



Michigan

TEST FOR TEACHER CERTIFICATION
STUDY GUIDE

103 Elementary Education

Effective after October 1, 2013



TABLE OF CONTENTS

PART 1: General Information About the MTTC Program and Test Preparation

OVERVIEW OF THE TESTING PROGRAM	1-1
Contact Information	
Test Development Process	
Characteristics of the Tests	
Test Administration	
Paper-Based Testing	
Computer-Based Testing	
Receiving Your Scores	
Examinee Score Reports	
HOW TO PREPARE FOR THE TESTS	1-4
Plan Your Course of Study	
THE DAY OF THE TEST: HELPFUL HINTS	1-5
Preparing for the Test Administration	
Test-Taking Tips	
Test Directions	

PART 2: Test Objectives and Sample Test Questions

INTRODUCTION	2-1
TEST OBJECTIVES	2-3
SAMPLE MULTIPLE-CHOICE TEST QUESTIONS	2-19
ANSWER KEY FOR THE SAMPLE MULTIPLE-CHOICE TEST QUESTIONS	2-33

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PART 1: General Information About the MTTC Program and Test Preparation

The first section of the study guide is available in a separate PDF file. Click the link below to view or print this section.

[General Information About the MTTC Program and Test Preparation](#)

PART 2: Test Objectives and Sample Test Questions

INTRODUCTION

The Elementary Education test (103) consists of 150 multiple-choice items. This section includes a list of the test objectives, immediately followed by sample test questions and an answer key for the field covered by this study guide.

Test Objectives

As noted, the test objectives are broad, conceptual statements that reflect the knowledge, skills, and understanding an entry-level teacher needs in order to teach effectively in a Michigan classroom. Each field's list of test objectives represents the **only** source of information about what a specific test will cover and, therefore, should be studied carefully.

The test objectives are organized into groups known as "subareas." These subareas define the major content areas of the test. You will find a list of subareas at the beginning of the test objective list. The percentages shown in the list of subareas indicate the approximate weighting of the subareas on the test.

Sample Multiple-Choice Test Questions

The sample multiple-choice test questions included in this section are designed to give the test-taker an introduction to the nature of the test questions included on the MTTC test for each field. The sample test questions represent the various types of test questions you may expect to see on an actual test; however, they are **not** designed to provide diagnostic information to help you identify specific areas of individual strengths and weaknesses or predict your performance on the test as a whole. Use the answer key that follows the sample test questions to check your answers.

To help you identify which test objective is being assessed, the objective statement to which the question corresponds is listed in the answer key. When you are finished with the sample test questions, you may wish to go back and review the entire list of test objectives and descriptive statements once again.

TEST OBJECTIVES

Subarea	Approximate Percentage of Questions on Test
English Language Arts and World Languages	24%
Social Studies	16%
Visual and Performing Arts	10%
Mathematics	22%
Science	18%
Health Education and Physical Education	10%

I. ENGLISH LANGUAGE ARTS AND WORLD LANGUAGES

001 Understand the major concepts, principles, and instructional practices in the acquisition and learning of languages to create opportunities for communication in a multilingual global society.

Includes:

- knowledge of language as a dynamic system, and strategies for helping students acquire and use language in listening, speaking, reading, and writing for social and academic purposes
- basic concepts related to the phonological, morphological, semantic, syntactic, and pragmatic structures of English as applied to listening, speaking, reading, and writing
- recognition of the integrated nature of reading, writing, listening, speaking, viewing, and visually representing, and the importance of integrating the use of these modes of communication in all content areas
- concepts and processes related to first- and second-language acquisition, factors (e.g., physical, social, cognitive, and emotional differences; developmental; cultural; environmental) that can affect language acquisition and literacy development, and the implications of these processes and factors for instruction
- knowledge of the relationships between language and culture; the interconnections among cultural perspectives, practices, and products; and strategies for integrating language and culture in instruction to encourage students to make cultural connections and comparisons
- knowledge of effective strategies and resources for creating a supportive, respectful classroom environment that provides opportunities for meaningful interaction and negotiation of meaning, which facilitate language acquisition and student achievement

002 Understand the foundations of emergent literacy, including the development of phonological and phonemic awareness skills.

Includes:

- the role of oral language development in emergent literacy, and strategies for promoting oral language development to enhance emergent literacy
- knowledge of phonological awareness, including phonemic awareness, and its significance in emergent literacy development; and research-based strategies for developing phonological and phonemic awareness skills
- knowledge of strategies for promoting development of concepts of print, letter recognition, and letter formation
- knowledge of strategies for promoting understanding of the alphabetic principle, including the use of reading and writing activities for teaching sound-symbol correspondence
- knowledge of processes by which emergent readers construct meaning and factors that influence their construction of meaning

003 Understand the development of accurate, automatic word recognition, spelling, and fluency.

Includes:

- characteristics of and relationships between stages of reading development and writing development
- the development of phonics knowledge and skills at beginning stages of reading development to promote accurate, automatic decoding and accurate spelling of regular single-syllable words
- the use of grade-level-appropriate sight words, common inflectional morphemes, and orthographic patterns and guidelines in combination with differentiated phonics instruction to promote accurate, automatic word recognition and spelling
- the use of syllable patterns and structural analysis to promote accurate, automatic decoding and spelling of multisyllable words at more advanced stages of literacy development
- knowledge of indicators of fluency (i.e., accuracy, rate, and prosody), factors that can disrupt fluency, the role of fluency in reading comprehension, and strategies for promoting fluency at various stages of reading development
- knowledge of developmentally appropriate materials and effective, research-based reading and writing activities to promote word recognition, spelling, and fluency at various stages of literacy development; and appropriate methods for assessing word recognition, spelling, and fluency

004 Understand the development of vocabulary and reading comprehension.

Includes:

- the relationship between oral and written vocabulary development and reading comprehension, elements of effective vocabulary instruction (e.g., explicitly teaching words, providing meaningful opportunities to use new vocabulary), and strategies for selecting vocabulary for instruction
- knowledge of research-based strategies for explicit instruction of words and their meanings, independent strategies for building vocabulary, and independent strategies for verifying the meanings and pronunciations of unfamiliar words or words with multiple meanings (e.g., structural analysis, reference materials, semantic and syntactic cues)
- application of knowledge of different levels of reading comprehension (e.g., literal, inferential, evaluative, critical) and factors that affect reading comprehension and a reader's construction of meaning (e.g., automaticity of word recognition, vocabulary knowledge, background knowledge, linguistic and organizational complexity of the text, context of the written situation)
- knowledge of effective comprehension strategies for different texts and purposes for reading
- knowledge of developmentally appropriate materials and effective, research-based oral language, reading, and writing activities to promote the development of vocabulary and comprehension at different stages of reading development; and appropriate methods for assessing vocabulary and reading comprehension

005 Understand the characteristics of narrative and expository texts in written, oral, performance, and media forms.

Includes:

- major works, authors, and genres of classical, contemporary, and multicultural children's and adolescent literature; key characteristics and elements of narrative texts (e.g., story grammar, stylistic elements); and strategies for promoting students' comprehension and literary response and analysis skills
- types of expository texts, key characteristics and features of expository texts (e.g., organization, graphic features), and strategies for promoting students' comprehension and analysis of expository texts
- appropriate use of children's and adolescent narrative and expository texts to promote reading growth, engage readers in the active construction of meaning, foster appreciation for the written word, and stimulate interest and motivation to read and write widely and independently for various purposes
- characteristics and features of different forms of oral, performance, and media texts (e.g., poetry, plays, screenplays, advertisements, music videos); and strategies for promoting students' comprehension, response, and analysis skills related to these forms

006 Understand the writing process using standard conventions of English in the United States.

Includes:

- steps in the writing process (i.e., pre-writing, drafting, revising, editing, publishing) and strategies used at each step in the process
- structures and key elements of various formal (e.g., research report) and informal (e.g., personal letter) genres of written communication
- application of the standard conventions of English in the United States, including correct spelling (e.g., "color" versus "colour"), capitalization, punctuation (e.g., possessive "its" versus contraction "it's"), grammar, and word usage (e.g., "already" versus "all ready")
- differences between descriptive and prescriptive conventions of usage, and the ways in which conventions of usage are adapted to different situations
- the use of main ideas, introductions, transitions, conclusions, and other organizational features in writing
- the use of references and tools in the writing process (e.g., dictionary, thesaurus, spell-checker, grammar checker, word processing program)

007 Understand the generation and expression of ideas and information through written, oral, visual, and nonverbal communication.

Includes:

- reasons for identifying an audience and purpose for communication; and procedures and methods for organizing, presenting, and conveying ideas and information
- knowledge of various strategies for using style, voice, and language choices in written, oral, and multiple-media texts; and the appropriateness of various choices in different contexts
- rhetorical techniques and devices used to respond to, create, and revise texts in a variety of genres
- structures of oral and visual presentations (e.g., sequence, transitions), including the integration of spoken, textual, visual, and multiple-media elements
- principles of active listening and viewing, and factors that can affect listening and viewing (e.g., overly technical language, cultural differences, production values)
- knowledge of effective strategies and resources for promoting written, oral, visual, and nonverbal communication skills; and appropriate methods for assessing communication skills
- knowledge of effective strategies and resources for inquiry and its processes; application of critical and creative thinking; and conveying literary information through writing, speaking, visually representing, performing, and using multiple technologies
- ethical considerations associated with researching, producing, and presenting written, oral, and multiple-media communications in English language arts

II. SOCIAL STUDIES**008 Apply historical thinking to understand the past in the local community, Michigan, and the United States.**

Includes:

- significant eras, themes, cultures, individuals, and chronological relationships of events in U.S. history from precolonial times to 1900 and in Michigan history from precolonial times to the present
- the significance and lasting influence of events, issues, people, and developments in Michigan and U.S. history
- interdependence of historical events at the community, state, national, and international levels
- recognition of how geographic, political, social, economic, and cultural factors have shaped historic patterns of human populations
- analysis of various perspectives and interpretations of history, including distinguishing between historical facts and historical interpretations
- characteristics of primary and secondary sources in historical inquiry and their ethical use
- methods for conducting historical research about a local community, and application of historical thinking to understand a community's past
- knowledge of effective strategies and resources for developing and assessing knowledge and skills related to history

009 Understand the fundamental principles and concepts of geography.

Includes:

- use of geographic representations and tools (e.g., maps, Internet, global positioning systems, geographic information systems) to acquire, process, and report information from a spatial perspective
- knowledge of features of geographic regions and how regions are defined by common physical and human characteristics
- knowledge of the interdependence of and interactions among geographic regions around the world (e.g., trade in natural resources, environmental impacts)
- analysis of how human activities (e.g., agriculture, manufacturing) help shape the earth's surface and how the earth's surface affects human activities (e.g., migration, settlement patterns)
- analysis of interactions between humans and the environment (e.g., urbanization, industrial development)
- recognition of how historical, political, social, economic, and cultural factors have shaped geographic patterns and processes
- knowledge of effective strategies and resources for developing and assessing knowledge and skills related to geography

010 Understand the fundamental principles and concepts of civics and government.

Includes:

- the reasons people create governments, and common forms of government
- the origins, core democratic values, and principles of constitutional democracy in the United States
- the structure and functions of government in the United States, including the interrelationships among national, state, and local governments, and between branches of government
- knowledge of important rights and responsibilities of individual citizens and citizen groups in the United States, and the ways individual citizens and citizen groups participate in government
- how the U.S. government relates to and interacts with other nations
- recognition of how historical, geographic, social, economic, and cultural factors have shaped governments and political systems
- knowledge of effective strategies and resources for developing and assessing knowledge and skills related to civics and government

011 Understand the fundamental principles and concepts of economics.

Includes:

- principles and strategies of personal and family resource management (e.g., decision-making model, making financial choices)
- characteristics of and activities in a market economy, including: individual, business, and government choices; the relationships between prices, supply, and demand; and scarcity and opportunity cost
- knowledge of economic activity in the United States, including national markets and the role of government in the U.S. economy
- characteristics of the global economy, such as trade and the causes and consequences of global economic interdependence
- recognition of how historical, geographic, political, social, and cultural factors have shaped economic systems and activities
- knowledge of effective strategies and resources for developing and assessing knowledge and skills related to economics

012 Understand inquiry processes in social studies, and concepts and skills associated with public discourse, decision making, and citizen involvement.

Includes:

- characteristics of various sources of and tools for obtaining social studies information and their ethical use
- methods for formulating research questions and for gathering, analyzing, interpreting, and communicating information related to social studies, including ethical considerations
- the role and importance of public discourse, decision-making processes, and citizen involvement related to public-policy issues
- knowledge of strategies and skills for engaging in public discourse and decision making (i.e., state a problem as a public-policy issue, analyze various perspectives, evaluate possible alternative resolutions, and use communication skills for expressing and justifying a position on a public-policy issue)
- principles of citizen involvement, and opportunities and approaches for becoming involved as a citizen of a culturally diverse, democratic society and interdependent world
- knowledge of effective strategies and materials for developing and assessing skills related to social studies inquiry, public discourse, decision making, and citizen involvement
- recognition of connections among social studies disciplines and between social studies and other content areas and everyday life
- types and characteristics of sources of information used in social studies (e.g., maps, primary sources, textbooks, Internet); and effective strategies for helping students construct meaning from these sources, apply critical and creative thinking, and convey social studies information through writing, speaking, and visual representation

III. VISUAL AND PERFORMING ARTS**013 Understand the functions, elements, principles, and styles of the arts, and artistic and creative processes and products.**

Includes:

- knowledge of basic elements, concepts, and terms associated with dance, music, theatre, and the visual arts
- the basic techniques, processes, tools, and materials for creating and performing works in dance, music, theatre, and the visual arts
- types and characteristics of products (e.g., paintings, sculptures, performances) created in the various arts disciplines
- how artists can use the elements and organizing principles of each art's discipline to express ideas, themes, or emotions
- the role and function of the arts in various cultures in contemporary and historical contexts
- application of steps in the artistic and creative processes (e.g., create, perform, respond) across all content areas

014 Understand communication about and through the arts, and developmentally appropriate arts instruction.

Includes:

- ways of communicating effectively about and through the arts, including promoting communication that is open to a variety of viewpoints and encourages continued exploration in the arts
- recognition of connections among the arts and between the arts and other content areas and everyday life
- developmentally appropriate arts instruction, including providing opportunities to participate actively in all four arts disciplines and using the motivational force of the arts to engage students as both participants and audience members
- knowledge of strategies for collaborating with arts teachers and identifying and using local artists and arts resources
- knowledge of effective strategies for assessing learning in and through the arts
- knowledge of effective strategies and resources for applying visual and performing arts processes and skills in all content areas
- types and characteristics of sources of information used in the visual and performing arts (e.g., live performances, audio and video recordings, scripts, texts with illustrations, paintings); and effective strategies for helping students construct meaning from these sources, apply critical and creative thinking, and convey information about the visual and performing arts through writing, speaking, and the visual and performing arts themselves
- ethical considerations associated with researching, producing, and presenting written, oral, and multiple-media communications in the visual and performing arts

IV. MATHEMATICS**015 Understand mathematical reasoning, representation, and problem solving; and the historical development of mathematics.**

Includes:

- knowledge of the use of axiomatic systems, justifications, and proofs in different branches of mathematics, such as number theory, algebra, and geometry
- strategies and procedures (e.g., modeling, working backwards, simplifying) used to solve real-world problems
- knowledge of a variety of diagrams, models, charts, manipulatives, and other tools used to represent mathematical concepts and real-world situations
- evaluation of problem-solving strategies, procedures, and calculations to verify the accuracy of results
- knowledge of the historical development and significance of important mathematical ideas, and how diverse cultures and individuals have influenced and contributed to developments in mathematics
- knowledge of effective strategies and resources for developing historical perspectives of mathematics and for developing and assessing knowledge and skills related to mathematical reasoning, representation, and problem solving
- recognition of connections among the fields of mathematics and between mathematics and other content areas and everyday life
- types and characteristics of sources of information used in mathematics (e.g., textbooks, computer programs, manipulatives); and effective strategies for helping students construct meaning from these sources, apply critical and creative thinking, and convey mathematics information through writing, speaking, and visual representation
- ethical considerations associated with researching, producing, and presenting written, oral, and multiple-media communications in mathematics

016 Understand number sense and concepts of number, number theory, and number systems.

Includes:

- knowledge of the characteristics of the subsets of real numbers (e.g., integer, rational, irrational)
- application of the concepts of numbers to compare, sort, order, and round
- equivalent representations of numbers (e.g., integers, fractions, decimals, scientific notation), and conversions between graphic, numeric, and symbolic representations of numbers
- application of place-value concepts (e.g., expanded form of a number, regrouping, base systems)
- application of concepts related to prime and composite numbers, multiples, factors, and divisibility rules
- application of a variety of strategies to estimate quantities
- knowledge of the development of number sense and effective strategies and resources for promoting the development of and assessing number sense

017 Understand numerical computation and operations on numbers.

Includes:

- knowledge of the use of the four basic operations and of the relationships between the operations
- knowledge of various representations (e.g., graphic, symbolic, verbal) of number operations
- application of the order of operations
- the modeling, explanation, development, and justification of computational algorithms, including the application of arithmetic properties (e.g., commutative, associative, distributive)
- application of computation strategies to problems involving integers, rational numbers, fractions, decimals, ratios, proportions, percentages, and exponents
- application of estimation strategies to determine the reasonableness of a calculation
- knowledge of effective strategies and resources for promoting fluency with operations and the ability to use various computational methods (e.g., mental math, paper and pencil, calculators), and for assessing computational fluency and skills

018 Understand concepts and procedures of direct and indirect measurement.

Includes:

- use of standard and nonstandard measurement units and the customary and metric systems, including unit conversions within a system
- selection of appropriate measurement techniques, units, and tools in various situations
- application of appropriate formulas for determining the length, perimeter, area, volume, and surface area of two- and three-dimensional objects
- solution of problems involving linear measurements, weight, temperature, time, angles, and rates
- application of estimation strategies to measurement
- knowledge of effective strategies and resources for promoting and assessing knowledge and skills related to measurement

019 Understand concepts of Euclidean geometry.

Includes:

- knowledge and application of properties of lines, angles, and two- and three-dimensional shapes
- relationships between three-dimensional figures and two-dimensional representations
- application of concepts of symmetry, similarity, congruence, and geometric transformation
- recognition of connections between geometry and algebra (e.g., use of coordinate systems, the Pythagorean theorem)
- use of geometric models, properties of figures, and coordinate systems to solve problems
- knowledge of effective strategies and resources for promoting and assessing spatial reasoning and knowledge and skills related to geometry

020 Understand concepts of algebra.

Includes:

- recognition and extension of patterns using a variety of representations (e.g., numeric, pictorial, algebraic)
- knowledge of the algebraic concepts and various representations of functions and relationships
- application of the concepts of variable, function, and equality to model relationships algebraically
- solution of linear equations and inequalities
- use of algebraic symbols to represent and analyze mathematical situations and structures, and use of various representations to model and solve contextualized problems
- use of algebraic functions to plot points on a coordinate plane, describe graphs, and determine slope
- knowledge of effective strategies and resources for promoting the development of and assessing knowledge and skills related to algebra

021 Understand concepts of data analysis and probability.

Includes:

- question formation, collection, organization, and display (e.g., tables, graphs, scatterplots, frequency distributions, percentiles) of data
- selection and use of appropriate statistical methods (i.e., descriptive, inferential) to analyze data, make predictions, and make decisions
- knowledge of basic concepts of probability (e.g., simple and compound events, independent and dependent events)
- the modeling and comparison of experimental probabilities with mathematical (theoretical) expectations
- interpretation of data and probability in real-world situations and use of data representations and probability to make predictions
- knowledge of effective strategies and resources for promoting the development of and assessing knowledge and skills related to data analysis and probability

V. SCIENCE**022 Understand how new scientific knowledge is constructed, including the role of inquiry.**

Includes:

- principles and processes of making observations about the natural world, including designing and conducting scientific investigations using appropriate methodology and technology
- strategies for collecting, organizing, analyzing, and communicating scientific data
- application of appropriate measurement methods and mathematical techniques (e.g., calculating the mean) in collecting and analyzing data
- application of safe science practices, including the ethical and appropriate use and care of living organisms, the proper use and care of scientific equipment, and the safe storage, use, and disposal of chemicals
- knowledge of effective strategies and resources for promoting and assessing the use of inquiry processes to develop scientific knowledge and conduct investigations using safe science practices
- types and characteristics of sources of information used in science (e.g., experiments, tables, graphics, trade books); and effective strategies for helping students construct meaning from these sources, apply critical and creative thinking, and convey science information through writing, speaking, and visual representation
- ethical considerations associated with researching, producing, and representing written, oral, and multiple-media communications in science

023 Understand the nature of scientific knowledge and the application of analysis and reflection in science.

Includes:

- characteristics of scientific knowledge (e.g., reliance on verifiable evidence) and how it is similar to and differs from other ways of learning about and understanding the world
- knowledge of the interconnectedness of the various scientific disciplines, including the major unifying themes of science (e.g., conservation of energy, classification, relationship between form and function)
- analysis of the ways in which science, technology, and society interact and the effects of these interactions
- knowledge of the historical development of important scientific ideas and how diverse cultures and individuals have influenced and contributed to developments in science
- knowledge of effective strategies and resources for promoting scientific literacy through the use of analysis and reflection
- recognition of connections among the sciences and between the sciences and other content areas and everyday life

024 Understand the fundamental concepts of life science.

Includes:

- knowledge of the structures and functions of living organisms, including single-celled and multicellular organisms, and how organisms obtain and use energy
- use of classification systems of living organisms, and knowledge of distinguishing characteristics of major groups of organisms (e.g., bacteria, plants, animals)
- differences in life cycles of organisms and how various types of organisms reproduce, grow, and develop
- basic principles of heredity, and sources of variation and new traits in a species
- knowledge of ways in which various organisms adapt to survive and reproduce in their environments, and of theories and evidence about how organisms evolve over time
- characteristics and components (both biotic and abiotic) of ecosystems and how organisms, including humans, interact with one another and their environments
- knowledge of effective strategies and resources for promoting the development of and assessing knowledge and skills related to life science

025 Understand the fundamental concepts of earth/space science.

Includes:

- characteristics of objects in the solar system, how they interact, and the effects of the relative positions of the earth, sun, and moon (e.g., eclipses, seasons)
- characteristics of the earth's surface and processes that change the earth's features over time (e.g., volcanism, erosion, plate tectonics)
- distribution, characteristics, and movement of water on the earth
- characteristics and processes of the atmosphere, causes of different kinds of weather (e.g., lake-effect snow, thunderstorms), and methods for studying and predicting weather
- interactions between the geosphere, atmosphere, hydrosphere, and biosphere, and the role of solar energy in various earth processes (e.g., water cycle, wind)
- analysis of interactions between humans and the hydrosphere, atmosphere, and geosphere, including the use of natural resources
- knowledge of effective strategies and resources for promoting the development of and assessing knowledge and skills related to earth/space science

026 Understand the fundamental concepts of physical science.

Includes:

- the composition and properties of matter (e.g., atoms, molecules, melting point, reactivity), and characteristics of physical, chemical, and nuclear changes in matter
- knowledge of forms of energy, transformations between one form of energy and another, processes of energy transfer (e.g., conduction), and interactions between energy and matter
- ways in which living organisms and human technology change matter and transport energy
- basic principles of electricity and magnetism, including the properties of magnets
- analysis of the motions of objects (e.g., speed), the effects of various types of forces (e.g., gravity, friction) on objects, and how the principles of motion are applied to control the movements of objects
- characteristics of light and sound, including how light and sound waves transfer energy
- knowledge of effective strategies and resources for promoting the development of and assessing knowledge and skills related to physical science

VI. HEALTH EDUCATION AND PHYSICAL EDUCATION**027 Understand concepts and strategies of health education.**

Includes:

- knowledge of basic concepts of safety; social-emotional health; healthy eating; physical activity; and disease prevention; and the relationships of these factors to health and learning
- knowledge of the health effects of alcohol, tobacco, and other drug use; and the relationships of these factors to health and learning
- knowledge of research-based methods that promote students' knowledge, skills, and behaviors that contribute to lifelong health
- knowledge of characteristics of research-based quality health education curricula, and health education resources in Michigan
- knowledge of appropriate decision-making processes relative to healthy life choices
- recognition of connections between health education and other content areas and everyday life
- knowledge of effective strategies and resources for developing and assessing knowledge and skills related to health education
- types and characteristics of sources of information used in health education (e.g., printed media, electronic media); and effective strategies for helping students construct meaning from these sources, apply critical and creative thinking, and convey information about health education through writing, speaking, and visual representation
- ethical considerations associated with researching, producing, and representing written, oral, and multiple-media communications in health education

028 Understand concepts and strategies of physical education.

Includes:

- components of health-related physical fitness, the F.I.T.T. principle, and methods for applying these components and principles to promote students' skills, knowledge, and behaviors that contribute to learning and healthy lifestyles
- application of principles and theories of motor development to promote students' skill acquisition and knowledge
- recognition of movement concepts as they apply to the development of motor skills in isolated and controlled settings
- recognition of methods for applying concepts of personal/social development in the context of physical activity (e.g., responsibility, cooperation, positive self concept) to promote students' skills, knowledge, and behaviors that contribute to learning and healthy lifestyles
- recognition of connections between physical education and other content areas and everyday life
- knowledge of effective strategies and resources for developing and assessing knowledge and skills related to physical education
- types and characteristics of sources of information used in physical education (e.g., printed media, electronic media); and effective strategies for helping students construct meaning from these sources, apply critical and creative thinking, and convey information about physical education through writing, speaking, and visual representation
- ethical considerations associated with researching, producing, and representing written, oral, and multiple-media communications in physical education

SAMPLE MULTIPLE-CHOICE TEST QUESTIONS

1. A fourth-grade teacher regularly has students maintain individual learning logs of their observations and questions during science experiments. Students then share and discuss their learning-log entry with a partner before the whole class meets to draw conclusions about what they learned. This approach to fostering student learning best demonstrates the teacher's recognition of the importance of:
 - A. helping students make connections and comparisons between different modes of communication.
 - B. considering students' physical, social, and cognitive development when planning academic instruction.
 - C. encouraging students to consider pragmatic elements when listening and speaking in academic situations.
 - D. enhancing students' understanding of content-area concepts through reading, writing, listening, and speaking.
2. A kindergarten teacher notices that some students are having difficulty developing understanding of the alphabetic principle and letter-sound correspondence. Which of the following strategies would be most effective to use *first* in addressing the students' needs?
 - A. helping the students develop automaticity recognizing grade-level-appropriate, high-frequency words
 - B. having the students practice identifying all the printed words in a book that begin with the same letter
 - C. assessing the students' ability to write both uppercase and lowercase letters clearly and accurately
 - D. focusing the students' attention on letters whose sound-symbol relationships are most consistent

3. A kindergarten student has good oral language skills and enjoys looking at, listening to, and discussing informational picture books about a range of subjects. However, when the teacher reads aloud narrative texts, the student often seems restless and confused and is unable to answer basic questions about the story. Which of the following factors is most likely interfering with this student's construction of meaning?
- A. lack of ability to make text-to-text connections
 - B. limited experience with literary material
 - C. lack of understanding of question words
 - D. limited awareness of the alphabetic principle
4. A student who has mastered six high-frequency letter-sound correspondences and can segment and blend CVC words presented orally is most likely ready to begin instruction in which of the following reading skills?
- A. decoding other word types and phonics patterns
 - B. learning how to pronounce words with consonant clusters
 - C. sounding out printed CVC words letter by letter
 - D. reading short passages containing primarily CVC words
5. A sixth-grade teacher observes that an advanced-level English Language Learner's oral reading lacks fluency. Although the student can accurately decode the words in an English text and has good comprehension of the meaning of the text, he sometimes uses inappropriate phrasing, intonation, and word stress. Which of the following statements provides the best explanation for this student's reading behavior?
- A. The student's expressive vocabulary in English is less developed than his receptive vocabulary.
 - B. The student is generalizing regular letter-sound correspondences to irregular words.
 - C. The student's primary language is influencing his production of English.
 - D. The student's academic-language skills are less developed than his social-language skills.

6. Which of the following options best exemplifies inferential comprehension?
- A. recognizing cause-and-effect relationships in a science text about the processes of condensation and evaporation
 - B. making connections between past personal experiences and information presented in an article about nutrition
 - C. following a sequence of steps in a set of written instructions for creating a pattern using stencils and paint
 - D. determining an author's point of view in a social studies text about the consequences of industrialization
7. A sixth-grade teacher is planning a unit on autobiography. Several students have expressed disinterest in reading nonfiction. Which of the following student activities would most likely help engage students' interest in reading an autobiography?
- A. giving a multimedia presentation about the author's life to the class
 - B. portraying the author in appearance and personality while being interviewed by students from other classes
 - C. creating an illustrated timeline of key events in the life of the author
 - D. comparing and contrasting the lives of several authors of autobiographies during small-group discussions
8. Students in a sixth-grade class are designing a Web site on which they will post their science research reports on invasive species in the Great Lakes. A teacher-guided discussion of which of the following concepts related to visual arts would best help students arrange the visual elements they have chosen to use on the Web page?
- A. perspective
 - B. texture
 - C. scale
 - D. balance
9. Which of the following statements best describes an important feature of life among Native American groups in the region that is now Michigan during the period immediately before European arrival in the Americas?
- A. Native American groups lived in large permanent settlements along the banks of Lakes Michigan, Huron, and Erie.
 - B. Major economic activities among Native American groups included agriculture, hunting, gathering, and fishing.
 - C. Native American groups produced skillfully made baskets and bone tools that were traded throughout nearby regions.
 - D. Most Native American groups built multistoried structures that served as forts and residences.

10. During the past century, the location of human settlements in most parts of North Africa and Southwest Asia has been most influenced by:
- A. their proximity to regional trade routes.
 - B. the existence of religious sites.
 - C. their proximity to oil deposits.
 - D. the existence of available water supplies.
11. Which of the following statements best describes a major consequence of the Columbian Exchange resulting from European colonization of the Americas?
- A. Europeans added corn, squash, potatoes, and cocoa to their diets.
 - B. European farmers began cultivating wheat, barley, and rye.
 - C. European clothing producers began making goods from cotton and silk.
 - D. Draft animals became a standard feature of European agriculture.
12. A sixth-grade teacher arranges to have students witness the operation of the Michigan state legislature while it is in session. This activity will most help students understand which of the following aspects of government?
- A. the role of public discourse and debate in the lawmaking process
 - B. the electoral strategies of political parties in state politics
 - C. the influence of the media on the policymaking process
 - D. the operation of the principle of constitutional supremacy
13. Which of the following examples best illustrates the operation of the concept of opportunity cost in a market economy?
- A. A wage earner decides to spend a salary bonus on garden tools rather than on new clothing.
 - B. A store owner lowers prices to attract a rival store's customers.
 - C. A business lays off a quarter of its workforce when demand for company products declines.
 - D. A consumer buys winter clothing in the spring to take advantage of sale prices.

14. The First Amendment to the U.S. Constitution prohibits the enactment of laws "abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the government for a redress of grievances." This amendment best illustrates the importance that the U.S. system of government places on the:
- A. responsibility of citizens to obey the laws of the land.
 - B. need for citizens to promote the general welfare over individual interests.
 - C. participation of citizens in the determination of public policy.
 - D. willingness of citizens to embrace the concept of a diverse society.
15. The primary purpose of a blocking rehearsal is to:
- A. review light and sound cues.
 - B. practice where, when, and how actors will move about the stage.
 - C. explore a variety of line readings.
 - D. plan unimpeded sight lines from audience members to the stage.
16. Throughout the school year, students in a fourth-grade class create a portfolio of their artworks. In the spring, the teacher plans a class art exhibit in the school library media center. Students will select their favorite artwork to exhibit and will write a paragraph to hang next to it. Which of the following teacher strategies would likely be most effective for promoting students' ability to convey information about their artwork in their paragraphs?
- A. giving students a scoring rubric showing how their artwork and paragraphs will be graded
 - B. providing students with sample paragraphs that previous students have written about their artwork
 - C. using art-related vocabulary regularly when discussing students' artwork with them
 - D. setting aside time to meet individually with students to help them select the artwork for the exhibit
17. A first-grade student is having difficulty understanding a math lesson involving patterns. Which of the following musical activities would be most appropriate to promote the student's understanding of patterns?
- A. echoing rhythms on a drum
 - B. singing a major scale
 - C. playing a melody on a recorder
 - D. singing with others in harmony

18. As part of a social studies unit on the history and cultural development of the Harlem Renaissance, a teacher would like to play musical selections and demonstrate styles of dance associated with the Harlem Renaissance. Which of the following styles of dance should the teacher demonstrate?

A. salsa
B. modern dance
C. ballet
D. line dance

19.

Tony needs to arrive at school at 8:10 a.m. If it takes him 9 minutes to get out of bed and brush his teeth, 12 minutes to get dressed, 18 minutes to eat breakfast, and 23 minutes to walk to school, when will he have to get up?

Which of the following strategies would be most effective for solving this problem?

A. modeling
B. working backwards
C. guessing and checking
D. finding a pattern

20. Two numbers, A and B , are shown below in expanded notation.

$$A = 7 \times 10^3 + 4 \times 10^2 + 5 \times 10^1$$

$$B = 3 \times 10^1 + 2 \times 10^0$$

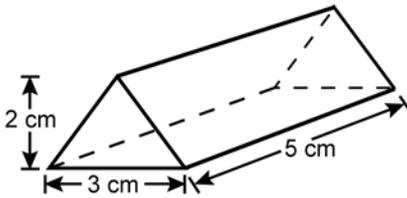
When $A \times B$ is calculated, what digit will be in the thousands place of the product?

A. 2
B. 3
C. 4
D. 8

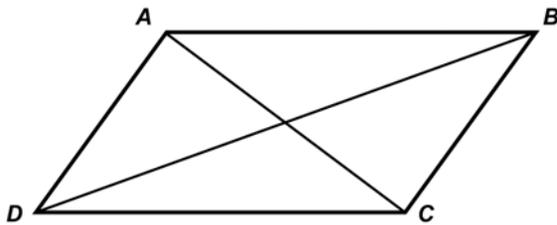
21. A person walks a distance of $4\frac{3}{5}$ miles at a speed of $2\frac{3}{4}$ miles per hour. Which of the following expressions represents the number of hours required to walk the distance?

A. $\frac{23}{5} \times \frac{4}{11}$
B. $\frac{23}{5} \times \frac{11}{4}$
C. $\frac{4}{11} \div \frac{23}{5}$
D. $\frac{11}{4} \div \frac{23}{5}$

22. What is the volume of the triangular prism shown in the diagram below?



- A. 30 cubic centimeters
 B. 18 cubic centimeters
 C. 15 cubic centimeters
 D. 10 cubic centimeters
23. Given that $ABCD$ below is a parallelogram, which of the following characteristics of $ABCD$ justifies the conclusion that opposite sides of a parallelogram are equal in length?



- A. Line AB is parallel to line CD .
 B. Angle A is congruent to angle C .
 C. Triangle ADC is similar to triangle CBA .
 D. Triangle ABC is congruent to triangle CDA .

24. A teacher is planning a unit on solving problems involving proportional reasoning. The teacher could best make connections between the algebra of ratios and proportion and spatial reasoning by including which of the following geometry topics in the lesson?

- A. finding the area of composite figures
 B. solving problems involving similar figures
 C. finding the sum of the angles in various polygons
 D. applying the Pythagorean theorem in real-world situations

25. A mathematical equation is given by $y - 5x + 2x^2 = x^2 + 6x + 3$. Which of the following is an equivalent representation?

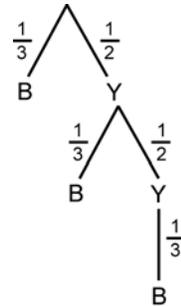
- A. $y = -x^2 - x + 3$
 B. $y = -x^2 + 11x + 3$
 C. $y = 3x^2 - x + 3$
 D. $y = 3x^2 + 11x + 3$

26. Students are creating a model for the amount of weight a bridge can support. The students propose that all else being equal, the longer the bridge, the less weight it will be able to support. If the number 10 is a constant, L represents the length of the bridge, and W represents the amount of weight it can support, which of the following equations could be a model for this situation?

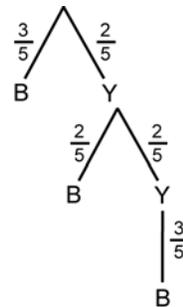
- A. $W = \frac{L}{10}$
- B. $W = \frac{10}{L}$
- C. $W = 10L$
- D. $W = 10L^2$

27. A box contains three blue blocks and two yellow blocks. Three blocks are drawn randomly from the box one at a time without replacement. Which of the following probability trees can be used to determine the probability that the blocks are drawn in the order of yellow, yellow, and then blue?

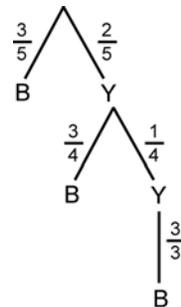
A.



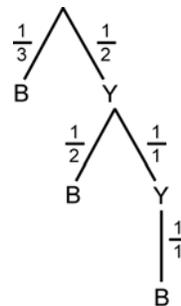
B.



C.



D.



28. Researchers are conducting a study on effectiveness of a new medication to control pain. One hundred individuals who are experiencing moderate levels of pain participate in the study. Fifty participants will be given the medication and 50 will be given a placebo. Over the course of several weeks, individuals will be interviewed to determine their levels of pain. Which of the following strategies would be most effective for reducing bias on the part of the researchers?
- A. collecting only data that can be quantified
 - B. adding 100 individuals who are experiencing severe pain to the study
 - C. ensuring that the interviewers do not know who was given the placebo or the medication
 - D. replicating the experiment using a different pool who are experiencing a range of pain levels
29. Students in a second-grade class notice there is more snow on the north side of the school building than on the south side, and they ask their teacher why the two sides of the building have different amounts of snow. Which of the following activities should the teacher carry out next in order to promote the students' use of inquiry processes?
- A. demonstrating with a ball and flashlight how the tilt of the earth causes the sun to be in the southern sky during the winter in the Northern Hemisphere
 - B. having the students use books and the Internet to research the seasons and the path of the sun in the sky throughout the year
 - C. putting the students into groups and giving each group a location around the school at which they will regularly measure and record the snow depth
 - D. discussing with the students various reasons why the north side of the building might have more snow than the south side

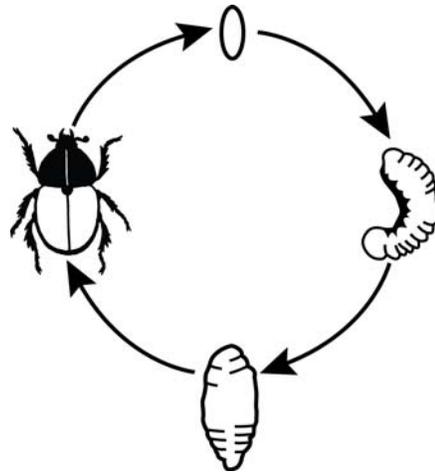
30. Read the passage below; then answer the question that follows.

Scientific and technological advances have led to the development of computer technology that is smaller, faster, and more versatile with each new innovation. Huge amounts of information are accessible at all times. Instant communication via e-mail, voice, video, and text messaging is possible all over the world. Virtual friends exchange information continuously at social networking sites. At the same time, many believe that this technology has contributed to information overload, increased social isolation, reduced attention span, and declining social skills for many individuals.

The passage above best illustrates that technological innovations often:

- A. require that certain social and economic conditions be present before they are accepted.
- B. are made possible by breakthroughs in one or more areas of science.
- C. have unforeseen consequences that offset some of their advantages.
- D. are gradually accepted by all segments of society.

- 31.



The illustration shows the life cycle of a beetle. The life cycle of a grasshopper, which undergoes gradual metamorphosis, differs from the life cycle of a beetle in that the young grasshoppers:

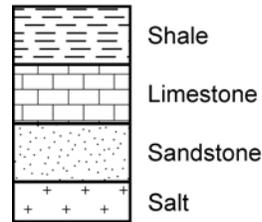
- A. grow into adults more quickly, and do not need to molt as they grow.
- B. look like small adults and do not go through a larval or pupal stage.
- C. live in different habitats and eat different food from the adults.
- D. pupate and then become adults, but do not change in appearance or form.

32. A flower grower has been growing several acres of daisies for many years. The grower lets the daisies go to seed late in the year so that new plants naturally replace older ones that die. This year, in the middle of the field, the grower finds a plant with pink flowers instead of the usual white flowers. Aside from the unusual color, the plant is identical to all the other daisies in the field. The grower has never seen a pink-flowered daisy in the field before. The appearance of the pink-flowered daisy was most likely caused by:

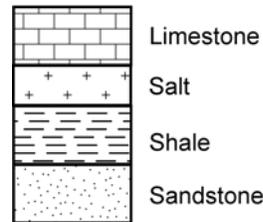
- A. a mutation in one of the sex cells produced by a parent of the daisy.
- B. hybridization between a daisy plant and a plant belonging to a non-daisy species.
- C. a dominant gene that has been carried undetected in the population for many years.
- D. unusual nutrients and soil conditions where the pink-flowered daisy is growing.

33. An inland sea that existed 50 million years ago slowly dries up. As it dries, the deep water near the center of the sea becomes shallower and the beaches surrounding the sea move inward. Eventually the sea completely disappears. Which of the following series of deposits would most likely result from this event?

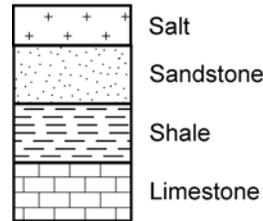
A.



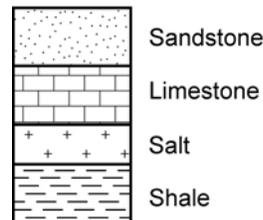
B.



C.



D.



34. A fourth-grade teacher has students attach the terminals of small light-emitting diode (LED) to an electric motor. The students then vigorously spin the shaft of the motor and observe that the LED gives off a quick flash of light. The principle demonstrated in this exercise could best be used to help explain:
- A. how energy is stored in batteries.
 - B. why refrigerators are able to cool warm air.
 - C. how electricity is generated in large power plants.
 - D. why a balloon sticks to a wall after rubbing it on a sweater.
35. On a hot summer day, a sixth grader's friend calls to ask her to go swimming with a group of friends at a nearby river gorge. The girl knows that it is a dangerous and illegal area in which to swim, but she likes swimming with her friends. Which of the following would be the most appropriate process for her to use in deciding how to respond to her friend's suggestion?
- A. considering the physical risks and benefits of swimming in the gorge, how she personally feels about it, and what the alternatives are
 - B. asking her friend who else will be going, and considering what they will think of her if she does or does not go swimming
 - C. telling her older brother about the situation and asking him what he would do in her place and what he thinks she should do
 - D. going to the gorge with the group and seeing for herself how dangerous it seems before deciding whether to go swimming

36. A middle school student is conducting research for a health project on juvenile rheumatoid arthritis. Which of the following types of Internet resources would be most appropriate for this purpose?
- A. a chat group or discussion forum where individuals or families affected by juvenile rheumatoid arthritis share their personal stories and offer advice
 - B. Web sites for products designed to alleviate joint pain associated with juvenile rheumatoid arthritis with testimonials from individuals who purchased the products
 - C. online medical journals that describe research studies focusing on new treatments for individuals with juvenile rheumatoid arthritis
 - D. Web sites of government or nonprofit organizations designed to provide information and support for individuals or families affected by juvenile rheumatoid arthritis
37. Outside on the playground, a first-grade teacher engages students in a variety of short relay races. For the first relay, the students walk to the end pole and then turn around and run back. For the second relay, the students skip to the pole and then gallop back. For the third relay, the students hop to the pole and then leap back. This is a particularly appropriate activity for providing students with opportunities to:
- A. combine manipulative and nonlocomotor skills smoothly.
 - B. gain practice in executing fundamental locomotor skills.
 - C. recognize the differences between self-space and general space.
 - D. demonstrate their understanding of movement qualities related to force.
38. When elementary students are participating in physical activities, the teacher can best help promote personal traits such as perseverance and confidence by:
- A. giving constant verbal praise and encouragement.
 - B. making sure students participate in activities at which they regularly succeed.
 - C. planning activities that minimize competition between students.
 - D. focusing students on setting and achieving individual goals.

Read the excerpt below from a writing sample; then answer the two questions that follow.

¹The oceans are home to many examples of symbiosis. ²The clownfish, _____, eats lichens that could harm the sea anemone, the sea anemone protects the clownfish from predators with its stinging cells. ³_____, barracudas get their bellies cleaned by cleaning fish, who get a meal out of the deal. ⁴_____ ⁵In the rain forests of Costa Rica, algae grow in the fur of the tree sloth. ⁶In return for providing a warm environment of the algae, the tree sloth receives protection in the form of camouflage. ⁷Thanks to the algae, the tree sloth's coat blends in with the lichen-covered bark of the trees where it makes its home.

39. Which of the following words or phrases, if inserted in the blanks in Sentences 2 and 3 respectively, would best support a logical development of the central idea?
- A. for instance / Similarly
 - B. consequently / For example
 - C. in the first place / Additionally
 - D. furthermore / Likewise
40. Which of the following sentences, if inserted as Sentence 4 in the excerpt, would best support a logical development of the central idea?
- A. Goby fish warn shrimp of danger and the shrimp construct their shared hideaway.
 - B. Some land animals also enjoy mutually beneficial relationships with animal or plant life.
 - C. The barracuda strikes a unique pose to assure cleaning fish that it will not eat them.
 - D. Symbiosis occurs when a host and a dependent species benefit from living together.

ANSWER KEY FOR THE SAMPLE MULTIPLE-CHOICE TEST QUESTIONS

Item Number	Correct Response	Objective
1.	D	Understand the major concepts, principles, and instructional practices in the acquisition and learning of languages to create opportunities for communication in a multilingual global society.
2.	D	Understand the foundations of emergent literacy, including the development of phonological and phonemic awareness skills.
3.	B	Understand the foundations of emergent literacy, including the development of phonological and phonemic awareness skills.
4.	C	Understand the development of accurate, automatic word recognition, spelling, and fluency.
5.	C	Understand the development of accurate, automatic word recognition, spelling, and fluency.
6.	D	Understand the development of vocabulary and reading comprehension.
7.	B	Understand the characteristics of narrative and expository texts in written, oral, performance, and media forms.
8.	D	Understand the generation and expression of ideas and information through written, oral, visual, and nonverbal communication.
9.	B	Apply historical thinking to understand the past in the local community, Michigan, and the United States.
10.	D	Understand the fundamental principles and concepts of geography.
11.	A	Understand the fundamental principles and concepts of geography.
12.	A	Understand the fundamental principles and concepts of civics and government.
13.	A	Understand the fundamental principles and concepts of economics.
14.	C	Understand inquiry processes in social studies, and concepts and skills associated with public discourse, decision making, and citizen involvement.
15.	B	Understand the functions, elements, principles, and styles of the arts, and artistic and creative processes and products.
16.	C	Understand communication about and through the arts, and developmentally appropriate arts instruction.
17.	A	Understand communication about and through the arts, and developmentally appropriate arts instruction.
18.	B	Understand communication about and through the arts, and developmentally appropriate arts instruction.
19.	B	Understand mathematical reasoning, representation, and problem solving; and the historical development of mathematics.
20.	D	Understand number sense and concepts of number, number theory, and number systems.
21.	A	Understand numerical computation and operations on numbers.
22.	C	Understand concepts and procedures of direct and indirect measurement.
23.	D	Understand concepts of Euclidean geometry.
24.	B	Understand concepts of Euclidean geometry.
25.	B	Understand concepts of algebra.
26.	B	Understand concepts of algebra.
27.	C	Understand concepts of data analysis and probability.
28.	C	Understand how new scientific knowledge is constructed, including the role of inquiry.
29.	D	Understand how new scientific knowledge is constructed, including the role of inquiry.

(continued on next page)

ANSWER KEY FOR THE SAMPLE MULTIPLE-CHOICE TEST QUESTIONS (CONTINUED)

Item Number	Correct Response	Objective
30.	C	Understand the nature of scientific knowledge and the application of analysis and reflection in science.
31.	B	Understand the fundamental concepts of life science.
32.	A	Understand the fundamental concepts of life science.
33.	C	Understand the fundamental concepts of earth/space science.
34.	C	Understand the fundamental concepts of physical science.
35.	A	Understand concepts and strategies of health education.
36.	D	Understand concepts and strategies of health education.
37.	B	Understand concepts and strategies of physical education.
38.	D	Understand concepts and strategies of physical education.
39.	A	Understand the writing process using standard conventions of English in the United States.
40.	B	Understand the writing process using standard conventions of English in the United States.