FTCE Elementary Education K-6

Diagnostic Test

Answer Sheet

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DIAGNOSTIC TEST

Total 120 multiple-choice questions
Time Limit: 2 hours

DIRECTIONS: Read each question and select the best response.

1. Which of the following sentences contains no punctuation or capitalization errors?
    (A) Wherever she goes people always recognize her.
    (B) Wherever she goes, people always recognize her.
    (C) Wherever, she goes people always recognize her.
    (D) Wherever she goes people always, recognize her.

2. Which of the following sentences contains no punctuation or capitalization errors?
    (A) "You're right to be upset," said the mayor. "I would rather avoid raising taxes as well."
    (B) Your right to be upset," said the Mayor. "I would rather avoid raising taxes as well."
    (C) Your right to be upset, "said the Mayor". I would rather avoid raising taxes as well.
    (D) You're right to be upset, said the Mayor. "I would rather avoid raising taxes as well."

3. Which of the following is most similar in meaning to the word "genre"?
    (A) theme of a story
    (B) setting of a story
    (C) type of story
    (D) response to story

4. What is the literary device used to compare things directly, without use of words such as "like" or "as"?
    (A) simile
    (B) metaphor
    (C) personification
    (D) alliteration

5. Which of the following is a major component of syntax?
    (A) rules for associating graphemes with phonemes
    (B) rules for describing the meaning of individual words
    (C) rules for determining the correct order of words in sentences
    (D) rules for analyzing the sounds of a language

6. Mary, a second grader, reads with very little expression or variability in pitch, and she often introduces pauses at inappropriate places. In what aspect of language does she most clearly need improvement?

    (A) syntax

    (B) semantics

    (C) phonics

    (D) prosody

7. What is the purpose of activating students' prior knowledge during a reading exercise?

    (A) Students tend to rely on what they already know rather than new information.

    (B) Students will thereby have more shared experiences to discuss with each other.

    (C) Students already know everything they need to know when encountering most texts.

    (D) Students engage a text more readily when they have a personal connection to it.

8. Which of the following levels is higher than the others in Bloom's Revised Taxonomy?

    (A) understanding

    (B) evaluating

    (C) analyzing

    (D) remembering

9. For a unit on Ancient Greece, the Social Studies and Language Arts teachers plan to collaborate. Which of the following literature would be most suitable for the unit?

    (A) translated poetry by Greek authors

    (B) biographies of famous Greeks

    (C) time lines of Greek history

    (D) maps of ancient Greece

10. Which of the following is not an example of alliteration?

    (A) laughing lions laugh loudly

    (B) red rabbits rise over roses

    (C) she sees three bees flee the cheese

    (D) talking turtles take the taxi

11. Which of the following assessments gives you the best review of the needs of a student?
    (A) screenings
    (B) evaluations
    (C) progress monitoring
    (D) diagnostic evaluation

12. Which of the following assessments would tend to give you the most useful information if administered during the first few weeks of school?
    (A) pencil and paper tests
    (B) evaluations
    (C) progress monitoring
    (D) diagnostic evaluation

13. Which of the following assessments is considered ongoing and used on a regular basis to provide the teacher with data about the progress the student is making?
    (A) screenings
    (B) evaluations
    (C) progress monitoring
    (D) diagnostic evaluation

14. Which of the following would not be a benefit of differentiating instruction?
    (A) meeting the needs of all your students
    (B) teaching to various learning styles
    (C) only teaching the low-performing students
    (D) using cooperative learning to encourage communication

15. Which of the following illustrates expository writing?
    (A) an essay about how the postal service works
    (B) a play about a large and boisterous family
    (C) a short story set in the pre-colonial era
    (D) a poem about an elderly woman

16. Rules such as "i before e, except after c" illustrate what aspect of language?
    (A) structure
    (B) orthography
    (C) semantics
    (D) pragmatics

17. A test that is supposed to measure spelling ability but also taps into reading comprehension, meta-cognition, and other skills suffers from limitations in what area?
    (A) reliability
    (B) validity
    (C) assessment
    (D) constructs

18. Which of these would yield information about percentiles and age equivalents?
    (A) teacher-designed test
    (B) standardized test
    (C) performance-based measure
    (D) informal assessment

19. What does it mean to say that a student scored in the 72nd percentile on a test?
    (A) The student scored better than 72% of the comparison group.
    (B) The student scored worse than 72% of the comparison group.
    (C) The student scored 72% correct items on the test.
    (D) The student scored an average of 72% across test items.

20. The ability to hear and identify individual sounds in words is known as
    (A) fluency.
    (B) comprehension.
    (C) phonemic awareness.
    (D) screening.

21. Worksheets, writings, and projects could all be included in
    (A) a screening.
    (B) a portfolio.
    (C) running record.
    (D) norm-referenced.

22. Structural analysis involves the ability to
    (A) understand linguistic organization.
    (B) identify missing words in passages.
    (C) apply rules of phonics when decoding.
    (D) break a word into parts or syllables.

23. The three types of assessments included in the "Just Read, Florida" Reading Formula are
    (A) screening, diagnosis, and progress monitoring.
    (B) screening, diagnosis, and evaluation.
    (C) screening , evaluation, and progress monitoring.
    (D) progress monitoring, evaluation, and screening.

24. Which of the following illustrates the critical level of interpretation on the part of a young reader?
    (A) The student is able to summarize a passage she just read.
    (B) The student is able to guess the implied meaning of a passage.
    (C) The student is able to determine whether a passage is objective or biased.
    (D) The student is able to recite a passage from memory.

25. Which sentence contains no punctuation or capitalization errors?
    (A) I asked Jaclyn, "Did he ask for his ring back"?
    (B) I asked Jaclyn, "Did he ask for his ring back?"
    (C) I asked, Jaclyn, "Did he ask for his ring back?"
    (D) I asked Jaclyn, did he ask for his ring back?

26. The United States Constitution defines some powers as shared concurrently between the states and the federal government. Which of the following powers are concurrent powers?
    I. To lay and collect taxes
    II. To regulate commerce
    III. To establish post offices
    IV. To borrow money
    (A) I and II
    (B) II and III
    (C) III and IV
    (D) I and IV

27. Which of the following statements is true about political parties in the United States but not true about political parties in multiparty European governments?
    (A) Political parties form coalitions to advance their policy initiatives through Congress.
    (B) Single-member district voting patterns clearly identify candidates for seats in political offices.
    (C) Parties provide candidates for office and organize campaigns to get the candidate elected.
    (D) Political parties are linked to religious, regional, or social class groupings.

28. The Pacific Northwest receives the greatest annual precipitation in the United States. Which of the following statements best identifies the reason this occurs?

    (A) The jet stream moving south from Canada is responsible for pushing storms through the region.

    (B) The region's mountains along the coast cause air masses to rise and cool, thereby reducing their moisture-carrying capacity.

    (C) Numerous storms originating in Asia build in intensity as they move across the Pacific Ocean and then dump their precipitation when they reach land.

    (D) The ocean breezes push moisture-laden clouds and fog into the coastal region, producing humid, moist conditions that result in precipitation.

29. The three branches of federal government in the U.S. include all of the following except the

    (A) executive branch.

    (B) legislative branch.

    (C) fiduciary branch.

    (D) judicial branch.

30. Which of the following statements best defines the role of the World Trade Organization?

    (A) It resolves trade disputes and attempts to formulate policy to open world markets to free trade through monetary policy and regulation of corruption.

    (B) It is an advocate for human rights and democracy by regulating child labor and providing economic aid to poor countries.

    (C) It establishes alliances to regulate disputes and polices ethnic intimidation.

    (D) It regulates trade within the United States to eliminate monopolistic trade practices.

31. The drought of the 1930s that spanned a large area from Texas to North Dakota was caused by

    I.   overgrazing and overuse of farmland

    II. natural phenomena, such as below-average rainfall and wind erosion

    III. environmental factors, such as changes in the jet stream

    IV. the lack of government subsidies for new irrigation technology

    (A) I and II

    (B) II and III

    (C) I and III

    (D) II and IV

32. Which of the following would be considered a primary source in researching the factors that influenced U.S. involvement in the Korean War?

    I.   The personal correspondence of an officer stationed in Korea.

    II. A biography of Harry S. Truman by David McCullough, published in 1993.

III. A journal article about the beginning of the Korean War by a noted scholar.

IV. An interview with Secretary of Defense George Marshall.

(A) I and II

(B) II and IV

(C) II and III

(D) I and IV

33. Primary source documents can be found in

(A) newspaper editorials.

(B) professional journals.

(C) the Library of Congress.

(D) book reviews.

34. Why is it helpful for a social studies teacher to allow students some influence over instructional decisions?

(A) All students dislike being told by the teacher what to do.

(B) Teachers like to avoid making significant instructional decisions.

(C) Teachers know that different students are motivated by different tasks.

(D) Students deserve a break from all the rules and regulations in their classes.

35. Which of the following best describes a major difference between a state government and the federal government?

(A) State governments have more responsibility for public education than the federal government.

(B) State governments are more dependent on the personal income tax for revenue than is the federal government.

(C) State governments are more dependent on the system of checks and balances than is the federal government.

(D) State governments are subject to term limits, whereas federal government representatives serve unlimited terms.

36. Which of the following was a major cause of the Great Depression?

I. Hoarding money greatly reduced the money supply, resulting in higher prices on consumer goods.

II. The gold standard limited the amount of money in supply, reducing money circulation and causing a drop in prices and wages.

III. The Smoot-Hawley Tariff Act increased tariffs, which resulted in increased prices for consumer goods.

IV. The stock market crash reduced the values of companies, causing them to raise the prices of consumer goods.

(A) I and II

(B) II and III

(C) III and IV

(D) I, II, and III

37. In announcing the Emancipation Proclamation, Lincoln's immediate purpose was to

   (A) free black slaves in all the slave states.

   (B) free black slaves in only the border slave states that had remained loyal to the Union.

   (C) let the southern states know that slavery would not be tolerated by his administration once he took office.

   (D) rally northern morale by giving the war a higher moral purpose than just preserving the Union.

38. In the case of *Dred Scott v. Sanford*, the U.S. Supreme Court held that

   (A) separate facilities for different races were inherently unequal and therefore unconstitutional.

   (B) no black slave could be a citizen of the United States.

   (C) separate but equal facilities for different races were constitutional.

   (D) affirmative action programs were acceptable in certain cases.

39. The Declaration of Independence was primarily the work of

   (A) Thomas Jefferson.

   (B) George Washington.

   (C) Benjamin Franklin.

   (D) James Monroe.

40. A teacher plays a piece of music for her music appreciation class, telling the students that it is an example from the Romantic period. She plays the piece again and asks the students to describe the piece. After students describe the music, she asks them to define *romantic*. The teacher is engaging her students in

   (A) inductive reasoning.

   (B) deductive reasoning.

   (C) oral interpretation.

   (D) evaluation.

41. The fourth-grade students in Ms. Alvarez's class are studying Native Americans. Ms. Alvarez wants to strengthen her students' ability to work independently. She also wants to provide opportunities for the students to use a variety of print and media resources during this unit of study. Ms. Alvarez plans to begin the unit by leading the class in a brainstorming session to formulate questions to guide their research about Native Americans. Which of the following criteria should guide

Ms. Alvarez as she leads the brainstorming session?

(A) The questions should emphasize the factual content presented in the available print materials.

(B) The questions should emphasize higher-order thinking skills, such as comparison, analysis, and evaluation.

(C) The questions should reflect the interests of the students, both individually and as a group.

(D) The questions should include all of the fourth-grade objectives for this particular unit.

42. Which of the following would probably be the best way to motivate students to research questions they have prepared?

(A) The teacher should assign two to three questions to each student so that all the questions are covered.

(B) The teacher should allow individual students to select the questions they would like to research.

(C) The teacher should select three key questions and assign them to all the students.

(D) The teacher should assign one topic to each student and then provide the students with additional information.

43. The Silk Road connected to all of the following countries except

(A) China.

(B) Greece.

(C) Iran.

(D) India.

44. The characteristics of fascism include all of the following except

(A) democracy.

(B) totalitarianism.

(C) romanticism.

(D) militarism.

45. The industrial economy of the nineteenth century was based on all the following except

(A) the availability of raw materials.

(B) an equitable distribution of profits among producers.

(C) the availability of capital.

(D) a distribution system to market finished products.

46. The teachings of Mohammed are described in

(A) *The Torah*.

(B) *The Bible*.

(C) *The Koran.*

(D) *The Four Noble Truths*.

47. According to the most recent census, what percentage of Florida's population speaks a language other than English at home?

(A) 15%

(B) 25%

(C) 17%

(D) 6%

48. Cultural geography encompasses the relationship between

(A) the Earth and the planets.

(B) finances and resources.

(C) people and place.

(D) between laws and government.

49. Which agency oversees the protection and safety of the ecosystem?

(A) The Food and Drug Administration (FDA)

(B) The Environmental Protection Agency (EPA)

(C) The International Energy Agency (IEA)

(D) The Federal Aviation Administration (FAA)

50. Of the following, which test does *not* measure muscular strength and endurance in children?

(A) Pull-ups

(B) Flexed arm hang

(C) Grip strength test

(D) Sit-and-reach test

51. Which of the following is *not* an art design element?

(A) balance

(B) movement

(C) timbre

(D) form

52. What should be true of an art classroom?

I. It should include both natural and artificial lighting.

II. It should avoid the use of individual seating arrangements in order to facilitate collaborative work.

       III.   It should include areas for the teacher to lecture and for student work to be displayed.

(A) I and II

(B) II and III

(C) I and III

(D) I, II, and III

53. The instruments a K-6 classroom teacher usually teaches include

       I.   rhythmic instruments

       II.   harmonic instruments

       III. melodic instruments

(A) I and II

(B) II and III

(C) I and III

(D) I, II, and III

54. Mr. Jones is teaching his students the vertical aspect of music, as illustrated by the simultaneous combinations of musical tones. This aspect of music is referred to as

(A) melody.

(B) harmony.

(C) timbre.

(D) dynamics.

55. Which of the following does *not* utilize musical instruments other than voice?

(A) plainsong

(B) baroque

(C) pentatonic

(D) sonata

56. Which of the following statements is true of vitamins?

       I.   Vitamins are organic substances.

       II.   Vitamins are either water- or fat-soluble.

       III. Vitamins come from soil or water.

(A) I, II, and III

(B) I and II

(C) I and III

(D) II and III

57. Which vitamin or mineral contributes most to the development of red blood cells?
    (A) Vitamin D
    (B) Sodium
    (C) Vitamin A
    (D) Iron

58. Unsaturated fats are found in
    (A) beef and pork.
    (B) milk and cheese.
    (C) vegetables.
    (D) poultry.

59. Which of the following was a twentieth century architect who used natural surroundings and building materials to dictate the form of a structure?
    (A) Philip Johnson
    (B) Le Corbusier
    (C) Walter Gropius
    (D) Frank Lloyd Wright

60. The period immediately following the Renaissance is known as
    (A) prehistoric.
    (B) ancient.
    (C) medieval.
    (D) Baroque.

61. Which of the following is a true statement about music?
    I.   Styles are basic musical languages.
    II. Genre is a synonym for style.
    III. Many songs include multiple genres.
    (A) I and II
    (B) II and II
    (C) I and III
    (D) I, II, and III

62. A classroom teacher's lesson plans for music include playing a game in which children squat for low sounds and stand on tiptoe for high sounds. What grade does the teacher most likely teach?

(A) first grade

(B) fourth grade

(C) sixth grade

(D) eighth grade

63. Which of the following vitamins is fat soluble?

(A) Niacin

(B) Vitamin C

(C) Vitamin B-12

(D) Vitamin K

64. Which of the following are true of the human body?

     I.   A group of cells working together is called a system.

     II.   The two divisions of the nervous system are somatic and autonomic.

     III.   The three types of nerve terminals are exteroceptors, interoceptors, and proprioceptors.

     IV.   The musculoskeletal system initiates and controls movement.

(A) I and II

(B) II and III

(C) III and IV

(D) I and IV

65. Goals of music education include

     I.   helping students learn to discriminate music

     II.   increasing listening awareness

     III.   increasing involvement in music

     IV.   decreasing sensitivity to the expressive qualities of music

(A) I, II, and III

(B) II, III, and IV

(C) I, II, and IV

(D) I, III, and IV

66. An example of a musical genre is

(A) rap.

(B) nocturne.

(C) symphonic.

(D) waltz.

67. A teacher realizes that her students are in Erikson's stage of developing a sense of self and identity. The school is most likely to be a

    (A) preschool for 3 and 4 year olds

    (B) K-2 primary school

    (C) upper elementary school (grades 3-5)

    (D) middle school

68. Which of the following is a style of art that is opposed to realistic representation, but rather shows multiple aspects of an object simultaneously and introduces other apparent distortions?

    (A) Cubism

    (B) Impressionism

    (C) Baroque

    (D) Pop Art

69. The Ninth Symphony and the *Moonlight* sonata of which composer exemplify the dramatic passion, expressive melodies, and complex themes of music during the Romantic period?

    (A) Bach

    (B) Beethoven

    (C) Handel

    (D) Stravinsky

70. Lymphocytes are produced by which system?

    (A) respiratory

    (B) digestive

    (C) circulatory

    (D) immune

71. Kohlberg's theory focused on which aspect of development?

    (A) moral

    (B) psychosocial

    (C) cognitive

    (D) physical

72. What aspect of a person's singing voice might be described as reedy, nasal, thin, or full?

    (A) dynamics

    (B) timbre

    (C) style

    (D) form

73. Which of the following is an example of an activity that involves gross motor skills?

    (A) playing checkers

    (B) writing a story

    (C) painting a picture

    (D) playing baseball

74. Which of the following statements regarding the nature of matter is true?

    I.   Matter is the same as volume.

    II.   Weight is the same as matter.

    III. Density is related to buoyancy.

    IV.   Density is the ratio of mass to volume.

    (A) I and II

    (B) II and III

    (C) III and IV

    (D) I, II, III, and IV

Use the following information to answer questions 75-76.

A student has created an experiment for a science project: 100 sunflower seeds will be divided into four sets of 25 seeds each. Seeds in group 1 will be exposed to sunlight for 8 hours, seeds in group 2 will be exposed to fluorescent light for 8 hours, seeds in group 3 will be exposed to ultraviolet light for 8 hours, while seeds in group 4 will be placed in a box with no light. Then, each group of seeds will be soaked overnight and placed between the folds of water-saturated newspaper to sprout. The student will examine each group daily to determine how many, if any, seeds sprout.

75. What is the best testable question for the experiment?

    (A) What is the effect of 8 hours of light on seed germination?

    (B) How does the soaking of sunflower seeds affect sprouting?

    (C) How do different kinds of light affect seed germination?

    (D) Does more or less light affect plant size?

76. Among the seeds available at the store, no single package contained enough seeds for the entire project; most contained about 30 seeds per package. Which of the following is an acceptable approach for conducting the experiment?

    I.   Purchase one packet from each of four different brands of seed, one packet for each test group.

    II.   Purchase one packet from each of four different brands of seed, and divide the seeds from each packet equally among the four test groups.

III.   Purchase four packets of the same brand, one packet for each test group.

IV.   Purchase four packets of the same brand, and divide the seeds from each packet equally among the four test groups.

(A) I and II

(B) II and IV

(C) III and IV

(D) IV only

77. Which of Ms. Penny's class activities is most likely to violate copyright law in the sense of failing to meet the fair use doctrine?

(A) Ms. Penny allows her students to use the Internet to locate government weather data for analysis.

(B) Ms. Penny purchases magazines and then distributes them to students when she is finished reading them.

(C) Ms. Penny photocopies published short stories and hands them out to students each semester.

(D) Ms. Penny encourages her students to play an educational video game sponsored by PBS.

78. Which of the following terms and definitions are correctly matched?

I.   Ecology– all the living and nonliving things surrounding an organism

II.   Ecosystem– a group of populations that interact with one another

III.   Energy pyramid–an illustration of the dependent relationships in an ecosystem

IV.   Succession–the orderly and predictable change of communities as the result of population replacement

(A) I and II

(B) II and III

(C) III and IV

(D) I and IV

79. Which of the following is an example of a material added to an ecosystem that disrupts its normal functioning?

(A) excess fertilizer

(B) temperature inversion

(C) acid rain

(D) succession

80. Scientist A thinks that a newly discovered rock could be a new element. Scientist B has isolated a microorganism that she thinks may be responsible for a new disease. Scientist C notices that most of the individuals who have been diagnosed with brain tumors also have cell phones. What is the

next best step that the scientists should take?

(A) assume that their ideas are correct

(B) publish papers about their discoveries

(C) design investigations to test their theories

(D) share their findings with other scientists

81. A teacher hung a crystal in the window of her classroom. When the sunlight passes though the crystal, bright colors appear on one of the classroom walls. This crystal must be a

(A) concave lens.

(B) convex lens.

(C) prism.

(D) simple machine.

82. Two friends were taking a walk when they saw lightning and heard thunder from an approaching storm. As they hurried home they counted the seconds between the time they saw a flash of lightning and heard the thunder. In order to determine the distance of the storm, they were making use of the speed of

(A) light.

(B) sound.

(C) the storm.

(D) the lightning.

83. Scientists believe sea levels rose drastically at one point in Earth's geologic history and covered much of the existing landforms. Which of the following would support that theory?

(A) the discovery of dinosaur and bird fossils in the Florida Everglades

(B) the discovery of coal in mountain regions of the Appalachian Mountains

(C) the discovery of volcanoes on the ocean floor

(D) the discovery of fossils of coral and marine animals in the U.S. Midwest.

84. Which of the following is *not* a form of energy?

(A) viscosity

(B) heat

(C) wave

(D) chemical

85. A naturally occurring magnet is called a

(A) pole.

(B) electromagnet.

(C) lodestone.

(D) magnetic field.

86. Which of the following is an example of potential energy?
    (A) A piece of very ripe fruit hangs from a tree.
    (B) An Olympic runner crosses the finish line.
    (C) An apple pie bakes in an electric oven.
    (D) A bell rings for the changing of classes.

87. A company is drilling for new oil deposits. What layer of Earth will the crew drill through first?
    (A) core
    (B) plate
    (C) mantle
    (D) crust

88. Which of the following statements concerning maps is correct?
    I.   A compass rose is another name for the legend.
    II. Parallels measure latitude.
    II. Meridians run from pole to pole.
    IV. A topographical map shows altitude and landforms.
    (A) I, II, and III
    (B) II, III, and IV
    (C) I, II, and IV
    (D) I, II, and IV

89. Which of the following is *not* an example of a simple machine?
    (A) the device that raises and lowers a flag on a flagpole
    (B) the wheels on a bicycle
    (C) a piece of paper folded into a pinwheel
    (D) a stick used to pry a rock out of a garden

90. Echoes in caves, for example, illustrate which of the characteristics of sound?
    (A) reflection
    (B) pitch
    (C) rarefaction
    (D) compression

91. Which of the following was the first satellite to travel in space around Earth?
    (A) *Sputnik*
    (B) *Explorer 1*
    (C) *Pioneer 1*
    (D) *Surveyor 1*

92. Which of the following life activities involved in cell metabolism can be food-getting?
    I.   diffusion
    II.   fermentation
    III. phagocytosis
    IV.   photosynthesis
    (A) I, II, and III
    (B) II, III, and IV
    (C) I, III, and IV
    (D) I, II, and IV

93. Which of the following teachers is most likely to be using inquiry approaches to learning science?
    (A) Mr. Smith writes the following on the board: Lecture on the history of science tomorrow: Read Chapter 5.
    (B) Ms. Kohl asks a student to sketch a diagram of the sodium atom on the board in as much detail as possible.
    (C) Mr. Lee gives pairs of students jump ropes and asks them to experiment with the different kinds of waves they can produce.
    (D) Mrs. Evans uses a DVD to give students step-by-step instructions on how to use a microscope.

94. Mrs. Wilson's class looks out the window and observes cirrus clouds. What weather should they expect?
    (A) an approaching storm
    (B) good weather
    (C) stable weather
    (D) a change in weather

95. Which of the following is another name for the water cycle?
    (A) hydrologic cycle
    (B) nitrogen cycle
    (C) carbon dioxide-oxygen cycle
    (D) biogeochemical cycle

96. Which of the following is the local, short-term condition of the atmosphere that is affected by the amounts of energy and water that are present?
    (A) weather
    (B) atmospheric pressure
    (C) hydrologic cycle
    (D) the jet stream

97. Which of the following are equivalent to 1/200?

      I.   One-half of 1%

      II.   5%

      III.   0.5%

      IV.   0.05

(A) I and III

(B) I and IV

(C) II and III

(D) II and IV

98. Mr. Green had one pencil for each of his 30 students. Three students wanted two pencils each. Then, a new student came to the school and asked for three pencils. Afterwards, one of the first three students gave his two pencils back. Which formula would show how many pencils Mr. Green had left to pass out?

(A) $30 - (3 \times 2) - 3 + 2$

(B) $30 - 3 \times 2 + 3 - 2$

(C) $30 \times (3 - 2 - 3) + 2$

(D) $30 + 3 \times (2 + 3) + 2$

99. Which of the following illustrates the of property reciprocals?

(A) Multiplying 23/16 by 16/23 gives the same product as multiplying 16 by 23.

(B) The numbers 65, 70, and 12 can be added together in any order, and the sum will always be the same.

(C) The sum of 102 and 9 is the same as the sum of 9 and 102.

(D) The product of 31 and 1/31 equals 1.

100. Mr. Ramirez teaches 3rd grade. His students' averages for last year are plotted on the following graph. Which conclusions can be drawn from the data?
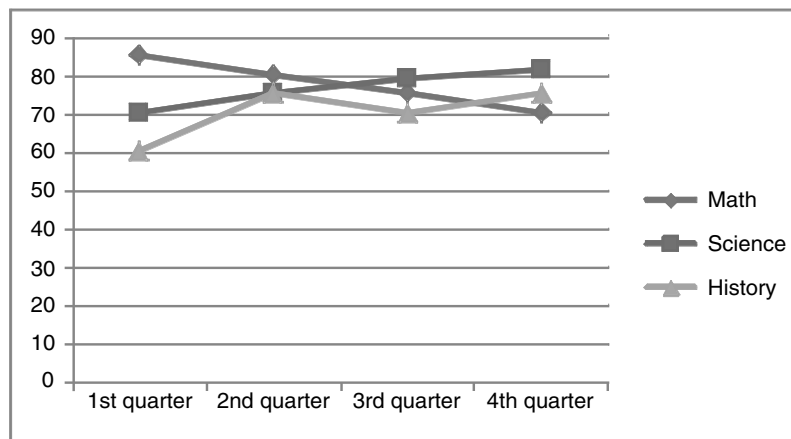
(A)   As the year progressed, the math skills of students improved.

(B)   As the year progressed, science skills decreased.

(C)   The lowest scores for each subject occurred at second quarter scores

(D)   The greatest gains from 1st quarter to 4th quarter were made in history.

101. A school wants to create a vegetable garden for students as an applied science project. The garden is 30 feet wide and 44 feet long; however, there will be a gate that is 4 feet wide. How many feet of fencing are needed?

(A)   1320 feet

(B)   148 feet

(C)   144 feet

(D)   132 feet

102. A certain kind of bacterium moves very slowly, taking steps that have a distance of 0.0000002 feet each. If one of these bacteria takes 4,250,000,000 steps, how far will it travel?

(A)   850 feet

(B)   8.5 feet

(C)   8500 feet

(D)   85 feet

103. A school bus driver is examining her route. The distance from Carmen's house to Mike's house is 3 miles. The distance from Mike's house to the school is 2 miles. Which of the following statements are true?

     I.   The greatest possible distance between Carmen's house and the school is 5 miles.

     II.   The greatest possible distance between Carmen's house and the school is 6 miles.

     III.   The shortest possible distance between Carmen's house and the school is 1 mile.

     IV.   The shortest possible distance between Carmen's house and the school is 2 miles.

(A)   I and III

(B)   I and IV

(C)   II and III

(D)   II and IV

104. Ms. Bell gives an exam to her class. The scores are as follows: 75, 80, 95, 90, 70, 65, 80, 100, 80, 60, 80, 90, 70, 55, and 50. Which of the following statements are true?

     I.   The median is 80.

     II.   The mode is 80.

     III.   The mean is 80.

(A) I and II

(B) II and III

(C) I and III

(D) I, II, and III

105. A principal is walking past a teacher's classroom and overhears him say the following: "So the numbers in this set have exactly two whole-number factors: 1 and the number itself." When the principal peeks in the door, she sees the numbers 2, 3, 5, 7, 11, 13, 17 written on the board. Which Sunshine State Math Standard is the teacher addressing?

(A) Determine factors and multiples for specified whole numbers

(B) Know equivalent forms of real numbers

(C) Determine the prime factorization of numbers

(D) Represent quantities with numbers of to 20, verbally, in writing, and with manipulatives

106. Six students at a vocational school sign up for a group project. Since they don't know each other, the teacher suggests that each student call the other students individually to get to know each other. How many phone calls will there be?

(A) 12

(B) 36

(C) 15

(D) 18

107. Which types of graphs or charts would be appropriate for displaying the following information?

Favorite Sports of 50 Surveyed Middle School Students	
Football	11
Basketball	13
Soccer	11
Baseball	10
Tennis	5

    I.   Bar graph

    II.   Pie (circle) chart

    III. Scatter plot

    IV. Broken-line graph

(A) I and II

(B) III and IV

(C) I and III

(D) II and IV

108. 31 students at West High School failed the FCAT test. If that figure represents about 5.5% of the students, approximately what is the population of the school?

(A) 177

(B) 517

(C) 564

(D) 171

109. Which is the correct sequence (largest to smallest) for the following measurement abbreviations?

(A) km, m, dm, cm, mm

(B) m, km, dm, cm, mm

(C) dm, cm, km, m, mm

(D) cm, dm, mm, km, m

110. A survey of 30 classes at Bay Beach High School was taken to find the total number of left-handed students in each class. The table below shows the results:

No. of left-handed students	0	1	2	3	4	5
Frequency (no. of classes)	1	2	5	10	8	4

A class was randomly selected. What is the probability that the class has 3 left-handed students?

(A) 3 out of 10

(B) 1 out of 3

(C) 3 out of 30

(D) 1 out of 30

111. Given that lines PR and SU are parallel in following figure, which of the following is true?
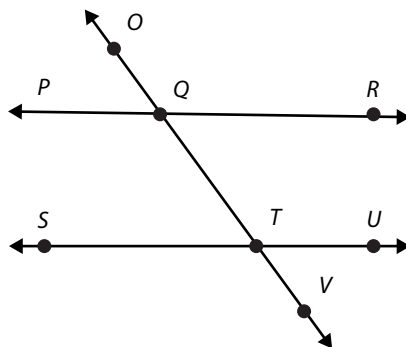
I. ∠PQT and ∠QTU are exterior angles.

II. ∠STV and ∠VTU are supplementary angles

III. ∠STV and ∠PQO are supplementary angles

IV.   ∠PQT and ∠VTU are congruent angles

(A) I and II

(B) II and III

(C) III and IV

(D) I and IV

112. Given the following right triangle and dimensions, line AB $= \sqrt{9}$ inches and line AC $= \sqrt{25}$ inches, which of the following is true?
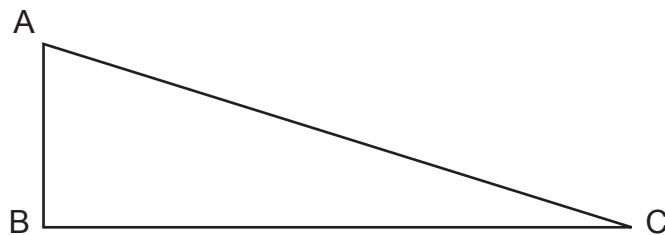
I.   The size of line BC is 4 inches.

II.   ∠BCA + ∠BAC = ∠ABC

III.   ∠ACB − ∠CAB = ∠CBA

IV.   ∠BCA and ∠ABC are supplementary angles
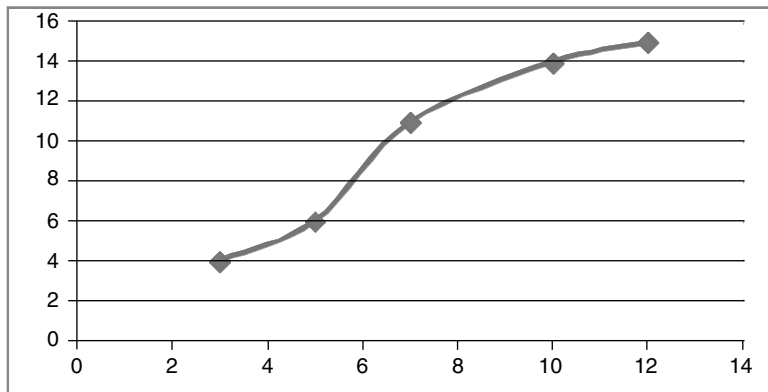
(A) I and II

(B) II and IV

(C) II and III

(D) I and IV

113. Which figures have at least one line of symmetry?
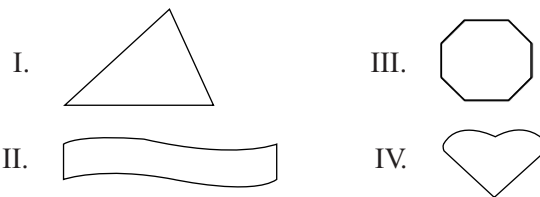
(A) I and II

(B) II and III

(C) III and IV

(D) II and III

114. Which of the following ordered pairs is *not* shown on the following graph?

(A) (3,4)

(B) (5,6)

(C) (7,11)

(D) (14,10)

115. How many thousands are in 1 million?

(A) 100

(B) 10,000

(C) 1,000,000

(D) 1,000

116. A teacher wants to do small group projects in her class and needs to buy supplies. Each group will do the same project. What information does she need to determine the cost of the project supplies for the class?

    I.   number of students in the class

    II.   total cost of supplies for one project

    III.   number of groups

    IV.   number of students in each group

(A) I and II

(B) II and III

(C) III and IV

(D) I and IV

117. A farmer picked twice as many oranges in the afternoon as he picked in the morning. During the whole day he picked 360 oranges. How many oranges did he pick in the morning and how many in the afternoon?

    (A) 120 morning, 240 afternoon

    (B) 100 morning, 260 afternoon

    (C) 110 morning, 250 afternoon

    (D) 140 morning, 220 afternoon

118. $(6^2)^4 =$

    (A) $\sqrt[3]{6}$

    (B) 6^5

    (C) 6^6

    (D) 6^8

119. Carmen and Alicia are playing a game. Carmen said, "I am thinking of a number. If I divide it by 5 and subtract 154 from the quotient, the answer is 6. I am thinking of which number?" What should Alicia say?

    (A) 944

    (B) 800

    (C) 750

    (D) 744

120. Which of the ordered pairs is a solution of the inequality $y \leq -3x - 1$?

    (A) (2, 3)

    (B) (−5, 15)

    (C) (1, −2)

    (D) (0, −1)

COMPETENCIES AND SKILLS	
Language Arts and Reading	**Question Number**
1. Knowledge of the Reading Process	14, 15, 22, 23
2. Knowledge of Literature and Literary Analysis	3, 4, 5, 9, 10, 24, 25
3. Knowledge of Writing Process and Applications	1, 2, 6, 7, 8, 20
4. Knowledge of Reading Methods and Assessment	11, 12, 13, 16, 17, 18, 19, 21
5. Knowledge of Communication	
6. Knowledge of Information and Media Literacy	
Social Science	
7. Knowledge of Time, Continuity, and Change (i.e., history)	32, 33, 37, 39, 44, 46, 47
8. Knowledge of People, Places, and Environment (i.e., geography)	28, 31, 43, 48, 49, 50
9. Knowledge of Government and the Citizen (i.e., government and civics)	26, 27, 29, 35, 38
10. Knowledge of Production, Distribution, and Consumption (i.e., economics)	30, 36, 45
11. Knowledge of Instruction and Assessment of the Social Sciences	34, 41, 42
Music, Visual Arts, Physical Education, and Health	
12. Knowledge of Skills and Techniques in Music and Visual Arts	51, 52, 53, 54, 72
13. Knowledge of Creation and Communication in Music and Visual Arts	
14. Knowledge of Cultural and Historical Connections in Music and Visual Arts	55, 59, 60, 61, 66, 68, 69
15. Knowledge of Aesthetic and Critical Analysis of Music and Visual Arts	
16. Knowledge of Appropriate Assessment Strategies in Music and Visual Arts	40, 62, 65
17. Knowledge of Personal Health and Wellness	56, 57, 58, 63, 71
18. Knowledge of Physical, Social, and Emotional Growth and Development	64, 67, 70
19. Knowledge of Community Health and Safety Issues	
20. Knowledge of Subject Content and Appropriate Curriculum Design	73
Science and Technology	
21. Knowledge of the Nature of Matter	74
22. Knowledge of Forces, Motion, and Energy	81, 82, 84, 85, 86, 89, 90
23. Knowledge of Earth and Space	83, 87, 88, 91, 94, 95, 96
24. Knowledge of Life Science	78, 79, 92
25. Knowledge of the Nature and History of Science	75, 76, 80
26. Knowledge of the Relationship of Science and Technology	93
27. Knowledge of Technology Processes and Application	77
Mathematics	
28. Knowledge of Numbers and Operations	97, 98, 99, 102, 105, 115, 118
29. Knowledge of Geometry and Measurement	109, 101, 111, 112, 113, 114
30. Knowledge of Algebraic Thinking	103, 106, 107, 108, 116, 117, 119, 120
31. Knowledge of Data Analysis and Probability	100, 104, 110
32. Knowledge of Instruction and Assessment	

Question	Answer	Competency	Question	Answer	Competency	Question	Answer	Competency
1	B	3	41	C	11	81	C	22
2	A	3	42	B	11	82	B	22
3	C	2	43	B	8	83	D	23
4	B	2	44	A	7	84	A	22
5	C	2	45	B	10	85	C	22
6	D	3	46	C	7	86	A	22
7	D	3	47	B	7	87	D	23
8	B	3	48	C	8	88	B	23
9	B	2	49	B	8	89	C	22
10	C	2	50	D	8	90	A	22
11	C	4	51	C	12	91	A	23
12	A	4	52	C	12	92	C	24
13	C	4	53	D	12	93	C	26
14	C	1	54	B	12	94	D	23
15	A	1	55	A	14	95	A	23
16	B	4	56	B	17	96	A	23
17	B	4	57	D	17	97	A	28
18	B	4	58	C	17	98	A	28
19	A	4	59	D	14	99	D	28
20	C	3	60	D	14	100	D	31
21	B	4	61	C	14	101	C	28
22	D	1	62	A	16	102	A	28
23	A	1	63	D	17	103	A	30
24	C	2	64	B	18	104	A	31
25	B	2	65	A	16	105	C	28
26	D	9	66	A	14	106	C	30
27	B	9	67	D	18	107	A	30
28	B	8	68	A	14	108	C	30
29	C	9	69	B	14	109	A	29
30	A	10	70	D	18	110	B	31
31	A	8	71	A	17	111	B	29
32	D	7	72	B	12	112	A	29
33	C	7	73	D	20	113	C	29
34	C	11	74	C	21	114	D	29
35	A	9	75	C	25	115	D	28
36	B	10	76	D	25	116	B	30
37	D	7	77	C	27	117	A	30
38	B	9	78	C	24	118	D	28
39	A	7	79	A	24	119	B	30
40	A	16	80	C	25	120	D	30

Diagnostic Test Answer Explanations

1. **(B)**

   Answer B is correct because of the correct placement of the comma. A comma is necessary after the word "goes" because the first part of this sentence is a dependent clause.

2. **(A)**

   Answer A is correct because it contains both statements made by the mayor in quotations, along with a comma showing the pause in the mayor's statement. Also, the word "mayor" should not be capitalized in this usage.

3. **(C)**

   A genre is a particular type of written work.

4. **(B)**

   The correct answer is metaphor.

5. **(C)**

   Syntax includes rules governing the correct order of words in sentences.

6. **(D)**

   Prosody refers to the rhythms, stress patterns, and intonations of speech.

7. **(D)**

   Students more readily connect with texts that reflect their own experiences.

8. **(B)**

   Evaluating is the second highest level in Bloom's Revised Taxonomy.

9. **(B)**

   Timelines and maps should be eliminated because they reflect dates, rather than people. While poetry may be important, biographies would be most relevant and engaging.

10. (C)

Alliteration is the writer's use of repeated consonant sounds. Vowel sounds are primarily repeated in Option C.

11. (C)

Progress monitoring is used to assess students' academic performance and evaluate the effectiveness of instruction.

12. (A)

Paper-and-pencil tests are the most common method for evaluating student progress.

13. (C)

Progress monitoring is used to assess students' academic performance and evaluate the effectiveness of instruction.

14. (C)

Differentiating instruction allows teachers to structure the learning environment to address the variety of learning styles, interests, and abilities found within a classroom. Option C would tend to serve low-performing students rather than the entire class.

15. (A)

Expository writing presents information in a factual way.

16. (B)

Orthography consists of the rules for representing speech sounds in writing.

17. (B)

Validity refers to the extent to which a test measures what it is supposed to measure.

18. (B)

Standardized tests by definition are based on normative data and can be used to identify percentile rankings of individual students.

19. (A)

The percentile ranking refers to the percentage of one's peers that one has outperformed.

20. (C)

Phonemic awareness is the ability to hear and identify individual sounds.

21. (B)

Portfolios are collections of students' best work. Like a portfolio created by an artist, model, or performer, a student portfolio provides a succinct picture of the child's achievements over a certain period (Competency 4).

22. (D)

Through structural analysis, unfamiliar words can be divided into familiar syllables and other units in order to facilitate decoding.

23. (A)

The three types of assessment are screening, diagnosis, and progress monitoring.

24. (C)

Determining whether a passage is objective or biased would be one example of the use of critical interpretation.

25. (B)

The correct answer is B because it places the question mark within the quotation, and there is no comma needed (choice C) after "asked."

26. (D)

Both state and federal governments have the power to lay and collect taxes and to borrow money.

27. (B)

Multiparty systems use an electoral system based on proportional representation. In the United States, the candidate who receives a plurality of the votes is declared the winner.

28. (B)

The region's mountain ranges are the main reason for both the high precipitation and varied climate.

29. (C)

Fiduciary is not a branch of the U.S. government.

30. (A)

The main purpose of the World Trade Organization is to open world markets to all countries to promote economic development and to regulate economic affairs among member states.

31. (A)

Overgrazing, overuse of farmland, and a lack of rainfall caused the drought of the 1930s.

32. (D)

Both the personal correspondence of an officer stationed in Korea and an interview with Secretary of Defense George Marshall would be primary sources because they involve correspondence or testimony from individuals who were actually involved in the Korean War.

33. (C)

The Library of Congress holds a wide range of primary source materials.

34. (C)

Different students respond differently to different kinds of materials and approaches.

35. (A)

The responsibility for public education belongs primarily to the state governments.

36. (B)

A limited money supply and rising prices were major causes of the Great Depression.

37. (D)

Lincoln's immediate purpose in announcing the Emancipation Proclamation was to rally flagging northern morale.

38. (B)

In the 1857 case *Dred Scott v. Sanford*, the Supreme Court held that no black slave could be a citizen of the United States.

39. (A)

The Declaration of Independence was primarily the work of Thomas Jefferson.

40. (A)

Inductive reasoning involves making generalizations based on a particular fact or example. Students would use deductive reasoning (B) if they were to discuss the characteristics of romance and then compose a musical piece encompassing those characteristics. Oral interpretation (C) is a type of dramatic speech, and evaluation (D) involves judging the quality or merits of a work or product.

41. (C)

The use of instructional strategies that make learning relevant to individual student interests is a powerful motivating force that facilitates learning and independent thinking.

42. (B)

Choice is an important element in motivating students to learn.

43. (B)

The Silk Road was a transcontinental trade route that branched out over a vast area, including western China, northern Iran, and northern India.

44. (A)

Democracy is the antithesis of the authoritarianism of fascist states.

45. (B)

Raw materials, a constant labor supply, capital, and an expanding marketplace were critical elements in the development of the industrial economy.

46. (C)

The Islamic sacred book, *The Koran*, contains the revelations of Mohammed and is revered by Muslims.

47. (B)

Twenty-five percent of the Florida population speaks a language other than English at home.

48. (C)

Cultural geography considers the relationship between people and place.

49. (B)

The correct answer is the Environmental Protection Agency.

50. (D)

Pull-ups for boys (A), flexed arm hang for girls (B), and the grip strength test (C), are all tests to measure muscular strength and endurance. The sit-and-reach test measures flexibility.

51. (C)

Timbre describes a quality of sound.

52. (C)

An art classroom should include different sources of light, both natural and artificial. It should include areas for the teacher to lecture and for the display of student work. It should include the use of individual seating arrangements as well as arrangements that allow groupings of differing sizes.

53. (D)

The instruments that the classroom teacher normally teaches include the rhythmic instruments (e.g., triangle, tambourine, blocks, and sticks); melodic instruments (e.g., melody bells and simple flutes); and harmonic instruments (e.g., chording instruments, like the autoharp).

54. (B)

Harmony is defined as the vertical aspect of groups of notes (simultaneous combinations of music notes). Melody is the horizontal aspect of notes (notes in succession). Timbre refers to the quality of sound. Dynamics refers to the loudness of sounds.

55. (A)

Plainsong (unaccompanied religious chant) is the only form among the options that does not utilize musical instruments.

56. (B)

Vitamins come from plants and animals, and they can be fat or water soluble. However, minerals come from soil and water, not vitamins.

57. (D)

Iron is the mineral that contributes most to red blood cell formation and growth. Calcium contributes to the development of bones and teeth. Vitamin D contributes to absorption of calcium and phosphorus and promotes bone, teeth, and nail growth. Vitamin A promotes vision and skin health, boosts immunity, and contributes to cell growth and repair.

58. (C)

Vegetables are a source of unsaturated fats. Meats, milk, and milk products have saturated fats.

59. (D)

Frank Lloyd Wright's buildings were based on a philosophy of "organic architecture" that closely followed the characteristics of the natural surroundings and the building materials.

60. (D)

The Baroque period immediately followed the Renaissance.

61. (C)

Genre is defined as categories of music, and many songs represent more than one genre.

62. (A)

Classifying sounds as high or low and using the body to show whether they are high are low are skills addressed in grades K-2.

63. (D)

Vitamin K is fat soluble.

64. (B)

Although cells are the building blocks of the body, cells working together form tissues. The two divisions of the nervous system are somatic and autonomic, and the three types of nerve terminals are exteroceptors, interoceptors, and proprioceptors. However, the nervous system initiates and controls movement.

65. (A)

The goals of music education include increasing rather than decreasing sensitivity to the expressive qualities of music.

66. (A)

Rap is an example of a musical genre.

67. (D)

According to Erikson, adolescents of about middle school age are most likely to be in the stage in which they are exploring their sense of self and identity.

68. (A)

Among the available options, cubism is most opposed to realistic representation in the conventional sense.

69. (B)

Beethoven composed the Ninth Symphony and the *Moonlight* sonata during the Romantic music period.

70.   (D)

The immune system produces lymphocytes and antibody molecules to destroy disease or other invader molecules.

71.   (A)

Kohlberg developed a six-stage theory of moral development.

72.   (B)

Timbre is a synonym for tone.

73.   (D)

Gross motor skills involve large muscles used in running and throwing or catching a ball. Playing games, writing, and painting involve fine motor skills.

74.   (C)

Both statements regarding density are true. Density is related to buoyancy and is the ratio of mass to volume. However, matter is everything that has mass and volume. Weight is a measure of the force of gravity on an object.

75.   (C)

Since the treatment was different types of light (sunlight, ultraviolet light, fluorescent light, and no light), the best testable question is how do different kinds of light affect seed germination? Option A does not provide a good question because all of the treatments involved 8 hours of light (or no light). Option B does not provide a good question because all of the seeds were soaked in the same manner. Finally, Option D is not a good question because the experiment was designed to investigate seed sprouting, not plant size.

76.   (D)

The experiment requires a control of all variables other than the one identified in the hypothesis—exposure to different forms of light. Seeds from different suppliers may be different; for example, one brand might be treated with a fungicide, whereas another brand is not treated or is treated with a different fungicide. While it is likely that choice III might be acceptable, without confirming that all packages are from the same year and production run, the four packages could be significantly different from each other. The best solution is to randomly divide the available seeds equally among the four test groups. Choice II also allows the experiment to compare the germination rates between the different brands, but

only if the seeds from each packet are isolated within each test group and the number of seeds is large enough to create a statistically significant sample.

77. (C)

Because the fair use doctrine involves limited reproduction of copyrighted works for educational and research purposes, the activity described in Option C seems most problematic.

78. (C)

Statements III and IV present correct matches.

79. (A)

A material added to an ecosystem that disrupts its normal functioning constitutes the definition of pollution, as in the example of excess fertilizer.

80. (C)

The scientists do not have enough information to publish or share their results and should not assume their ideas are correct without further research. Their next step should be to design investigations to further test their theories.

81. (C)

A crystal that breaks white light from the sun into colors is a prism.

82. (B)

Light travels faster than sound so the difference between the time at which lightning occurs and the thunder it simultaneously produces results from the slower speed of sound. Therefore, the friends were using the speed of sound to determine the distance of the storm.

83. (D)

If much of the landforms on Earth had been covered by sea water, then evidence of aquatic life would be found in places that are now far from the ocean. Thus, fossils of coral and marine animals found in the U.S. Midwest would be relevant evidence.

84. (A)

Viscosity is a measure of thickness or ability to flow and is not a type of energy.

85. (C)

A naturally occurring magnet is called a lodestone.

86. (A)

Fruit hanging from a tree has the potential to fall and be converted into kinetic energy.

87. (D)

The top layer of the Earth is the crust.

88. (B)

Statement I is not true. A compass rose shows the cardinal directions (N,S,E,W) on a map. A legend shows the meanings of symbols on a map.

89. (C)

A piece of paper folded into a pinwheel is not an example of a simple machine.

90. (A)

Echoes are one example of the reflection of sound.

91. (A)

Sputnik, launched by the Soviets, was the first satellite to orbit Earth.

92. (C)

Diffusion, phagocytosis, and photosynthesis are food-getting activities, while fermentation is an activity that provides energy.

93. (C)

Mr. Lee is most likely to be using an inquiry approach because the students are given some degree of control over the activity.

94. (D)

Cirrus clouds indicate a change in weather.

95. (A)

The hydrologic cycle is also called the water cycle.

96. (A)

Weather is the local, short-term condition of the atmosphere that is affected by the amounts of energy and water that are present.

97. (A)

The fraction $\frac{1}{200}$ is equivalent to half of 1%, so choice I is correct. One-half of 1% cannot be the same as 5%, so choice II cannot be correct. The value $\frac{1}{200}$ is equivalent to 0.5%, because 1% is equivalent to $\frac{1}{100}$; therefore, half of 1% (0.5%) is $\frac{1}{200}$, so choice III is correct.

98. (A)

Mr. Green starts with 30 pencils. Giving pencils out implies subtraction. Three students get 2 pencils each $-$ (3×2). The new student gets 3 pencils. (-3) One of the first students gives his back to Mr. Smith $(+3)$. The correct formula would be $30 - (3 \times 2) - 3 + 2$.

99. (D)

The property of reciprocals states that any number (a) multiplied by 1 divided by that number (1/a) equals 1.

100. (D)

The greatest gains from the 1st quarter to the 4th quarter were made in history.

101. **(C)**

This problem is asking for perimeter. The formula for the perimeter of a rectangle is 2L + 2W. In this particular problem, the perimeter is calculated as 2(44) + 2(30) = 148. However, the size of the gate (4 feet) must be subtracted in order to arrive at the final answer: 148 − 4 = 144.

102. **(A)**

Total distance = size of step × number of steps

$$D = 0.0000002 \times 4{,}250{,}000{,}000$$
$$D = (2 \times 10^{-7}) \times (4.25 \times 10^{9})$$
$$D = (2 \times 4.25) \times (10^{-7} \times 10^{9})$$
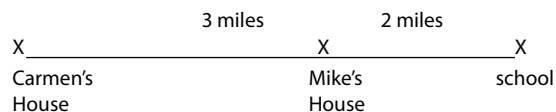$$D = (8.50) \times (10^{2})$$
$$D = 8.5 \times 100$$
$$D = 850 \text{ feet}$$

103. **(A)**

Drawing a sketch with an X marking the possible locations of the two houses and the school is a good idea. You can start with dots for the two houses, using inches for miles, as shown here:

```
                    3 miles
X_____X
Carmen's                             Mike's
House                                House
```
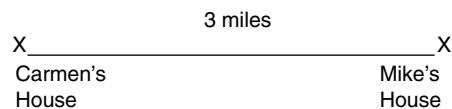
If you then place an X representing 2 miles (inches) to the right of Mike's house, as in the figure that follows, you see that the greatest possible distance between Carmen's house and the school is 5 miles.

```
              3 miles              2 miles
X_____X_____X
Carmen's                     Mike's          school
House                        House
```

If you place the X representing the school to the left of Mike's house, as in the figure below, you see that the school could be as close as 1 mile to Carmen's house but no closer. Only statements I and III, then, are true.

```
        1 mile            3 miles
X_____X_____X
Carmen's school                   Mike's
House                             House
```
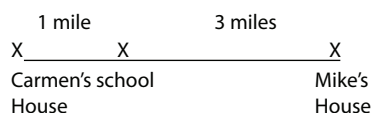
104. (A)

The first step in solving this problem is ordering the scores from low to high: 50, 55, 65, 60, 75, 70, 70, 80, 80, 80, 80, 90, 90, 95, 100. The median is the middle score. Since there are 15 scores, the 8th score, 80, is the median. The mode is the score that occurs most frequently – in this case, the score of 80, which occurs four times. To find the mean, the scores should be added and then divided by the number of scores. The resulting mean is 76.

105. (C)

Numbers with exactly two whole-number factors that are 1 and the number itself constitute the definition of prime numbers. Therefore, the most applicable Sunshine State Standard would be to determine the prime factorization of numbers.

106. (C)

There are several methods available to determine the answer. Making a sketch, for example, is a classic approach. You could draw six x's, representing the six students, as follows:
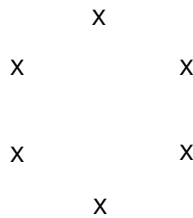
Then you could connect each x with all other x's, counting the number of connecting lines as you add them. The connecting lines represent individual calls, as shown here:
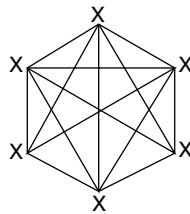
In the figure, there are 15 connecting lines, so there were 15 calls. (Be sure to count the outermost lines forming the hexagon.)

Here is another approach: Student number 1 must have made five calls. Once she completed her fifth call, she was done with her calls and could be considered out of the picture for the moment. Student number 2 also had five calls, but you should not count the one he had with stu-

dent number 1; it is already accounted for in the first student's tally of five calls. So student number 2 had only four more new calls. Student number 3 had five calls, but you should not count the first two; she had only three more new calls. Continuing the pattern for all six students, you see that you need to add together 5, 4, 3, 2, and 1 calls. This again gives the correct answer of 15 calls.

107. (A)

A bar graph could be used with the height of each bar representing one of the sports. A circle or pie chart could also be used, see below. The 10 votes for baseball results in the fraction $^{10}/_{50}$ ($^1/_5$), so baseball would be assigned $^1/_5$ of the area of a circle chart. The same approach would tell us the appropriate size of each sport's portion of the circle. A scatter plot illustrates the relationship between sets of data. A broken-line graph generally illustrates change over time. Neither is appropriate for illustrating the given data.

Favorite Sports of 50 Surveyed Middle School Students
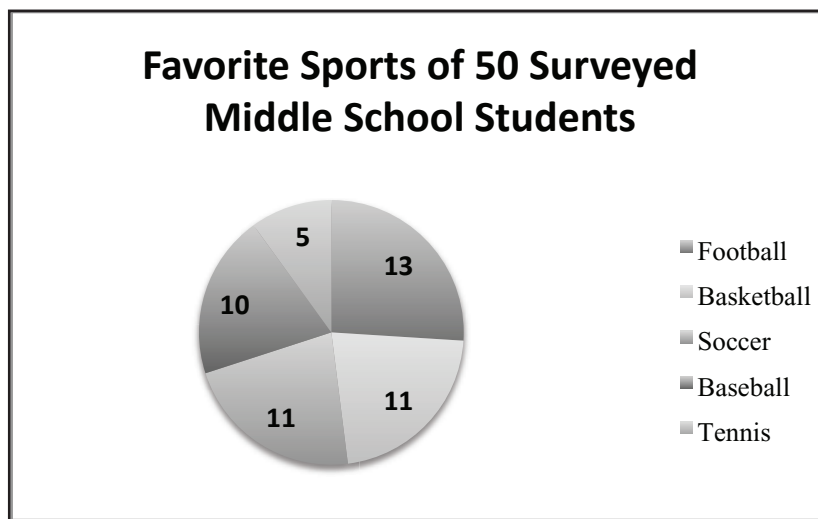
108. (C)

One way to arrive at the answer is to set up a proportion, with one corner labeled x:

$$\frac{31}{x} : \frac{5.5}{100}$$

To complete the proportion (and to find the answer), you can cross-multiply 31 and 100, giving 3,100, which you then divide by 5.5, giving approximately 564.

109. (A)

To answer this question, you need to know metric measurements for length and their abbreviations: 1 kilometer (km) is the largest at 1,000 m followed by 1 meter (m) = 1.0 m, 1 decimeter (dm) = 0.1 m, 1 centimeter (cm) = 0.01 m, and 1 millimeter (mm) = 0.001 m

110. (B)

The probability of a particular event occurring equals the number of ways the event can occur (N) divided by the total number of possible events (T). If T equals the total number of classes (30) and N equals the event of a class having 3 left-handed students (10), the probability is N/T or $^{10}/_{30}$ with reduces to $\frac{1}{3}$ or 1 out of 3.

111. (B)

Statemetn I cannot be true because $\angle$PQT and $\angle$QTU are interior angles. $\angle$STV and $\angle$VTU are supplementary angles forming a straight line so II is true. $\angle$STV and $\angle$PQO are also supplementary angles because $\angle$STV is supplementary to $\angle$VTU and $\angle$VTU and $\angle$PQO are equal in measure because they are alternate exterior angles. Thus, III is also true. $\angle$PQT is an obtuse angle and $\angle$VTU is an acute angle; therefore, they are not congruent angles. Thus, IV is false.

112. (A)

Since the triangle is a right triangle, $a^2 + b^2 = c^2$ so $(\sqrt{9})^2 + b^2 = (\sqrt{25})^2$. Therefore,

$$(3)^2 + b^2 = (5)^2$$
$$9 + b^2 = 25 \text{ so } b^2 = 25{-}9$$
$$b^2 = 16, \text{ so the length of side BC is 4.}$$

Statement I is true. Since $\angle$ABC is a right angle (90°) and triangles have 180°, $\angle$BCA and $\angle$BAC must equal that of $\angle$ABC. Thus, statement II is also true. Statement III is false because $\angle$CBA measures 90°, which is the sum of the measures of the other two angles. Statement IV is also false because supplementary angles must total 180°. Since all three angles in a triangle total 180°, any two angles in the triangle will total less than that.

113. (C)

Figures I and II are not symmetrical because there is no place they can be "folded" to form mirror images. However, Figures III and IV are symmetrical because when "folded," they do form mirror images.

114. (D)

The points on the graph are shown in the following chart. Because points are shown as (x,y), the point (14,10) is not on the graph.

x-Values	y-Values
3	4
5	6
7	11
10	14
12	15

115. (D)

You know that 1,000 contains three zeros and can be expressed in exponential notation as 10^3. One million contains six zeros and can be expressed in exponential notation as 10^6. Thus, 10^6 divided by 10^3 is 10^3 or 1,000. You could calculate by long division of 1,000 into 1 million, but that is the laborious way to solve this problem.

116. (B)

You are challenged to analyze which data you would need to calculate the cost of projects for small groups in a class. To do so, you need only know how many groups will complete the projects and the total cost of supplies for one project, then multiply the two. The total number of students in the class is irrelevant as is the number of students in each group.

117. (A)

The number of oranges picked in the morning equals x and the number picked in the afternoon equals $2x$. Their sum $x + 2x = 3x$ is the total number of oranges that were picked. So,

$$3x = 360$$

$$x = \frac{360}{3}; x = 120$$

Thus, in the morning the farmer picked 120 oranges, and in the afternoon 240 oranges.

118. (D)

A base raised to a power and then to another power requires multiplication of the two exponents: 2 times 4 equals 8.

119. (B)

If the number that Carmen thought of is x, the equation is

$$\frac{x}{5} - 154 = 6.$$

$$\frac{x}{5} = 160$$

$$x = 160 \times 5$$
$$x = 800$$

120. (D)

To find the ordered pair that is a solution to the inequality $y \leq -3x - 1$, substitute in each (x, y) pair to find one that makes a true statement. The statement below is true. Therefore, $(0, -1)$ is a solution to the inequality.

$$y \leq -3x - 1$$
$$-1 \leq -3(0) - 1$$
$$-1 \leq -1$$