

PRACTICE EXAM 4: NYSTCE MULTI-SUBJECT TEACHERS OF CHILDHOOD (GRADE 1-GRADE 6) (120 QUESTIONS)

This independently written practice exam contains 120 selected-response questions aligned to the published NYSTCE Multi-Subject: Teachers of Childhood (Grade 1-Grade 6) assessment design: 40 Literacy and English Language Arts, 40 Mathematics, and 40 Arts and Sciences. The official tests also include one constructed-response item in Part One and one in Part Two; those are not included here. Official testing times are 2 hours for Part One, 2 hours 15 minutes for Part Two, and 1 hour for Part Three. The official passing score is 520 for each part. Choose the single best answer for each question.

1. A teacher says map, asks a student to change the first sound /m/ to /t/, and the student responds tap. Which phonemic-awareness skill is being demonstrated?

- A. Syllable segmentation
- B. Print directionality
- C. Phoneme substitution
- D. Morphological analysis

2. In the word patch, which spelling most directly represents the final /ch/ sound?

- A. The digraph sh
- B. The digraph tch
- C. The vowel team ai
- D. The consonant blend pl

3. Students notice that inspect, spectator, and spectacle all relate to looking or seeing. Which word-learning knowledge best supports this observation?

- A. Knowledge of alphabetical order
- B. Knowledge of sentence punctuation

- C. Knowledge of rhyming patterns
- D. Knowledge of the Latin root spect

4. A passage first describes repeated flooding near a school and then explains how a rain garden and new drainage channels reduced the flooding. Which organizational structure is most prominent?

- A. Problem and solution
- B. Compare and contrast
- C. Description only
- D. Cause without a response

5. In a mystery story, readers learn Maya's private worries and observations during the investigation, but they never enter any other character's mind. The narrator refers to Maya as she. Which point of view is used?

- A. First-person participant
- B. Third-person limited
- C. Third-person omniscient
- D. Second-person instructional

6. In a story, a child finds a wallet containing money, returns it despite wanting a new bicycle, and later feels proud of the decision. Which statement best expresses a theme?

- A. Bicycles are the most useful form of transportation.
- B. Finding money always leads to a reward.
- C. Children should avoid carrying wallets in public.
- D. Integrity can require giving up a personal advantage.

7. An author argues that a town should add protected bicycle lanes and cites crash data showing fewer cyclist injuries on streets with protected lanes. What role does the crash data play?

- A. It serves as the title of the argument.
- B. It introduces an unrelated counterclaim.
- C. It provides evidence supporting the author's claim.
- D. It changes the argument into a fictional narrative.

8. Which sentence contains a simile?

- A. The creek curled through the meadow like a silver ribbon.
- B. The creek whispered under the bridge.
- C. The creek was a silver ribbon across the meadow.
- D. The creek flooded after three days of rain.

9. A writer replaces the verb walked with trudged in a sentence about a hiker climbing a steep hill. What does the revision most strongly add?

- A. A guarantee that the hiker is running
- B. A more formal definition of the hill
- C. A change from past tense to future tense
- D. A connotation of slow, effortful movement

10. A dictionary entry lists the word record twice, once as a noun and once as a verb, with different stress marks. Which feature of language does the entry illustrate?

- A. Every English word has only one pronunciation.
- B. Stress marks identify a word's alphabetical position.
- C. A word's pronunciation can vary with its part of speech.
- D. Nouns and verbs must always have different spellings.

11. Students are researching a local factory strike from 1912. Which source would be a primary source for the event?

- A. A modern encyclopedia article summarizing the strike
- B. A letter written by a worker during the strike
- C. A recent textbook chapter about labor history
- D. A documentary produced a century after the strike

12. An online article uses a dramatic headline that says, 'This One Simple Trick Will Change Every Student's Life!' Which reading habit is most appropriate before accepting the claim?

- A. Examine the evidence, source, and wording for possible exaggeration.
- B. Accept the claim because the headline sounds confident.
- C. Judge the article only by the number of photographs.
- D. Assume any article shared online has been peer reviewed.

13. Which sentence demonstrates correct subject-verb agreement?

- A. The basket of ripe peaches sit on the counter.
- B. The basket of ripe peaches sits on the counter.
- C. The students in the library reads quietly.
- D. Each of the dogs chase the bouncing ball.

14. Which sentence correctly joins two closely related independent clauses with a semicolon?

- A. The rain stopped, the players returned to the field.
- B. The rain stopped because; the players returned.
- C. The rain; stopped the players returned to the field.
- D. The rain stopped; the players returned to the field.

15. During a group discussion, a student waits for a pause, responds to a classmate's idea, and asks a relevant follow-up question. Which oral-language skill is most clearly demonstrated?

- A. Pragmatic turn-taking and conversational responsiveness

- B. Alphabetic decoding of printed words
- C. Silent reading rate
- D. Spelling by syllable type

16. A teacher listens as a student reads a short passage aloud and marks substitutions, omissions, self-corrections, and successful words. Which assessment technique is the teacher using?

- A. A norm-referenced intelligence test
- B. A spelling inventory only
- C. A running record or oral-reading record
- D. A final course grade

17. A Spanish-speaking student uses the English word information correctly after recognizing its similarity to Spanish información. Which language resource is the student using?

- A. An unrelated homophone
- B. A punctuation cue
- C. A cross-linguistic cognate
- D. A syllable deletion rule

18. Several first graders can identify the first sound in words but struggle to blend three spoken phonemes into a word. Which teacher activity most directly targets the need?

- A. Say /m/ /a/ /p/ slowly and have students blend the sounds to say map.
- B. Have students copy the word map five times from the board.
- C. Ask students to alphabetize a list of printed words.
- D. Have students identify the main idea of a paragraph.

19. A beginning reader knows the sounds for s and h separately but reads ship as /s/ /h/ /i/ /p/. What is the best next instruction?

- A. Teach that every two consonants must be pronounced separately.
- B. Teach that sh is a consonant digraph representing one sound.
- C. Stop using decodable words until the student reads faster.
- D. Focus only on the meaning of ship and avoid its spelling.

20. A first grader frequently reverses b and d in reading and writing. Which instructional response is most appropriate?

- A. Tell the student reversals prove that reading comprehension is weak.
- B. Remove all words containing b or d from reading materials.
- C. Require the student to memorize whole pages without letter practice.
- D. Provide explicit practice distinguishing the letter forms, sounds, and formation using consistent cues.

21. A student reads road as /r/ /o/ /a/ /d/ instead of recognizing the middle letters as one vowel pattern. Which lesson would best address the error?

- A. Practice only consonant blends at the beginnings of words.
- B. Teach that every written vowel must have a separate syllable.
- C. Teach the vowel team oa and practice blending it in words such as road, boat, and coat.
- D. Ask the student to guess each word from the accompanying picture.

22. A student can read many one-syllable words but struggles with rabbit and tennis. Which strategy would be most helpful?

- A. Have the student ignore internal consonants and use the first letter only.
- B. Teach the student to divide between the two middle consonants and blend each syllable.
- C. Ask the student to memorize the paragraph containing each word.
- D. Teach only silent-e words until multisyllabic reading improves.

23. A fourth grader encounters the word miscommunication. Which instructional approach best develops a transferable word-analysis strategy?

- A. Identify the prefix mis-, the base communicate, and the suffix -ion, then combine their meanings.
- B. Cover all but the first letter and guess from the sentence topic.
- C. Count the word's letters without discussing meaningful parts.
- D. Replace the word with an easier synonym before examining its structure.

24. A teacher is helping students learn the high-frequency word was, whose vowel sound is not represented by the most common pronunciation of the letter a. Which routine best supports durable recognition of the word?

- A. Ask students to memorize only the outside shape of the printed word.
- B. Tell students to identify the word from a nearby picture instead of its letters.
- C. Teach that the letter a always has the same sound in every English word.
- D. Connect each spoken sound to its letters, explicitly mark the unexpected vowel spelling, and practice reading was in phrases.

25. A reader decodes a grade-level passage with high accuracy but pauses on many words that were decoded correctly earlier in the same passage. Which practice most directly targets faster, more automatic word reading?

- A. Copy the passage by hand without reading the words aloud.
- B. Practice naming isolated letters that the student already knows.
- C. Reread a short appropriate passage aloud several times with feedback on accuracy and phrasing.
- D. Replace unfamiliar words with guesses so the passage can be finished sooner.

26. A reader decodes accurately and at a reasonable rate but reads every word with equal stress and pauses in unnatural places. Which instructional support is best?

- A. Return exclusively to alphabet naming drills.
- B. Use phrase-cued reading and model how punctuation and syntax guide expressive phrasing.
- C. Increase the passage difficulty until the reader slows down.
- D. Ask the student to ignore punctuation and focus only on speed.

27. A student knows that bank can mean the side of a river but is confused when a story says a character deposited money at a bank. What should the teacher emphasize?

- A. Assume a familiar word can have only one meaning.
- B. Count the syllables to determine the definition.
- C. Replace every multiple-meaning word with a picture.
- D. Use sentence context to select the meaning that fits the situation.

28. After reading a simple narrative, a first grader lists several details but cannot explain what happened first, next, and last. Which scaffold is most appropriate?

- A. Use a three-part story map for beginning, middle, and end and have the student retell with it.
- B. Ask the student to copy every sentence in the story.
- C. Provide a dictionary and require definitions of all nouns.
- D. Have the student reread only the final sentence aloud.

29. A passage never states why a character brings an umbrella, but it describes dark clouds, thunder, and people hurrying indoors. Which teacher prompt best develops inferential comprehension?

- A. How many letters are in the word umbrella?
- B. Which sentence is printed closest to the top margin?
- C. Can you copy the weather words in alphabetical order?
- D. What clues explain the umbrella, and how do they support your inference?

30. Before reading a science chapter, a teacher asks students to examine headings and subheadings and predict what each section will explain. What is the main instructional purpose?

- A. Teach students to ignore paragraphs that have no heading.
- B. Replace close reading with predictions that never need checking.
- C. Teach students to use text features to anticipate organization and key ideas.
- D. Practice spelling the headings without discussing meaning.

31. A student writes jump~~t~~ for jumped. Which instruction most directly addresses the spelling pattern?

- A. Teach that every /t/ sound at the end of a word is spelled with t.
- B. Teach that the past-tense ending -ed can be pronounced /t/ after some voiceless consonants while still being spelled -ed.
- C. Remove inflectional endings from the student's writing tasks.
- D. Focus only on capital letters because the error is unrelated to morphology.

32. A kindergartner is learning to spell the word plant. Which teacher prompt best supports phoneme-grapheme mapping?

- A. Segment plant into sounds and write the spelling for each sound in order.
- B. Copy plant from the board without saying or analyzing it.
- C. Draw a plant and avoid discussing the word's sounds.
- D. Memorize the word's shape as a single visual picture.

33. A school screening identifies a first grader at risk for a word-reading difficulty associated with weak phonological processing. Which response is most appropriate?

- A. Wait several years before offering targeted instruction.
- B. Provide timely, explicit, systematic instruction in phonemic awareness and decoding while monitoring progress.
- C. Replace reading instruction with independent silent reading only.
- D. Assume the difficulty will disappear if the student memorizes enough pictures.

34. A teacher gives a brief decoding probe every two weeks to a student receiving targeted intervention and graphs the scores. What is the primary purpose of this practice?

- A. Determine a permanent intelligence score.
- B. Replace all classroom observation with one test.
- C. Monitor progress and adjust instruction based on the student's response.
- D. Assign a final report-card grade after each probe.

35. Students are preparing an argumentative essay about whether the school should reduce disposable cafeteria items. Which planning step should come first?

- A. State a clear claim and gather relevant evidence that can support it.
- B. Write a fictional ending before deciding on a position.
- C. Choose decorative fonts before researching the issue.
- D. List unrelated facts without deciding what they prove.

36. A fifth grader is revising written directions for first graders who will visit the school garden. Which revision best demonstrates attention to audience and purpose?

- A. Add several unrelated jokes so the directions become longer.
- B. Replace every familiar word with specialized horticultural terminology.
- C. Remove the sequence words and combine all directions into one long sentence.
- D. Use clear age-appropriate words, numbered steps, and specific safety reminders for the garden visit.

37. Two students offer different interpretations of a character's decision. Which response best demonstrates evidence-based literary discussion?

- A. Point to a specific passage, explain how it supports one interpretation, and address the classmate's cited evidence.
- B. Choose the interpretation stated most loudly and end the discussion.
- C. Avoid referring to the text once personal opinions are shared.
- D. Agree with the teacher immediately without explaining any reasoning.

38. A class is studying a poem in which every other line ends with words that rhyme. Which activity best helps students analyze this structural feature?

- A. Rewrite the poem as a multiplication table.

- B. Mark the line-ending words, identify the rhyme pattern, and discuss how it contributes to sound and organization.
- C. Count only the number of letters in the title.
- D. Ignore line breaks and read the poem as one paragraph.

39. Students researching a local water issue find an anonymous blog post, a city water-quality report, a university study, and an advertisement from a filter company. Which instruction best develops source evaluation?

- A. Use only the source with the most colorful design.
- B. Assume advertisements are neutral because they include statistics.
- C. Reject every government or university source without reading it.
- D. Compare authorship, evidence, purpose, currency, and possible bias across the sources before using them.

40. A multilingual learner understands a science topic but hesitates during an oral presentation because of limited academic English. Which support best maintains the content goal while promoting language development?

- A. Excuse the student from speaking and assess only handwriting.
- B. Replace the science content with much easier material unrelated to the unit.
- C. Provide a visual outline and sentence frames for key explanations while allowing rehearsal before presenting.
- D. Correct every minor pronunciation difference immediately during the presentation.

41. What is $\frac{3}{4}$ divided by $\frac{1}{8}$?

- A. $\frac{3}{32}$
- B. 2
- C. 8
- D. 6

42. A warehouse packs 324 notebooks into each shipment. How many notebooks are in 18 equal shipments?

- A. 342
- B. 5,832
- C. 3,240
- D. 6,156

43. A container held 7.20 liters of water before 3.85 liters were poured out. How many liters remain?

- A. 3.45
- B. 4.35
- C. 3.35
- D. 4.65

44. A mosaic pattern uses 5 blue tiles for every 8 tiles in the complete pattern. If a larger version contains 24 tiles with the same ratio, how many blue tiles should it contain?

- A. 15 blue tiles
- B. 10 blue tiles
- C. 19 blue tiles
- D. 29 blue tiles

45. A water pump moves 37.5 liters in 15 minutes at a constant rate. How many liters does it move per minute?

- A. 1.5 liters per minute
- B. 2.5 liters per minute
- C. 22.5 liters per minute
- D. 562.5 liters per minute

46. A class has completed 35% of a 60-page reading goal. How many pages have been completed?

- A. 21 pages
- B. 18 pages
- C. 25 pages
- D. 35 pages

47. If $\frac{4}{7} = \frac{x}{21}$, what is the value of x ?

- A. 7
- B. 17
- C. 84
- D. 12

48. Four objects are at elevations of -18 meters, -6 meters, +4 meters, and +9 meters relative to sea level. Which elevation is greatest?

- A. -18 meters
- B. -6 meters
- C. +9 meters
- D. +4 meters

49. What is the distance on a number line between -7 and 5?

- A. 2 units
- B. 12 units
- C. 7 units
- D. 35 units

50. Which list is ordered from least to greatest?

- A. -0.5, -1.2, 0.4, $\frac{3}{4}$
- B. $\frac{3}{4}$, 0.4, -0.5, -1.2
- C. -1.2, 0.4, -0.5, $\frac{3}{4}$
- D. -1.2, -0.5, 0.4, $\frac{3}{4}$

51. A student shades 42 of 56 equal squares on a grid. Which fraction represents the shaded part in simplest form?

- A. $\frac{3}{4}$
- B. $\frac{2}{3}$
- C. $\frac{4}{5}$
- D. $\frac{7}{8}$

52. A measuring cup is filled to 0.625 of its capacity. Which fraction is equal to 0.625?

- A. $\frac{3}{8}$
- B. $\frac{5}{6}$
- C. $\frac{5}{8}$
- D. $\frac{62}{100}$

53. Two hallway lights flash every 8 seconds and every 30 seconds. If they flash together now, after how many seconds will they next flash together?

- A. 38 seconds
- B. 120 seconds
- C. 60 seconds
- D. 240 seconds

54. What is the value of 3^4 ?

- A. 81
- B. 12
- C. 64
- D. 243

55. Which is 0.00072 written in scientific notation?

- A. 7.2×10^4
- B. 72×10^{-4}
- C. 7.2×10^{-4}
- D. 0.72×10^{-4}

56. Which number is irrational?

- A. 0.125
- B. $\frac{7}{9}$
- C. $\sqrt{49}$
- D. $\sqrt{2}$

57. What is the value of $2a + 3b$ when $a = 4$ and $b = 5$?

- A. 23
- B. 18
- C. 21
- D. 45

58. Which value of x satisfies $\frac{x}{4} + 2 = 7$?

- A. 5
- B. 9
- C. 28

D. 20

59. A school club charges a \$7 registration fee plus \$4 for each activity. A student pays \$43 total. How many activities did the student choose?

- A. 7 activities
- B. 9 activities
- C. 10 activities
- D. 12 activities

60. The sequence 6, 10, 14, 18, ... follows a constant pattern. What is the next term?

- A. 20
- B. 24
- C. 22
- D. 28

61. A triangular fabric banner has a base of 15 inches and a perpendicular height of 8 inches. What is its area?

- A. 23 square inches
- B. 120 square inches
- C. 180 square inches
- D. 60 square inches

62. A rectangular water tank has inside dimensions of 14 decimeters by 5 decimeters by 4 decimeters. What volume can the tank hold?

- A. 23 cubic decimeters
- B. 140 cubic decimeters
- C. 280 cubic decimeters

D. 560 cubic decimeters

63. Three angles meet at a point. Two of the angles measure 145 degrees and 95 degrees. What is the measure of the third angle?

A. 120 degrees

B. 100 degrees

C. 140 degrees

D. 240 degrees

64. A robot moves in a straight horizontal line on a coordinate grid from $(-3, 6)$ to $(8, 6)$. How far does it travel?

A. 5 units

B. 11 units

C. 9 units

D. 14 units

65. Which capital letter has exactly one line of symmetry in a typical block-font form?

A. A

B. N

C. S

D. Z

66. On an architectural scale drawing, 1 centimeter represents 4 meters. A hallway measures 7.5 centimeters on the drawing. What is the hallway's actual length?

A. 11.5 meters

B. 18.75 meters

C. 30 meters

D. 300 meters

67. A movie begins at 1:35 p.m. and ends at 3:20 p.m. How long does it last?

- A. 1 hour 35 minutes
- B. 1 hour 45 minutes
- C. 1 hour 55 minutes
- D. 2 hours 15 minutes

68. How many centimeters are in 2.5 meters?

- A. 25 centimeters
- B. 2,500 centimeters
- C. 0.025 centimeter
- D. 250 centimeters

69. Five science teams recorded 4, 7, 9, 10, and 15 observations. What is the mean number of observations?

- A. 9
- B. 7
- C. 10
- D. 45

70. Six students checked out 6, 14, 3, 21, 9, and 12 library books during a reading challenge. What is the median number of books checked out?

- A. 9 books
- B. 12 books
- C. 10.5 books
- D. 65 books

71. A spinner is divided into 8 equal sections, 3 blue and 5 yellow. What is the probability of landing on blue in one spin?

- A. $\frac{1}{3}$
- B. $\frac{3}{5}$
- C. $\frac{5}{8}$
- D. $\frac{3}{8}$

72. A line plot shows the numbers of books read by eight students: 2, 2, 3, 4, 4, 4, 5, 8. Which value occurs most often?

- A. 2
- B. 4
- C. 5
- D. 8

73. A bar graph shows 18 students chose apples, 12 chose bananas, 9 chose oranges, and 6 chose pears. How many more students chose apples than pears?

- A. 9 students
- B. 18 students
- C. 12 students
- D. 24 students

74. A rectangular garden is 14 meters long and 9 meters wide. A 3-meter gate replaces part of the fence along one side. How many meters of fencing are needed?

- A. 40 meters
- B. 46 meters
- C. 126 meters

D. 43 meters

75. Which description is always true of a square?

- A. It has four congruent sides and four right angles.
- B. It has exactly one pair of parallel sides.
- C. It has no lines of symmetry.
- D. Its diagonals can never be congruent.

76. A student says the equal sign means 'write the answer next' and rejects $8 = 5 + 3$ as incorrect. Which activity best addresses the misconception?

- A. Practice only equations written as $5 + 3 = 8$.
- B. Compare true and false equations with expressions on both sides of the equal sign.
- C. Memorize the word equals without using equations.
- D. Avoid equations until the student learns multiplication facts.

77. Students are comparing $\frac{5}{8}$ and $\frac{7}{12}$. Which representation best supports conceptual reasoning before using a common-denominator algorithm?

- A. Place both fractions on the same number line and compare their positions relative to $\frac{1}{2}$ and 1.
- B. Tell students the fraction with the larger numerator is always greater.
- C. Compare only the denominators and choose the smaller denominator.
- D. Convert both fractions to unrelated whole numbers by dropping the fraction bars.

78. A teacher wants students to understand why 23×14 works before introducing the standard algorithm. Which model is most appropriate?

- A. A clock face showing only hours
- B. A tally chart with no place-value labels
- C. A number line labeled only with negative integers

D. A place-value area model using $(20 + 3)(10 + 4)$

79. Students confuse rectangles, rhombi, and squares because they classify shapes by appearance. Which lesson best develops property-based classification?

- A. Show only one perfectly oriented example of each shape.
- B. Have students sort varied examples and nonexamples using side lengths, parallel sides, and angle measures.
- C. Ask students to memorize the colors assigned to each category.
- D. Avoid overlapping categories such as squares being rectangles.

80. After a lesson on fraction addition, a teacher wants to decide what to reteach the next day. Which assessment practice is most useful?

- A. Wait until the end-of-year test before examining understanding.
- B. Record only whether students finished the worksheet on time.
- C. Give a short exit task that reveals students' strategies and errors, then group the results by misconception.
- D. Assign a grade without looking at how incorrect answers were produced.

81. Students investigate how daily light exposure affects bean-plant growth. They give identical plants 2, 6, or 10 hours of light each day while keeping soil, water, and temperature the same. What is the independent variable?

- A. Hours of light per day
- B. Amount of plant growth
- C. Type of bean plant
- D. Amount of water held constant

82. An ice cube melts in a sealed container. Which statement best describes the mass of the water before and after melting?

- A. The mass doubles because liquid water is heavier than ice.
- B. The mass remains the same because melting changes state, not the amount of matter.
- C. The mass becomes zero because the solid disappears.
- D. The mass decreases because some matter is destroyed during melting.

83. A mixture contains salt dissolved in water and insoluble sand. Which sequence would best separate and recover all three substances?

- A. Use a magnet to remove the salt, then freeze the sand.
- B. Add more salt until the sand dissolves.
- C. Heat the mixture first and discard every substance that remains.
- D. Filter out the sand, then distill the saltwater and collect the condensed water.

84. Students mix two clear solutions. The mixture becomes cloudy and a solid forms that was not present before. What does this most strongly indicate?

- A. Only a change in container shape occurred.
- B. The substances underwent simple melting.
- C. A chemical change produced a new substance.
- D. No change occurred because both starting liquids were clear.

85. In a battery-powered flashlight, which energy transformation best describes the main sequence when the flashlight is switched on?

- A. Light energy to chemical energy to motion
- B. Thermal energy to nuclear energy to sound
- C. Chemical energy to electrical energy to light and thermal energy
- D. Gravitational energy to chemical energy only

86. A student builds a simple circuit with a battery and bulb and tests different materials in a gap. Which material would most likely allow the bulb to light?

- A. A dry wooden craft stick
- B. A copper strip
- C. A rubber band
- D. A plastic ruler

87. A book rests motionless on a level table. Which statement best describes the forces on the book?

- A. No forces act because the book is not moving.
- B. Gravity acts upward while the table pushes downward.
- C. An unbalanced horizontal force keeps the book at rest.
- D. The downward gravitational force and upward support force are balanced.

88. What is the primary cause of the daily cycle of daylight and darkness at a location on Earth?

- A. Earth rotates on its axis.
- B. Earth moves closer to and farther from the Sun each day.
- C. The Moon blocks sunlight from half of Earth every night.
- D. The Sun revolves around Earth once every 24 hours.

89. Why does the Moon appear to have different phases during a month?

- A. We see changing portions of the Moon's sunlit half as the Moon orbits Earth.
- B. Earth's shadow covers the Moon a little more every night.
- C. The Moon produces different amounts of its own light.
- D. Clouds permanently hide different sections of the Moon in a fixed cycle.

90. On a cool morning, invisible water vapor in air changes into tiny liquid droplets that remain suspended near the ground as fog. Which phase change produced the droplets?

- A. Evaporation
- B. Sublimation

- C. Condensation
- D. Melting

91. A river carries loosened rock particles downstream after rain. Which process is illustrated most directly?

- A. Condensation
- B. Photosynthesis
- C. Crystallization
- D. Erosion

92. In a meadow food web, which organism is a producer?

- A. A rabbit that eats the grass
- B. A grass plant that makes sugars through photosynthesis
- C. A hawk that eats small mammals
- D. A mushroom that breaks down dead material

93. Which animal behavior is an adaptation that can help a population survive seasonal changes in food and temperature?

- A. Migrating to a region with more favorable seasonal conditions
- B. Choosing to stop inheriting genes during winter
- C. Changing every body structure within one afternoon
- D. Eliminating all competition by remaining motionless forever

94. Which trait is primarily learned rather than inherited genetically?

- A. Natural eye color
- B. Blood type
- C. A genetically determined hair-color tendency

D. Knowing how to ride a bicycle

95. Students are designing a portable water filter. It must reduce visible particles and may cost no more than \$12 to build. In the design problem, the \$12 maximum is best classified as what?

- A. A scientific law
- B. A control group
- C. A constraint
- D. A measurement error

96. Students measure the bounce height of the same ball five times from the same drop height instead of relying on one trial. What is the main scientific advantage?

- A. Repeated trials guarantee every measurement will be identical.
- B. Repeated trials help reveal variability and produce a more reliable estimate.
- C. Repeating removes the need to control variables.
- D. Five trials prove the hypothesis true regardless of results.

97. What is the primary purpose of latitude and longitude on maps and globes?

- A. To show only political party membership
- B. To measure the age of every settlement
- C. To identify absolute locations using a coordinate system
- D. To predict the exact weather for any future date

98. A family moves from a region with few jobs to a city where several employers are hiring. Which factor is the clearest pull factor in the migration?

- A. Greater employment opportunity in the destination city
- B. Few jobs in the region they leave
- C. The distance already traveled

D. The family's number of suitcases

99. A town has enough money this year either to repair the public pool or to purchase two new snowplows, but not both. What is the opportunity cost of choosing the pool repair?

- A. The total amount of money in every future budget
- B. The number of residents who use the pool
- C. The price of the pool repair plus the snowplows together
- D. The value of the snowplows the town gives up

100. Which action is most characteristic of representative democracy?

- A. Government offices are inherited within one family.
- B. Citizens elect officials who make public decisions on their behalf.
- C. All laws are imposed by a foreign ruler with no local consent.
- D. Only judges choose every legislator and executive.

101. Which situation most clearly shows federalism operating in the United States?

- A. One national official makes every state and local decision without constitutional limits.
- B. A city ordinance automatically becomes binding federal law throughout the country.
- C. State governments exercise no independent authority and exist only as federal agencies.
- D. A state governs matters within its authority while the national government exercises separate powers assigned to it.

102. Which freedom is protected by the First Amendment to the U.S. Constitution?

- A. A guarantee of free housing for every citizen
- B. Freedom of speech
- C. A requirement that every state use identical local laws
- D. A prohibition on all forms of taxation

103. Why did shipbuilding and maritime trade become especially important in many New England colonies?

- A. The region had extensive coastlines, harbors, forests, and access to Atlantic trade routes.
- B. The region had year-round tropical plantation conditions.
- C. The colonies were completely isolated from the Atlantic Ocean.
- D. The region prohibited the use of timber for construction.

104. Which grievance helped increase colonial opposition to British rule before the American Revolution?

- A. Britain required all colonies to elect members of Parliament immediately.
- B. Colonists objected because Britain ended every form of taxation in the colonies.
- C. Parliament imposed taxes while colonists argued they lacked proper representation in that body.
- D. Parliament transferred full national independence to the colonies before conflict began.

105. What was one major effect of the Louisiana Purchase on the United States?

- A. It ended all European claims in North America immediately.
- B. It transferred the original thirteen states to France.
- C. It permanently prohibited U.S. exploration of western lands.
- D. It greatly expanded U.S. territory west of the Mississippi River.

106. Which change was closely associated with industrialization in the nineteenth-century United States?

- A. A complete disappearance of wage labor
- B. Growth of factories and increased movement of workers into cities
- C. An end to technological innovation in production
- D. A permanent return of most manufacturing to isolated households

107. Which constitutional change established that persons born or naturalized in the United States are citizens and required states to provide equal protection of the laws?

- A. The Second Amendment
- B. The Tenth Amendment
- C. The Fourteenth Amendment
- D. The Twenty-second Amendment

108. The Seneca Falls Convention is most closely associated with which reform movement?

- A. The movement for women's rights and suffrage
- B. The campaign to restore British colonial rule
- C. The movement to prohibit all public schooling
- D. The effort to create a hereditary U.S. monarchy

109. What does the term Great Migration commonly describe in U.S. history?

- A. The forced migration of every European immigrant back to Europe
- B. A single wagon trip completed by one family across one state
- C. African Americans' large twentieth-century migration from the South to cities in other U.S. regions
- D. The movement of all U.S. factories from cities to farms

110. The New Deal programs of the 1930s were primarily developed in response to which national crisis?

- A. The Great Depression
- B. The War of 1812
- C. The California Gold Rush
- D. The purchase of Alaska

111. A class is studying the civil rights movement of the 1950s and 1960s. Which source would be the strongest example of a primary source?

- A. A current textbook overview written for middle school
- B. A speech recording made by a movement leader during a contemporary demonstration
- C. A modern encyclopedia entry summarizing several events
- D. A recent historian's article interpreting the movement

112. Two newspaper accounts of the same 1890 labor dispute disagree about why violence began. What should a historian do next?

- A. Choose the longer article and ignore all other evidence.
- B. Assume the first account published must be completely accurate.
- C. Conclude that historical inquiry is impossible whenever sources disagree.
- D. Compare the accounts with additional evidence while considering each newspaper's audience, purpose, and perspective.

113. An artist wants a poster to create a visual contrast between a bright orange shape and its background. Which background color would provide a strong complementary-color contrast?

- A. Blue
- B. Red-orange
- C. Yellow-orange
- D. Orange

114. In written music, what does a rest indicate?

- A. A permanent increase in pitch
- B. A change of instrument family
- C. A gradual increase in loudness
- D. A measured period of silence

115. In a play script, what is the primary function of stage directions?

- A. They list only the audience members' names.
- B. They give nonspoken performance cues for movement, setting, and delivery.
- C. They replace every line spoken by the characters.
- D. They determine the ticket price for each performance.

116. During a physical-education circuit, which station most directly trains muscles to keep producing submaximal force through repeated contractions?

- A. Complete one all-out lift and stop immediately afterward.
- B. Track a moving object with the eyes for ten seconds.
- C. Perform repeated controlled bodyweight squats for a sustained set.
- D. Sit still and hold the breath for as long as possible.

117. Which everyday practice most directly reduces the spread of many infectious illnesses in a classroom?

- A. Wash hands with soap and water at appropriate times, especially after contamination and before eating.
- B. Share drinking containers so everyone is exposed equally.
- C. Avoid cleaning frequently touched surfaces under all circumstances.
- D. Cover coughs with bare hands and then touch shared materials.

118. Two classmates disagree about how to divide tasks for a group project. Which response best demonstrates constructive conflict resolution?

- A. Insult the other person until one side gives up.
- B. Use calm I-statements, listen to each person's concerns, and negotiate a specific division of responsibilities.
- C. Refuse to discuss the problem and secretly change the plan.
- D. Ask unrelated classmates to spread rumors about the disagreement.

119. A household budget lists rent of \$1,200 each month and an electric bill that varies with usage. Which statement best classifies these expenses?

- A. Both expenses are income rather than costs.
- B. Rent is variable and the electric bill is always fixed.
- C. Rent is generally a fixed expense, while the electric bill is a variable expense.
- D. Neither expense should be included in a household budget.

120. A student is interested in becoming an architect and wants to learn what the work is actually like before choosing courses. Which next step would be most useful?

- A. Choose the career immediately based only on the job title.
- B. Ignore required education and focus only on clothing worn at work.
- C. Apply for professional licensure before learning what architects do.
- D. Conduct an informational interview with an architect about daily tasks, education, skills, and working conditions.

Practice Exam 4: Answer Key and Explanations

1. C — Phoneme substitution requires replacing one speech sound with another while keeping the remaining sounds in place. Changing /m/ in map to /t/ produces tap, so the student is manipulating individual phonemes without print. Syllable segmentation divides larger spoken units, print directionality concerns written text, and morphological analysis examines meaningful word parts such as roots and affixes.

2. B — The letters tch work together to represent the single final /ch/ sound in patch. A digraph uses more than one letter for one sound. The digraph sh represents /sh/, ai commonly represents a vowel sound, and pl is a consonant blend in which both consonant sounds remain audible rather than forming one phoneme.

3. D — The Latin root spect carries the idea of looking or seeing, which helps explain the related meanings of inspect, spectator, and spectacle. Root knowledge supports vocabulary across many morphologically related words. Alphabetical order helps locate entries, punctuation organizes sentences, and rhyme focuses on sound patterns rather than the shared meaning carried by the root.

4. A — The passage presents a difficulty—repeated flooding—and then describes measures used to address that difficulty, making problem and solution the dominant structure. Compare and contrast would emphasize similarities and differences, description would mainly list characteristics, and a cause-only structure would explain why flooding occurred without organizing the text around actions taken to solve it.

5. B — The narrator uses third-person pronouns while limiting interior access to Maya's thoughts and perceptions, which defines third-person limited point of view. First person would have Maya narrate with I or we. Third-person omniscient could reveal several characters' thoughts. Second person would address a reader or character directly as you throughout the narration.

6. D — A theme states a broader idea developed through a story rather than a literal plot detail. The character gives up an immediate personal benefit in order to act honestly, supporting the idea that integrity may require sacrifice. The other choices either generalize unsupported details or make claims about bicycles and wallets that the story does not establish.

7. C — The author's position is the claim, and the crash data function as relevant evidence because they bear directly on the safety effect of protected bicycle lanes. A title labels a text, a counterclaim presents an opposing position, and fictional narration tells invented events. Evidence strengthens an argument when it is relevant and logically connected to the stated claim.

8. A — A simile explicitly compares unlike things using a word such as like or as. The creek is compared to a silver ribbon with the word like. Calling the creek a silver ribbon without like is a metaphor, describing it as whispering is personification, and stating that it flooded after rain is literal cause-and-effect information.

9. D — Trudged suggests heavy, slow, effortful walking, so the revised verb adds a stronger connotation about the hiker's exertion. It does not mean running, does not define the hill, and does not change the tense of the sentence. Word choice shapes tone and imagery because near-synonyms can carry different emotional and descriptive associations.

10. C — Some English words keep the same spelling but shift stress and pronunciation when used as different parts of speech, as with record. The entry therefore links pronunciation with grammatical function. Stress marks do not show alphabetical order, words may have multiple pronunciations, and a noun and verb can share identical spelling even when their pronunciation differs.

11. B — A primary source was created by a participant or observer during the period being studied. A worker's 1912 letter provides contemporaneous evidence from the strike itself. Encyclopedias, textbooks, and later documentaries interpret or synthesize earlier evidence, so they are secondary sources. Historians often compare both source types while considering perspective, purpose, and reliability.

12. A — Sensational wording can signal an attempt to attract attention rather than present a carefully qualified conclusion. A critical reader should inspect the source, supporting evidence, and language before accepting the claim. Confidence, photographs, and online publication do not establish accuracy.

Evaluating credibility requires attention to evidence, authorship, purpose, and corroboration with trustworthy sources.

13. B — The grammatical subject basket is singular, so the singular verb sits agrees with it; the intervening phrase of ripe peaches does not change the subject's number. The other sentences pair singular subjects with plural-form verbs: basket with sit, students with reads, and each with chase. Agreement depends on the actual subject, not nearby nouns.

14. D — A semicolon can join two complete, closely related independent clauses without a coordinating conjunction. Both 'The rain stopped' and 'the players returned to the field' can stand alone, so the semicolon is appropriate. A comma alone creates a comma splice, and the other choices place the semicolon where it separates words that belong within a clause.

15. A — Pragmatics concerns how language is used appropriately in social contexts. Waiting for a turn, connecting a response to another speaker's idea, and asking a relevant follow-up all show conversational responsiveness. Alphabetic decoding, silent reading rate, and spelling are literacy skills, but they do not describe the social rules that organize successful spoken interaction.

16. C — A running record documents a student's oral reading behaviors as they occur, including errors, self-corrections, and accurate words. The pattern can inform analysis of decoding and reading strategies. An intelligence test measures different constructs, a spelling inventory targets spelling knowledge, and a final grade summarizes performance rather than capturing moment-by-moment oral reading evidence.

17. C — Cognates are words in different languages that share historical origins and have similar forms and meanings. Información and información provide a useful cross-linguistic connection that can support vocabulary learning. A homophone shares sound within a language, punctuation cues organize written sentences, and syllable deletion changes spoken word structure rather than linking related vocabulary across languages.

18. A — The students need phoneme blending, so instruction should require combining separately presented speech sounds into a whole spoken word. Blending /m/ /a/ /p/ to make map directly practices that skill without depending on print. Copying, alphabetizing, and identifying a main idea involve handwriting, print organization, and comprehension rather than blending individual phonemes.

19. B — The error shows that the student is treating s and h as separate phonemes rather than recognizing the common digraph sh. Explicitly teaching that the two letters work together to represent /sh/, followed by blending practice in decodable words, directly addresses the pattern. The other choices reinforce the error or avoid the needed sound-spelling connection.

20. D — Confusion between b and d calls for direct, repeated attention to their visual forms, associated sounds, and motor patterns for writing them. Consistent multisensory cues can strengthen discrimination without treating reversals as proof of a comprehension problem. Avoiding the letters or memorizing pages prevents the focused practice needed to build accurate, automatic letter recognition.

21. C — The student needs to recognize oa as a common vowel team rather than assigning separate sounds to both vowel letters. Explicit teaching followed by decoding related words supports

generalization of the pattern. Beginning consonant blends do not address the vowel error, separate-syllable instruction is inaccurate here, and picture guessing bypasses the orthographic information needed for decoding.

22. B — Words such as rabbit and tennis illustrate a common two-consonant division pattern that can help readers identify manageable syllables. Dividing and blending each syllable gives the student a systematic decoding procedure. Using only the first letter or memorizing paragraphs encourages guessing, while practicing an unrelated silent-e pattern does not address the specific multisyllabic difficulty.

23. A — Morphemic analysis helps older elementary readers unlock long words by identifying meaningful prefixes, bases, and suffixes. In miscommunication, the parts provide both pronunciation support and meaning clues. First-letter guessing, letter counting, and immediate replacement with a synonym do not teach a reusable strategy for analyzing unfamiliar morphologically complex words in future reading.

24. D — Durable recognition grows when students connect a word's pronunciation to its spelling rather than memorizing a visual silhouette. In was, the consonant correspondences are useful anchors while the vowel spelling requires explicit attention as the unexpected part. Picture guessing and an absolute rule for a would not create accurate, transferable sound-symbol knowledge for later reading.

25. C — Rereading a manageable passage gives the student repeated accurate encounters with the same spellings in connected text, helping correct decoding become more automatic. Feedback protects accuracy and can also improve phrasing. Copying, overpracticing mastered letter names, or guessing around difficult words does not build the rapid, reliable word recognition needed for fluent reading.

26. B — The difficulty is prosody, not basic accuracy or rate. Phrase-cued text and teacher modeling make meaningful word groups, punctuation, stress, and intonation visible and audible so the student can practice expressive reading. Alphabet drills address a different skill, harder text may add unnecessary decoding load, and ignoring punctuation would reinforce the very phrasing problem being addressed.

27. D — Multiple-meaning words require readers to use surrounding language and situation to determine which meaning makes sense. Depositing money points to a financial institution rather than a riverbank. Syllable count does not determine meaning, familiar words may have several senses, and pictures are not a general solution. Contextual flexibility supports vocabulary and comprehension across texts.

28. A — A beginning-middle-end organizer directly supports narrative sequencing by helping the student arrange important events in temporal order before retelling. Copying sentences does not require organizing meaning, defining every noun distracts from the comprehension goal, and rereading only the last sentence cannot establish the full event sequence. The scaffold matches the specific retelling difficulty.

29. D — Inferential comprehension combines textual clues with relevant background knowledge to reach a conclusion that is not stated directly. Asking students to identify weather clues and explain how

they support the umbrella inference makes that reasoning explicit. Letter counting, page position, and alphabetizing may involve print skills, but they do not require interpreting implied meaning from evidence.

30. C — Headings and subheadings signal a text's organization and often preview important ideas. Predicting from them helps students establish a purpose and mental framework for reading, which can later be confirmed or revised. The strategy does not justify skipping unheaded text, predictions must be checked against content, and spelling practice would not address informational-text comprehension.

31. B — The student represents the heard final /t/ accurately but does not yet apply the conventional spelling of the past-tense morpheme -ed. Explicitly connecting pronunciation variation with the stable written suffix supports both morphology and spelling. Writing every final /t/ as t would create new errors, while avoiding endings or focusing on capitals misses the source of the difficulty.

32. A — Phoneme-grapheme mapping connects the sequence of sounds in a spoken word to the letters that represent those sounds. Segmenting plant and recording each sound in order strengthens the alphabetic principle and spelling memory. Copying or memorizing a visual outline can reproduce the word temporarily, but those approaches do not require analysis of its internal sound-spelling structure.

33. B — Early risk information should lead to prompt evidence-based support rather than a wait-to-fail approach. Explicit, systematic work in phonemic awareness and decoding targets foundational processes associated with word reading, while progress monitoring shows whether instruction is helping. Independent silent reading alone and picture memorization do not provide the structured sound-symbol teaching the identified risk suggests is needed.

34. C — Frequent brief probes during intervention are used for progress monitoring. Graphing results helps the teacher see the student's rate of improvement and decide whether to continue, intensify, or change instruction. These measures are not designed to produce permanent intelligence scores, eliminate other evidence, or function as repeated final grades. Their value lies in instructional decision-making over time.

35. A — Argumentative writing is organized around a defensible claim supported by relevant reasons and evidence. Establishing the position and gathering information that bears on it gives students a basis for later organization and revision. A fictional ending, font choices, and disconnected facts do not establish the logical relationship between a claim and the evidence required to support it.

36. D — Directions for younger students should make the intended actions easy to understand and follow. Age-appropriate vocabulary, an explicit sequence, and concrete safety reminders directly serve that audience and purpose. Unrelated humor can distract, specialized jargon can confuse, and removing organizational cues makes procedures harder to follow. Effective writers adapt wording and organization for real readers.

37. A — Evidence-based literary discussion requires a student to connect an interpretation to specific textual evidence and engage with the evidence offered by others. Citing a passage makes the reasoning

visible and open to evaluation. Volume, unsupported personal preference, or automatic agreement with the teacher does not demonstrate analysis, collaborative reasoning, or accountable use of the text.

38. B — Rhyme is a sound pattern connected to poetic structure, so students should identify the repeated line-ending sounds and examine how the pattern shapes rhythm, unity, or emphasis. Multiplication, title-letter counting, and ignoring lineation do not analyze the poem's organization. Linking a visible pattern to its effect moves students beyond simply naming a literary device.

39. D — Source evaluation involves examining who produced information, what evidence supports it, why it was created, how current it is, and what interests may shape presentation. Comparing those features helps students select and corroborate useful evidence. Design alone does not establish credibility, statistics can be used selectively, and source categories should not be accepted or rejected automatically without evaluation.

40. C — A visual outline, targeted sentence frames, and rehearsal reduce unnecessary language demands while still requiring the student to communicate the same science understanding. This is scaffolding rather than lowering the content standard. Removing speaking eliminates practice, unrelated easier material changes the goal, and constant interruption for minor pronunciation can disrupt fluency and obscure assessment of the intended content.

41. D — Dividing by $\frac{1}{8}$ asks how many one-eighth units fit into three-fourths. Rewrite $\frac{3}{4}$ as $\frac{6}{8}$, so six pieces of size $\frac{1}{8}$ fit exactly. Equivalently, multiply $\frac{3}{4}$ by the reciprocal $\frac{8}{1}$ to get 6. The other choices come from multiplying the fractions, dividing numerators only, or inverting the wrong fraction. This interpretation also matches the unit-fraction model directly.

42. B — The total is found by multiplying 324 notebooks per shipment by 18 shipments. Compute $324 \times 18 = 324 \times (20 - 2) = 6,480 - 648 = 5,832$. Adding 18 to 324, appending a zero, or using an incorrect partial product produces the distractors. Multiplication models equal groups in this situation.

43. C — Subtract the amount poured out from the starting amount: $7.20 - 3.85 = 3.35$ liters. Aligning decimal points preserves tenths and hundredths during regrouping. A quick estimate, $7.2 - 3.9$, is about 3.3, which supports 3.35. The other choices result from common place-value, regrouping, or subtraction errors with decimals. Checking the units confirms the answer is a remaining volume.

44. A — The ratio of blue tiles to total tiles is 5:8. Increasing the total from 8 to 24 multiplies it by 3, so the number of blue tiles must also be multiplied by 3. Thus $5 \times 3 = 15$ blue tiles. The distractors come from additive reasoning or an incorrect multiplicative scale factor.

45. B — A unit rate gives the amount for one minute, so divide 37.5 liters by 15 minutes. The quotient is 2.5 liters per minute. One and one-half results from an incorrect division, 22.5 subtracts instead of dividing, and 562.5 multiplies the quantities. The units confirm the operation because liters divided by minutes gives liters per minute.

46. A — Convert 35% to 0.35 and multiply by the whole goal: $0.35 \times 60 = 21$ pages. A benchmark approach also works: 30% of 60 is 18 and 5% is 3, totaling 21. The distractors confuse a benchmark part, an arithmetic estimate, or the percent itself with the number of pages completed.

47. D — The denominator 7 is multiplied by 3 to become 21, so the numerator must also be multiplied by 3 to preserve the equivalent ratio. Thus $x = 4 \times 3 = 12$. Cross-multiplication gives the same result: $7x = 84$. The distractors reflect copying a denominator, adding, or failing to divide after cross-multiplying.

48. C — Greater numbers lie farther to the right on a number line, so +9 is greater than +4 and both negative elevations. Negative numbers represent positions below zero, and among them -6 is greater than -18. The question asks for greatest elevation, not greatest absolute distance from sea level, so magnitude alone would lead to the wrong comparison.

49. B — Distance is the absolute difference between the coordinates: $|5 - (-7)| = |12| = 12$ units. Moving from -7 to 0 covers 7 units and from 0 to 5 covers 5 more, confirming 12. The distractors come from subtracting magnitudes incorrectly, using one endpoint alone, or multiplying the coordinates. Crossing zero makes the two segment lengths add.

50. D — Convert $\frac{3}{4}$ to 0.75 for a common representation. Then compare -1.2, -0.5, 0.4, and 0.75 on the number line. The two negative numbers come first, with -1.2 less than -0.5, followed by the positive values 0.4 and 0.75. Each distractor reverses or misplaces at least one comparison. A common scale makes the ordering transparent.

51. A — The shaded fraction is $\frac{42}{56}$. The greatest common factor of 42 and 56 is 14, so dividing both terms by 14 gives $\frac{3}{4}$. Equivalent fractions preserve value when numerator and denominator are divided by the same nonzero factor. The other choices are close benchmarks but do not equal the original shaded proportion.

52. C — Write 0.625 as $\frac{625}{1000}$ and simplify by dividing numerator and denominator by 125 to obtain $\frac{5}{8}$. A division check confirms that $5 \div 8 = 0.625$. Three-eighths equals 0.375, five-sixths is about 0.833, and $\frac{62}{100}$ equals 0.62. Place value gives the exact fraction before simplification. The simplified form preserves the original decimal value exactly.

53. B — The next simultaneous flash occurs at the least common multiple of 8 and 30. Their prime factors are $8 = 2^3$ and $30 = 2 \times 3 \times 5$, so the LCM is $2^3 \times 3 \times 5 = 120$. Sixty is not divisible by 8, while 240 is common but not the least.

54. A — The exponent 4 tells how many factors of 3 are multiplied: $3 \times 3 \times 3 \times 3 = 81$. Twelve incorrectly treats the exponent as a multiplier, 64 is 4^3 , and 243 is 3^5 . Exponential notation represents repeated multiplication of the base, not multiplication of the base by the exponent.

55. C — Scientific notation uses a coefficient at least 1 but less than 10. Moving the decimal in 0.00072 four places to the right gives 7.2, so the power of ten is 10^{-4} . A positive exponent would make the number large, while coefficients 72 and 0.72 do not meet the standard coefficient range.

56. D — The square root of 2 cannot be expressed as a ratio of integers and has a nonterminating, nonrepeating decimal expansion, so it is irrational. The decimal 0.125 equals $\frac{1}{8}$, $\frac{7}{9}$ is already a ratio of integers, and $\sqrt{49}$ equals 7. Those three values are rational numbers. Rational numbers can always be written as integer ratios.

57. A — Substitute the given values before applying the operations: $2(4) + 3(5) = 8 + 15 = 23$. Eighteen omits part of the second product, twenty-one reflects an arithmetic slip, and forty-five can result from combining the coefficients and variables incorrectly. Substitution preserves the structure of the original expression. Evaluating multiplication before addition follows the expression structure.

58. D — Subtract 2 from both sides to isolate $x/4$: $x/4 = 5$. Then multiply both sides by 4 to obtain $x = 20$. Substituting 20 gives $5 + 2 = 7$, confirming the solution. The distractors stop after one step, add instead of multiply, or multiply the original right side without first isolating the quotient.

59. B — Model the total with $7 + 4x = 43$, where x is the number of activities. Subtract 7 to get $4x = 36$, then divide by 4 to obtain $x = 9$. Substitution gives $7 + 36 = 43$. The distractors result from incomplete inverse operations or using the total without removing the fixed fee.

60. C — Each term increases by 4: 6 to 10, 10 to 14, and 14 to 18. Continuing the same additive pattern gives $18 + 4 = 22$. The distractors use different increments or double a previous change. Recognizing the constant difference is the key feature of this arithmetic sequence. The repeated difference determines every later term in the pattern.

61. D — A triangle's area is one-half the product of its base and perpendicular height. Compute $(1/2)(15)(8) = 60$ square inches. Twenty-three adds the dimensions, 120 omits the one-half factor, and 180 uses an unrelated multiplier. The perpendicular height matters because it measures the distance from the base to the opposite vertex at right angles.

62. C — A rectangular prism's volume is found by multiplying its three perpendicular dimensions. Here, $14 \times 5 \times 4 = 280$ cubic decimeters. Adding the dimensions gives 23, using only two dimensions gives 70 rather than a volume, and doubling the product gives 560. Cubic units are required because volume measures three-dimensional space.

63. A — Angles around a point total 360 degrees. The two known angles sum to $145 + 95 = 240$ degrees, so the remaining angle is $360 - 240 = 120$ degrees. One hundred and 140 result from subtraction errors, while 240 is only the known sum. The full-turn relationship determines the missing measure.

64. B — Because the y -coordinate stays at 6, the robot moves only horizontally. Its distance is the absolute difference between the x -coordinates: $|8 - (-3)| = 11$ units. The path crosses the y -axis, covering 3 units from -3 to 0 and 8 more to 8. Adding those parts confirms the same distance.

65. A — A typical block capital A has one vertical line of symmetry: reflecting the left half across that line matches the right half. Block N, S, and Z do not have a reflection line that maps the entire letter onto itself. Symmetry questions depend on the stated conventional block form, not decorative fonts that may alter shapes.

66. C — Each centimeter on the drawing represents 4 actual meters. Multiplying 7.5 centimeters by 4 meters per centimeter gives 30 meters. Eleven and one-half adds the numbers instead of scaling, 18.75 uses an incorrect factor, and 300 shifts the decimal unnecessarily. A scale drawing preserves proportional relationships between drawing measurements and actual dimensions.

67. B — From 1:35 p.m. to 2:35 p.m. is one hour, and from 2:35 p.m. to 3:20 p.m. is 45 minutes, for a total of 1 hour 45 minutes. The distractors reflect minute-subtraction errors or counting clock labels rather than elapsed intervals. Breaking the interval at a convenient hour reduces regrouping mistakes.

68. D — One meter equals 100 centimeters, so multiply 2.5 by 100 to convert to the smaller unit: 2.5 meters = 250 centimeters. Twenty-five uses a factor of 10, 2,500 uses 1,000, and 0.025 divides instead of multiplies. Converting to a smaller unit should produce a larger numerical count. The metric relationship is exact, so no estimation is needed.

69. A — Add the five counts to get 45, then divide by 5 teams: $45 \div 5 = 9$. Seven and 10 are individual data values, while 45 is the total rather than the mean. The mean is the equal-share value that would result if the total number of observations were distributed evenly among the teams.

70. C — Order the values before finding the median: 3, 6, 9, 12, 14, 21. Because there are six observations, the median is halfway between the two middle values, 9 and 12. Their average is $(9 + 12)/2 = 10.5$ books. Choosing 9 or 12 uses only one middle value; 65 is the total.

71. D — All eight spinner sections are equal, so the outcomes are equally likely. Three of the eight sections are blue, giving probability $3/8$. One-third compares blue sections incorrectly, $3/5$ compares blue with yellow rather than the total, and $5/8$ is the probability of yellow. Probability is favorable outcomes divided by total possible outcomes.

72. B — The mode is the value with the greatest frequency. In the data, 4 appears three times, 2 appears twice, and 3, 5, and 8 each appear once. Therefore 4 occurs most often. The question asks about frequency, not the largest value, the median, or the range, so counting occurrences is the appropriate operation.

73. C — The phrase how many more asks for a difference. Subtract the pear count from the apple count: $18 - 6 = 12$ students. Nine is the orange count, eighteen simply repeats the apple count, and twenty-four adds apples and pears. Reading a bar graph requires matching each category to its value before choosing the needed operation.

74. D — The full perimeter is $2(14 + 9) = 46$ meters. Because the 3-meter gate occupies part of the boundary where no fence is needed, subtract 3 to get 43 meters. Forty subtracts the gate twice, 46 ignores it, and 126 is the area. The garden dimensions themselves do not change.

75. A — A square is a quadrilateral with four equal side lengths and four right angles. It also has two pairs of parallel sides, multiple lines of symmetry, and congruent diagonals. Therefore each distractor contradicts a defining or guaranteed property of squares. Classifying shapes depends on properties that are always true, not features that occur only in some drawings.

76. B — The student needs a relational understanding of equality: both sides represent the same value. Examining varied true and false equations, including forms such as $8 = 5 + 3$ and $4 + 4 = 6 + 2$, directly challenges the 'answer comes next' interpretation. Restricting equation forms would reinforce the misconception rather than broaden it.

77. A — A common number line makes fraction magnitude visible on the same scale and encourages benchmark reasoning. Both fractions are above $\frac{1}{2}$, and their positions can be compared meaningfully. Numerators or denominators alone do not determine size when both differ, and dropping fraction bars destroys the values. Representation should reveal the quantities the symbols denote.

78. D — An area model connects multidigit multiplication to the distributive property and place value. Decomposing 23 and 14 creates partial products 20×10 , 20×4 , 3×10 , and 3×4 , whose sum equals the total product. The other representations do not naturally display the place-value structure underlying the standard multiplication algorithm. Students can then connect those partial products to algorithmic steps.

79. B — Property-based sorting directs attention to defining attributes rather than orientation or visual prototypes. Varied examples and nonexamples help students see that a square satisfies rectangle and rhombus properties even when rotated. A single prototype, color memorization, or avoiding hierarchical relationships would strengthen appearance-based misconceptions instead of building flexible geometric classification.

80. C — A brief exit task provides immediate formative evidence about what students understand and which misconceptions are present. Sorting responses by strategy or error pattern allows targeted next-day instruction. An end-of-year test is too delayed for this decision, completion time does not reveal conceptual understanding, and grading without analyzing reasoning wastes useful diagnostic information.

81. A — The independent variable is the factor deliberately changed by the investigators. Here, students vary the number of light hours while controlling soil, water, temperature, and plant type. Plant growth is the dependent variable measured in response. The controlled factors are kept the same so differences in growth can be attributed more reasonably to light exposure.

82. B — Melting is a physical change in which water changes from solid to liquid without changing its chemical identity or destroying matter. In a sealed container, the same particles remain present, so total mass is conserved. Density and volume may change, but those changes do not mean the mass doubles, vanishes, or is destroyed.

83. D — Filtration first separates insoluble sand from the saltwater because the sand particles are retained while the solution passes through. Distillation then boils the water and condenses its vapor into a separate container, leaving the dissolved salt behind. That sequence recovers sand, water, and salt. Magnetism, adding more salt, or discarding residues would not recover all three components.

84. C — Formation of a new solid precipitate from two solutions is strong evidence that a chemical reaction produced substances with different properties. A container-shape change does not alter matter, melting is a physical state change, and the original clarity of the liquids does not prevent a reaction. New-substance evidence distinguishes chemical change from ordinary physical rearrangement.

85. C — Chemical potential energy stored in the battery drives an electric current when the circuit is closed. The bulb or LED converts electrical energy primarily into light, with some thermal energy also

produced. The other sequences begin with energy forms not supplied by the flashlight's battery or omit the electrical stage that carries energy through the circuit.

86. B — Copper is a good electrical conductor, so placing a copper strip in the gap can complete the circuit and allow charge to flow through the bulb. Dry wood, rubber, and common plastic are electrical insulators under ordinary classroom conditions. The test therefore distinguishes materials by how readily they permit electric current to pass.

87. D — The book is at rest with no acceleration, so the net force is zero. Gravity pulls downward, while the table exerts an upward normal support force of equal magnitude. Forces can act on an object even when it is motionless. Reversing their directions or adding an unbalanced horizontal force would not match the observed equilibrium.

88. A — Earth's rotation turns locations toward and away from the Sun over roughly a day, producing the familiar cycle of daylight and darkness. Earth's yearly revolution is associated with seasons rather than daily night, and the Moon does not cause ordinary nighttime. The apparent daily motion of the Sun results from Earth's rotation, not a daily solar orbit around Earth.

89. A — Half of the Moon is illuminated by the Sun at any given time, but the fraction of that lit half visible from Earth changes as the Moon moves around Earth. Earth's shadow causes a lunar eclipse, not the regular phases. The Moon does not generate visible light, and weather cannot create the predictable monthly sequence.

90. C — Fog forms when water vapor loses thermal energy and changes from a gas into tiny liquid droplets, which is condensation. Evaporation changes liquid to gas, sublimation changes a solid directly to gas, and melting changes solid to liquid. Because the observed droplets formed from water vapor, the evidence specifically identifies a gas-to-liquid phase change.

91. D — Erosion is the movement of weathered material from one place to another by agents such as water, wind, ice, or gravity. The river transports loosened sediment downstream, so movement is the key clue. Weathering breaks material down, while condensation, photosynthesis, and crystallization describe unrelated atmospheric, biological, or mineral-forming processes. Weathering may supply the particles, but erosion carries them away.

92. B — Producers capture energy and build organic molecules from nonliving materials; green plants do this through photosynthesis. Grass therefore forms the base of many meadow food webs. Rabbits and hawks are consumers because they obtain energy by eating other organisms, while mushrooms are decomposers that obtain energy from dead organic matter and recycle nutrients.

93. A — Migration is a behavioral adaptation in which animals move between regions as seasonal conditions change, often improving access to food, breeding sites, or suitable temperatures. Individuals cannot choose to stop heredity, instantly redesign inherited anatomy, or remove all competition through permanent inactivity. Adaptations improve survival or reproduction within environmental conditions over time.

94. D — Riding a bicycle is a learned skill acquired through experience, instruction, and practice. Eye color, blood type, and many basic hair-color characteristics are strongly influenced by inherited genetic information. Environment can affect how some inherited traits are expressed, but acquired knowledge and practiced motor skills are not passed from parents to offspring through genes.

95. C — A constraint is a limit or restriction that bounds possible engineering solutions, such as maximum cost, size, time, or available materials. The \$12 ceiling restricts which filter designs are feasible, while reducing visible particles is a performance criterion. Scientific laws, control groups, and measurement errors do not describe a required design limitation placed on the solution.

96. B — Repeated measurements show how much results vary and allow students to use patterns or averages rather than trusting a single potentially unusual trial. Repetition does not guarantee identical values, replace the need for controlled conditions, or prove a hypothesis regardless of evidence. Reliability improves when a result is reproducible and not dependent on one measurement.

97. C — Latitude and longitude form a global coordinate system for describing absolute location. Latitude measures position north or south of the equator, while longitude measures position east or west of a reference meridian. Political affiliation, settlement age, and exact future weather require different information. Coordinates help users identify and compare locations consistently across maps and globes.

98. A — A pull factor is an attractive condition at the destination that encourages migration. Available jobs in the city draw the family toward that location. Few jobs in the place of origin are a push factor because they encourage departure. Distance and luggage may affect the move, but they do not explain the destination's attraction in this example.

99. D — Opportunity cost is the value of the next-best alternative forgone when a choice is made under scarcity. If the town selects the pool repair, the sacrificed alternative is purchasing the snowplows. Opportunity cost is not every possible future expense, a usage count, or the combined price of mutually exclusive choices. It highlights tradeoffs created by limited resources.

100. B — In representative democracy, citizens choose representatives through elections and those officials exercise governmental authority subject to constitutional and legal limits. Hereditary rule, foreign rule without consent, and a system in which judges select all political leaders do not express representative self-government. Elections provide a mechanism for political participation and accountability between citizens and public officials.

101. D — Federalism allocates governmental authority between the national government and the states rather than placing all public power at one level. A state can exercise powers within its sphere while the national government exercises constitutionally assigned national powers. The other choices erase the independent roles of states or incorrectly treat local rules as automatic federal law.

102. B — The First Amendment protects freedoms concerning religion, speech, press, peaceful assembly, and petition. Freedom of speech therefore fits the amendment directly. It does not guarantee free housing, require identical local laws, or prohibit taxation. Recognizing the amendment's protected civil liberties helps distinguish constitutional rights from policy choices not stated in that provision.

103. A — New England's geography included a long coastline, useful harbors, forests that supplied timber, and direct access to Atlantic commerce. Those conditions supported fishing, shipbuilding, and trade. Tropical plantation agriculture was better suited to warmer regions, and New England was not isolated from the ocean. Abundant timber, rather than a ban on its use, supported ship construction.

104. C — A major colonial grievance concerned taxation and political representation. Protesters argued that Parliament was imposing taxes on people who did not elect representatives to that legislature, contributing to the slogan about taxation without representation. The other choices reverse the historical relationship by describing parliamentary representation, an end to taxation, or independence granted before the Revolutionary conflict.

105. D — The Louisiana Purchase added a vast territory west of the Mississippi River to the United States, substantially increasing the nation's land area and encouraging exploration and settlement. It did not eliminate every European claim in North America, transfer the original states to France, or prohibit western exploration. The acquisition instead expanded U.S. geographic and political possibilities.

106. B — Industrialization expanded factory production and created concentrated demand for wage labor, contributing to urban growth as many workers moved near manufacturing centers. It did not eliminate wage labor or technological change; both became central features of industrial development. Although household production continued in some forms, manufacturing increasingly shifted toward mechanized workplaces and larger production systems.

107. C — The Fourteenth Amendment defines national and state citizenship for persons born or naturalized in the United States and includes due process and equal-protection provisions directed at states. The Second Amendment concerns arms, the Tenth addresses powers not delegated to the federal government, and the Twenty-second limits presidential terms. The citizenship and equal-protection language identifies the Fourteenth.

108. A — The Seneca Falls Convention became a landmark gathering in the nineteenth-century women's rights movement, where participants debated legal, social, and political inequalities and called for expanded rights, including voting rights. The other choices concern goals unrelated to the convention. Connecting reform events to the issues their participants addressed is central to chronological and thematic historical understanding.

109. C — The Great Migration refers to the movement of millions of African Americans away from the South to cities in other U.S. regions during the twentieth century, driven by factors including employment opportunities and escape from racial oppression. The distractors describe unrelated or invented movements. Migration history is best understood by considering both push factors and destination opportunities.

110. A — The New Deal was the broad set of federal programs and reforms introduced during the Great Depression to address unemployment, economic instability, relief needs, and financial-system problems. The War of 1812, Gold Rush, and Alaska purchase occurred in different periods and contexts. Chronology is a useful check because the New Deal belongs specifically to the 1930s economic crisis.

111. B — A recording created by a participant during the movement is a primary source because it provides evidence originating in the period under study. Textbooks, encyclopedia entries, and later historical analyses are secondary sources that synthesize or interpret earlier evidence. Primary sources still require evaluation for purpose and perspective; being firsthand does not automatically make a source complete or unbiased.

112. D — Conflicting sources are a reason to investigate further, not to abandon inquiry. Historians corroborate claims with additional evidence and analyze how audience, purpose, position, and access to information may shape each account. Length and publication order do not guarantee accuracy. Careful comparison can reveal both shared facts and reasons for differences in interpretation or emphasis.

113. A — On a traditional color wheel, blue and orange are complementary colors positioned opposite one another, so placing them together creates strong hue contrast. Red-orange and yellow-orange are adjacent to orange and therefore more analogous, while orange on orange offers little hue contrast. Artists can use complementary relationships to create emphasis and visual energy.

114. D — A rest is a notation symbol specifying a duration during which no note is sounded, so it represents measured silence within the rhythm. Pitch changes are shown by note placement or accidentals, instrument family is not determined by a rest, and a gradual increase in loudness is a crescendo. Rests organize timing just as note values do.

115. B — Stage directions communicate non-dialogue information that guides performance, including actions, entrances, exits, setting details, pauses, and sometimes manner of delivery. They help actors and directors interpret how the written scene should be staged. Audience lists and ticket prices are administrative matters, while dialogue remains the characters' spoken language rather than being replaced by directions.

116. C — Muscular endurance is the capacity to repeat contractions or sustain muscular work over time without relying on a single maximal effort. Repeated controlled squats provide ongoing resistance and therefore train that capacity. One all-out lift emphasizes maximal strength, while eye tracking and breath-holding do not provide repeated resistance work for the major muscles used in the exercise.

117. A — Handwashing with soap and water removes many disease-causing microorganisms and interrupts common routes of transmission, especially before eating and after contact with potentially contaminated material. Sharing drink containers, refusing to clean high-touch surfaces, and coughing into bare hands can increase opportunities for germs to spread. Prevention combines hygiene with other context-appropriate health practices.

118. B — Constructive conflict resolution uses respectful communication, active listening, clear expression of needs, and collaborative problem solving. I-statements can describe concerns without assigning blame, and negotiation can produce a workable task division. Insults, avoidance with secret changes, and rumor spreading escalate conflict or undermine trust rather than addressing the underlying disagreement directly.

119. C — A fixed expense usually remains relatively stable from one billing period to the next, making monthly rent a typical example. Electricity cost varies with consumption, rates, and seasonal needs, so it is generally variable. Both are expenses rather than income and belong in a realistic budget because planning requires accounting for recurring fixed and changing costs.

120. D — An informational interview provides firsthand career information about responsibilities, preparation, skills, work settings, and challenges without requiring the student to commit to the occupation. That evidence can guide later course and career decisions. Choosing from a title alone, focusing on superficial details, or pursuing licensure before understanding the field skips essential exploration and planning.