.

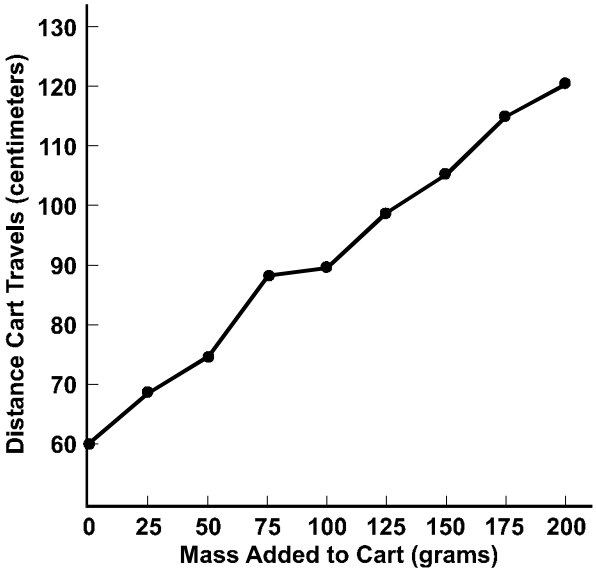
The item above measures competency 057:
The teacher understands the process of scientific inquiry and its role in science instruction.

Use the information below to answer the four questions that follow.

A group of fifth-grade students wishes to test the hypothesis that adding mass to a cart rolled down a ramp will increase the distance the cart will travel along the floor. To do this, they design and carry out the following experiment using a toy cart with a mass of 200 grams, a small ramp, and a supply of 25 gram masses.

1. Make a line across the ramp near the top.
2. Line up the front wheels of the cart with the line.
3. Let go of the cart without pushing it.
4. When the cart stops, measure the distance from the bottom of the ramp to the place where the front wheels stopped. Write down this distance.
5. Add a 25 gram mass to the cart.
6. Repeat until a total of 200 grams has been added to the cart.

To see more clearly the relationship between the amount of mass added to the cart and the distance the cart travels, the students graph their results. Their graph is shown below.



144. The students are concerned about the measurement they obtained when 75 grams were added to the cart because it did not seem to fit into the pattern created by the other results. They would like to repeat the investigation to determine whether this distance is correct. To improve their investigative design and to obtain more reliable results, the students should:

A. measure the total distance the cart traveled from the top of the ramp to where it stopped.

B. have two students measure independently the distance the cart traveled.

C. change the height on the ramp at which the cart is released.

D. release the cart several times with each mass and use the average distance traveled at each mass.

The item above measures competency 038:
The teacher understands the process of scientific inquiry and the history and nature of science.

145. The results of this experiment best illustrate which of the following physical principles?

A. An object with more mass has a greater force of friction acting on it than one with less mass.

B. A moving object with more mass has greater momentum than one with less mass.

C. An object with less mass requires less force to start it moving than one with more mass.

D. An object with less mass exerts less downward force on a level surface than an object with more mass.

The item above measures competency 041:
The teacher understands forces and motion and their relationships.

146. The teacher wants to help her students understand the role of variables in scientific experiments. Which of the following would be the most effective way to introduce this topic in the context of this experiment?

A. Ask the students to describe as precisely as they can how the movement of the cart changed as more mass was added to it.

B. Ask the students to identify what factors stayed the same during the experiment, what factors changed, and what results the changes produced.

C. Ask the students to predict what their results would have been if they had changed the slope of the ramp instead of the mass of the cart with each trial.

D. Ask the students to suggest other experimental designs that could be used to demonstrate the same principle that was discovered in this experiment.

The item above measures competency 057:
The teacher understands the process of scientific inquiry and its role in science instruction.

147. An appropriate way to assess the students' ability to draw conclusions based on these experimental data would be to have the students:

A. predict the distance the cart would travel if 250 grams were added.

B. determine how much farther the cart traveled with 200 grams than with 100 grams.

C. use a graphing calculator to determine the linear regression line that best fits the data.

D. describe what the graph would look like if the divisions on the vertical axis were spaced farther apart.

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

The item above measures competency 058:
The teacher knows the varied and appropriate assessments and assessment practices to monitor science learning in laboratory, field, and classroom settings.

148. **Use the student expectation below from the Texas Essential Knowledge and Skills (TEKS) to answer the question that follows.**

The student is expected to collect data and make measurements with precision.

Which of the following types of assessment would be most effective for measuring students' achievement of the above objective?

A. a written response, in which students explain significant figures and analyze how measurement errors are propagated through calculations

B. a portfolio, in which samples of students' more recent experimental designs are compared to previous designs in order to evaluate student improvement

C. a performance assessment, in which students input data into a spreadsheet, analyze the data using spreadsheet functions, and display the data in appropriate graphic formats

D. a performance assessment, in which students use tools to measure the attributes of various objects at measurement stations located throughout the classroom

The item above measures competency 058:
The teacher knows the varied and appropriate assessments and assessment practices to monitor science learning in laboratory, field, and classroom settings.

ACKNOWLEDGMENTS

Question

Sample Clustered Item Set #3	Lawrence J. Gitman and Carl McDaniel, *The World of Business* (Cincinnati: South-Western College Publishing, 1995), pp. 8—9. **(Page 56)**
85.	Lewis Paul Todd and Merle Curti, *Triumph of the American Nation* (Orlando: Harcourt Brace Jovanovich, Publishers, 1986), p. 519. **(Page 152)**
96.	James Mooney, "Myths of the Cherokee," *19th Annual Report of the Bureau of American Ethnology, 1897–98*, Part I (Washington, 1900), in *The Portable North American Indian Reader*, ed. Frederick Turner (New York: Penguin Books, 1974), p. 87. **(Page 163)**
100.	Roger L. Thiede, "Eastern Europe, Russia, and the Eurasian States of the Former Soviet Union," in *World Regional Geography: A Developmental Approach*, ed. David L. Clawson and James S. Fisher (Upper Saddle River, NJ: Prentice-Hall, 1998), p. 240. **(Page 167)**
Stimulus Preceding Question 101.	C. Berkin and L. Wood, *Land of Promise: A History of the United States to 1877* (Teacher's ed., Vol2). (Glenwood, IL: Scott Foresman and Company, 1986), p. 113, 117. **(Page 168)**
Stimulus Preceding Question 108.	David Welton and John Mallan, *Children and Their World,* third edition. Copyright 1988 by Houghton-Mifflin Company. Used with permission. **(Page 176)**

ANSWER KEY

Item Number	Correct Answer	Competency
1	**A**	001
2	**B**	001
3	**C**	002
4	**C**	002
5	**D**	002
6	**A**	002
7	**B**	002
8	**B**	003
9	**A**	003
10	**B**	004
11	**D**	005
12	**D**	005
13	**A**	006
14	**A**	006
15	**D**	007
16	**A**	007
17	**D**	007
18	**A**	008
19	**D**	008
20	**D**	004
21	**C**	004
22	**A**	005
23	**A**	004
24	**D**	005
25	**B**	009
26	**B**	004
27	**B**	005
28	**B**	009
29	**A**	007
30	**C**	007
31	**C**	009
32	**D**	001
33	**B**	008
34	**B**	008
35	**A**	006
36	**B**	006
37	**C**	009

Item Number	Correct Answer	Competency
38	**B**	010
39	**D**	010
40	**A**	011
41	**B**	011
42	**C**	012
43	**D**	012
44	**D**	013
45	**A**	013
46	**B**	014
47	**B**	014
48	**C**	015
49	**C**	015
50	**C**	015
51	**B**	017
52	**B**	017
53	**B**	018
54	**D**	018
55	**A**	019
56	**D**	020
57	**A**	020
58	**D**	021
59	**D**	021
60	**C**	022
61	**A**	022
62	**B**	023
63	**D**	023
64	**B**	024
65	**A**	024
66	**D**	025
67	**D**	025
68	**C**	026
69	**A**	026
70	**A**	027
71	**A**	027
72	**B**	027
73	**C**	028
74	**D**	028

Item Number	Correct Answer	Competency
75	**A**	029
76	**D**	029
77	**C**	029
78	**D**	029
79	**A**	029
80	**C**	030
81	**B**	030
82	**A**	030
83	**C**	030
84	**C**	030
85	**D**	031
86	**C**	031
87	**D**	031
88	**D**	031
89	**A**	032
90	**C**	032
91	**C**	032
92	**B**	032
93	**A**	032
94	**C**	032
95	**A**	033
96	**C**	033
97	**B**	033
98	**B**	033
99	**A**	033
100	**B**	034
101	**B**	034
102	**D**	034
103	**D**	034
104	**C**	034
105	**A**	034
106	**C**	035
107	**B**	035
108	**A**	035
109	**C**	035
110	**B**	035
111	**C**	035

Item Number	Correct Answer	Competency
112	**C**	036
113	**B**	037
114	**C**	037
115	**A**	039
116	**B**	040
117	**A**	038
118	**A**	051
119	**C**	042
120	**C**	043
121	**B**	043
122	**C**	044
123	**B**	044
124	**B**	045
125	**C**	045
126	**B**	046
127	**A**	047
128	**C**	047
129	**D**	048
130	**A**	048
131	**D**	049
132	**C**	049
133	**B**	050
134	**C**	050
135	**D**	051
136	**B**	052
137	**B**	052
138	**D**	053
139	**B**	053
140	**C**	054
141	**D**	056
142	**D**	056
143	**A**	057
144	**D**	038
145	**B**	041
146	**B**	057
147	**A**	058
148	**D**	058

SECTION V

PREPARATION RESOURCES

The resources listed below may help you prepare for the TExES test in this field. These preparation resources have been identified by content experts in the field to provide up-to-date information that relates to the field in general. You may wish to use current issues or editions to obtain information on specific topics for study and review.

ENGLISH LANGUAGE ARTS AND READING

Journals

Journal of Adolescent and Adult Literacy, International Reading Association.

Language Arts, National Council of Teachers of English.

Reading Research Quarterly, International Reading Association.

The Reading Teacher, International Reading Association.

Voices from the Middle, National Council of Teachers of English.

Other Sources

Adams, M. J. (1990). *Beginning to Read: Thinking and Learning About Print.* Cambridge, MA: MIT Press.

Alvermann, D. E., Moon, J., and Hagood, M. (Eds.). (1999). *Popular Culture in the Classroom: Teaching and Researching Critical Media Literacy*. Newark, DE: International Reading Association.

Anderson, V., and Roit, M. (1998). Reading as a Gateway to Language Proficiency for Language-Minority Students in the Elementary Grades. In R. M. Gersten and R. T. Jimenes (Eds.), *Promoting Learning for Culturally and Linguistically Diverse Students: Classroom Applications from Contemporary Research* (pp. 42–54). Belmont, CA: Wadsworth Publishing Co.

August, D., and Hakuta, K. (Eds.). (1997). *Improving Schooling for Language Minority Children.* Washington D.C.: National Academy Press.

Bear, D. R., Invernizzi, M., Templeton, S., and Johnson, F. (1996). *Words Their Way: Word Study for Phonics, Vocabulary, and Spelling.* Columbus, OH: Merrill.

Blachman, B. (Ed.). (1997). *Foundations of Reading Acquisition and Dyslexia: Implications for Early Intervention*. Mahwah, NJ: Lawrence Erlbaum Associates.

Burke, J. (1999). *The English Teacher's Companion*. Portsmouth, NH: Heinemann.

Clark, D., and Uhry, J. (1995). *Dyslexia: Theory and Practice of Remedial Instruction.* Baltimore, MD: York Press, Inc.

Donoahue, Z., Tassell, M., and Patterson, L. (Eds.). (1996). *Research in the Classroom: Talk, Texts, and Inquiry*. Newark, DE: International Reading Association.

Every Child Reading: A Professional Development Guide: A Companion to Every Child Reading: An Action Plan of the Learning First Alliance. (November 2000). Washington D.C.: ASCD Pub. No. 300303.

Every Child Reading: An Action Plan of the Learning First Alliance. (June 1998). Washington D.C.: ASCD Pub. No. 300342.

Hancock, J. (Ed.). (1999). *Teaching Literacy Using Information Technology: A Collection of Articles from the Australian Literacy Educators' Association*. Newark, DE: International Reading Association.

Harris, T. L., and Hodges, R. E. (Eds.). (1995). *The Literacy Dictionary: The Vocabulary of Reading and Writing.* Newark, DE: International Reading Association.

Harris, V. J. (Ed.). (1997). *Using Multiethnic Literature in the K–8 Classroom.* Norwood, MA: Christopher Gordon.

Lapp, D., Flood, J., and Farnan, N. (1996). *Content Area Reading and Learning: Instructional Strategies.* Boston, MA: Allyn and Bacon.

Moats, L. C. (1998). Middle Grades: Reading, Writing, and Spelling. In B. Wong (Ed.), *Learning About Learning Disabilities* (2nd ed., pp. 367–389). San Diego, CA: Academic Press.

Moats, L. C. (2000). *Speech to Print: Language Essentials for Teachers*. Baltimore, MD: Paul H. Brookes Publishing Company.

National Research Council. (1998). *Preventing Reading Difficulties in Young Children*. Washington D.C.: National Academy Press.

Osborn, J., and Lehr, F. (Eds.). (1998). *Literacy for All: Issues in Teaching and Learning*. New York, NY: The Guildford Press.

Report of the American Federation of Teachers: Teaching Reading is Rocket Science: What Expert Teachers of Reading Should Know and Be Able To Do. (June 1999). Washington D.C.: AFT Pub. No. 372.

Report of the National Reading Panel: Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and its Implications for Reading Instruction. (April 2000). Bethesda, MD: National Institute of Child Health and Human Development, NIH Pub. No. 00-04769.

Roller, C. (1996). *Variability, Not Disability: Struggling Readers in a Workshop Classroom.* Newark, DE: International Reading Association.

Simmons, D. C., and Kameenui, E. J. (Eds.). (1998). *What Reading Research Tells Us About Children with Diverse Learning Needs: Bases and Basics.* Mahwah, NJ: Lawrence Erlbaum Associates.

Smith, P. G. (Ed.). (2001). *Talking Classrooms: Shaping Children's Learning Through Oral Language Instruction*. Newark, DE: International Reading Association.

Spangenberg-Urbschat, K., and Pritchard, R. (Eds.). (1994). *Kids Come in All Languages: Reading Instruction for ESL Students.* Newark, DE: International Reading Association.

Taylor, B. M., Graves, M., and Van Den Broek, P. (Eds.). (2000). *Reading for Meaning: Fostering Comprehension in the Middle Grades*. Newark, DE: International Reading Association.

Texas Center for Reading and Language Arts. (1997, 1998, 1999). *Professional Development Guides*: *Reading and Language Arts TEKS*. Austin, TX: Author.

Texas Education Agency. (1997). *Texas Essential Knowledge and Skills (TEKS).*

Weaver, C. (1996). *Teaching Grammar in Context.* Portsmouth, NH: Heinemann.

Wepner, S. B., Valmont, W., and Thurlow, R. (Eds.). (2000) *Linking Literacy and Technology: A Guide for K–8 Classrooms*. Newark, DE: International Reading Association.

MATHEMATICS

Journals

Mathematics Teacher, National Council of Teachers of Mathematics.

Mathematics Teaching in the Middle School, National Council of Teachers of Mathematics.

Other Sources

Ball, D. L. (1992). Magical Hopes: Manipulatives and the Reform of Math Education. *American Educator; v16 n2*, 14–18, 46–47.

Brahier, D. J. (1999). *Teaching Secondary and Middle School Mathematics*. Needham Heights, MA: Allyn & Bacon.

Burns, M. (2000). *About Teaching Mathematics: A K–8 Resource* (2nd ed.). Sausalito, CA: Math Solutions Publications.

Coxford, A., Usiskin, Z., & Hirschhorn, D. (1998). *The University of Chicago School of Mathematics Project: Geometry*. Glenview, IL: Scott, Foresman and Company.

Crouse, R. J., & Sloyer, C. W. (1987). *Mathematical Questions from the Classroom—Parts I and II.* Providence, RI: Janson Publications.

Danielson, C. (1997). *A Collection of Performance Tasks and Rubrics: Middle School Mathematics*. Larchmont, NY: Eye On Education, Inc.

Demana, F., Waits, B. K., Clemens, S. R., & Foley, G. D. (1997). *Precalculus: A Graphing Approach* (4th ed.). Menlo Park, CA: Addison-Wesley.

Foerster, P. A. (1998). *Calculus Concepts and Applications*. Berkeley, CA: Key Curriculum Press.

Gottlieb, R. J. (2001). *Calculus: An Integrated Approach to Functions and Their Rates of Change* (Preliminary Ed.). Boston, MA: Addison Wesley Longman.

Harshbarger, R. J., & Reynolds, J. J. (1992). *Mathematical Applications for the Management, Life, and Social Sciences* (4th ed.). Lexington, MA: D. C. Heath and Company.

Hungerford, T. W. (2001). *Contemporary College Algebra and Trigonometry: A Graphing Approach*. Philadelphia, PA: Harcourt College Publishers.

Ma, L. (1999). *Knowing and Teaching Elementary Mathematics: Teachers' Understanding of Fundamental Mathematics in China and the United States.* Mahwah, NJ: Lawrence Erlbaum.

Morrow, L. J., & Kenney, M. J. (Eds.). (1998). *The Teaching and Learning of Algorithms in School Mathematics.* Reston, VA: The National Council of Teachers of Mathematics, Inc.

National Council of Teachers of Mathematics. (1995). *Assessment Standards for School Mathematics.* Reston, VA: The National Council of Teachers of Mathematics, Inc.

National Council of Teachers of Mathematics. (2000). *Principles and Standards for School Mathematics.* Reston, VA: The National Council of Teachers of Mathematics, Inc.

Newmark, J. (1997). *Statistics and Probability in Modern Life* (6th ed.). Philadelphia, PA: Saunders College Publishing.

Ostebee, A., & Zorn, P. (1997). *Calculus from Graphical, Numerical, and Symbolic Points of View*. Philadelphia, PA: Harcourt College Publishers.

Serra, M. (1997). *Discovering Geometry: An Inductive Approach* (2nd ed.). Emeryville, CA: Key Curriculum Press.

Swanson, T., Andersen, J., & Keeley, R. (2000). *Precalculus: A Study of Functions and Their Application*. Fort Worth, TX: Harcourt College Publishers.

Swokowski, E. W., Olinick, M., & Pence, D. D. (1994). *Calculus of a Single Variable* (2nd ed.). Stamford, CT: Brooks/Cole.

Texas Education Agency (1997). *Texas Essential Knowledge and Skills (TEKS).*

Triola, M. F. (2001). *Elementary Statistics* (8th ed.). Boston, MA: Addison Wesley Longman, Inc.

Wallace, E. C., & West, S. F. (1998). *Roads to Geometry* (2nd ed.). Upper Saddle River, NJ: Prentice-Hall, Inc.

Williams, G. (2000). *Applied College Algebra: A Graphing Approach*. Philadelphia, PA: Harcourt College Publishers.

Wu, H. (1999). Basic Skills Versus Conceptual Understanding: A Bogus Dichotomy in Mathematics Education. *American Educator; v 23 n3*, 14–19, 50–52.

SOCIAL STUDIES

Journals

History Matters!, National Council for History Education.

Journal of Geography, National Council for Geographic Education.

Social Education, National Council for the Social Studies.

Other Sources

Bahmueller, C. F. (1991). *Civitas: A Framework for Civic Education*. (Bulletin No. 86). Calabasas, CA: National Council for the Social Studies, Center for Civic Education.

Banks, J. A. (1998). *Teaching Strategies for the Social Studies* (5th ed.). Reading, MA: Addison-Wesley Publishing Company.

Boyes, W., and Melvin, M. (1999). *Economics* (4th ed.). Boston: Houghton Mifflin Company.

Burns, J. M., et al. (1999). *Government by the People* (18th ed.). Upper Saddle River, NJ: Prentice-Hall.

Calvert, R. A., and De León, A. (1995). *The History of Texas* (2d ed.). Arlington Heights, IL: Harlan Davidson, Inc.

Center for Civic Education. (1994). *National Standards for Civics and Government*. Calabasas, CA: Center for Civic Education.

Chambers, M., et al. (1999). *The Western Experience* (7th ed.). Boston: McGraw-Hill College.

Clawson, D. L., and Fisher, J. S. (Eds.). (1998). *World Regional Geography: A Development Approach* (6th ed.). Upper Saddle River, NJ: Prentice-Hall.

Faragher, J. M., et al. (2000). *Out of Many: A History of the American People* (3d ed.). Upper Saddle River, NJ: Prentice-Hall.

Fellmann, J., et al. (1997). *Human Geography: Landscapes of Human Activities* (5th ed.). Boston: McGraw-Hill College.

Gabler, R. E., et al. (1996). *Essentials of Physical Geography* (5th ed.). Austin: Holt, Rinehart and Winston.

Geography Education Standards Project. (1994). *Geography for Life: National Geography Standards*. Washington, D.C.: National Geographic Research and Exploration.

Janda, K., et al. (1996). *The Challenge of Democracy: Government in America* (5th ed.). Boston: Houghton Mifflin Company.

Kagan, D., et al. (2001). *The Western Heritage* (7th ed.). Upper Saddle River, NJ: Prentice-Hall.

Kraemer, R. H., et al. (1995). *Texas Politics* (6th ed.). St. Paul: West Publishing Company.

Michaelis, J. U., and Garcia, J. (1995). *Social Studies for Children: A Guide to Basic Instruction* (11th ed.). Old Tappan, NJ: Allyn and Bacon.

National Center for History in the Schools. (1996). *National Standards for History*. Los Angeles: National Center for History in the Schools.

National Council for the Social Studies. (1994). *Expectations of Excellence: Curriculum Standards for Social Studies*. Washington, D.C.: National Council for the Social Studies.

Norton, M. B., et al. (1995). *A People and a Nation: A History of the United States* (4th ed.). Boston: Houghton Mifflin Company.

Parkin, M. (2000). *Macroeconomics* (5th ed.). Reading, MA: Addison-Wesley Publishing Company.

Parkin, M. (1999). *Microeconomics* (5th ed.). Reading, MA: Addison-Wesley Publishing Company.

Shaver, J. P. (Ed.). (1991). *Handbook of Research on Social Studies Teaching and Learning*. New York: Maxwell Macmillan International.

Texas Education Agency. (1997). *Texas Essential Knowledge and Skills (TEKS).*

Welch, S., et al. (1996). *American Government* (6th ed.). St. Paul: West Publishing Company.

Welton, D. A., and Mallan, J. T. (1999). *Children and Their World: Strategies for Teaching Social Studies* (6th ed.). Boston: Houghton Mifflin Company.

SCIENCE

Journals

Science and Children, National Science Teachers Association.

Science Scope, National Science Teachers Association.

The Science Teacher, National Science Teachers Association.

Texas Science Teacher, Science Teachers Association of Texas.

Other Sources

Arons, A. B. (1990). *A Guide to Introductory Physics Teaching*. New York, NY: John Wiley and Sons, Inc.

Campbell, N. A., Reece, J. B., and Mitchell, L. G. (1999). *Biology* (5th ed.). Menlo Park, CA: Benjamin/Cummings, an imprint of Addison Wesley Longman, Inc.

Center for Science, Mathematics, and Engineering Education, National Research Council. (2000). *Inquiry and the National Science Education Standards: A Guide for Teaching and Learning*. Washington, D.C.: National Academy Press.

Chang, R. (1998). *Chemistry* (6th ed.). New York, NY: McGraw-Hill, Inc.

Chiappetta, E. L., Koballa, T. R., and Collette, A. T. (1994). *Science Instruction in the Middle and Secondary Schools* (4th ed.). Upper Saddle River, NJ: Merrill/Prentice-Hall.

Crotts, D. (1995). *Critical Thinking Skills: Science*. Torrence, CA: Frank Schaffer Publications, Inc.

Cunningham, W. P., and Saigo, B. W. (1999). *Environmental Science: A Global Concern* (5th ed.). Dubuque, IA: The McGraw-Hill Companies, Inc.

Halliday, D., Resnick, R., and Walker, J. (1997). *Fundamentals of Physics* (5th ed.). New York, NY: Wiley.

Hamblin, W. K. (2001). *Earth's Dynamic Systems* (9th ed.). Upper Saddle River, NJ: Prentice-Hall.

Hewitt, P., Suchocki, J., and Hewitt, L. A. (1998). *Conceptual Physical Science*. (2nd ed.). Boston, MA: Addison-Wesley Publishing Company, Inc.

Joyce, B. R., Weil, M., and Calhoun, E. (2000). *Models of Teachings* (6th ed.). Boston, MA: Allyn and Bacon.

Kotz, J. C. (1999). *Chemistry and Chemical Reactivity* (4th ed.). Philadelphia, PA: Saunders College Publishing.

Levin, H. L. (1999). *The Earth Through Time* (6th ed.). Philadelphia, PA: Saunders College Publishing.

National Research Council. (1996). *National Science Education Standards*. Washington, D.C.: National Academy Press.

Nebel, B. J., and Wright, R. T. (2000). *Environmental Science: The Way the World Works*. Upper Saddle River, NJ: Prentice-Hall.

Ostlund, K. L. (1992). *Science Process Skills: Assessing Hands-On Student Performance*. Menlo Park, CA: Addison-Wesley Publishing Company, Inc.

Project 2061 (American Association for the Advancement of Science). (1993). *Benchmarks for Science Literacy*. New York, NY: Oxford University Press.

Rakow, S. J. (Ed.). (1998). *NSTA Pathways to the Science Standards: Guidelines for Moving the Vision into Practice* (Middle School ed.). Arlington, VA: National Science Teachers Association.

Ramig, J., Bailer, J., and Ramsey, J. (1995). *Teaching Science Process Skills*. Torrence, CA: Frank Schaffer Publications, Inc.

Rezba, R., et al. (1995). *Learning and Assessing Science Process Skills*. Dubuque, IA: Kendall/Hunt Publishing Company.

Santa, C. M., and Alverman, D. E. (Eds.). (1991). *Science Learning: Processes and Applications*. Newark, DE: International Reading Association, Inc.

Serway, R. A., and Faughn, J. S. (1998). *College Physics* (5th ed.). Philadelphia, PA: Saunders College Publishing.

Starr, C., and Taggart, R. (2001). *Biology: The Unity and Diversity of Life* (9th ed.). New York, NY: Wadsworth Publishing Company.

Tarbuck, E. J., and Lutgens, F. K. (1999). *Earth: An Introduction to Physical Geology* (6th ed.) Upper Saddle River, NJ: Prentice-Hall.

Texas Education Agency. (1997). *Texas Essential Knowledge and Skills (TEKS).*

Texas Education Agency. (2000). *Texas Safety Standards: Kindergarten through Grade 12* (2nd ed.). Austin, TX: Author.

Thompson, G., and Turk, J. (1999). *Earth Science and the Environment* (2nd ed.). Philadelphia, PA: Harcourt College Publishers.

Whitten, K. W., Gailey, K. D., and Davis, R. E. (1992). *General Chemistry* (4th ed.). Fort Worth, TX: Saunders College Publishing.