MIDDLE LEVEL SSAT PRACTICE TEST 3

Writing Sample

Time – 25 Minutes

Directions: Schools would like to get to know you better through an essay or story you write. Please select and respond to one of the two topics provided. If you choose Topic A, write a creative story. If you choose Topic B, write a personal essay. Fill in the circle next to your topic choice.

Topic A: The package arrived on my doorstep with no return address, just my name written in handwriting I didn't recognize. When I opened it, I couldn't believe what was inside.

Topic B: Think about a time when you had to make a difficult choice between two things you valued. What did you choose, and looking back, do you think you made the right decision? What did this experience teach you about decision-making?

Section 1: Quantitative

Time – 30 Minutes

25 Questions

Directions: Following each problem in this section, there are five suggested answers. Work each problem in your head or in the blank space provided. Then select the best answer.

1. What is 156 ÷ 13?

A. 11

B. 12

C. 13

D. 14

E. 15

2. If m + 24 = 67, then m =

A. 91

B. 24

C. 67

D. 43

E. 33

3. A sequence follows the rule: multiply the previous number by 3. If the first number is 2, what is the 4th number?

A. 54

B. 18

C. 27

D. 6

E. 162

4. What is the area of a rectangle with length 13 and width 6?

A. 19

B. 38

C. 72

D. 26

E. 78

5. If 7x = 84, then x =

A. 77

B. 91

C. 12

D. 14

E. 11

6. A school has 45 students. If 3/5 of them play sports, how many students play sports?

A. 15

B. 27

C. 18

D. 30

E. 9

7. What is $40 - 8 \times 3 + 5$?

A. 101

B. 45

C. 96

D. 21

E. 17

8. A spinner has 8 equal sections numbered 1 through 8. What is the probability of landing on a number greater than 5?

A. 3/8

B. 1/2

C. 5/8

D. 1/4

E. 2/8

9. Which of the following is equivalent to 0.6?

A. 6/100

B. 60/10

C. 1/6

D. 6/10

E. 3/5

10. A circle has a diameter of 18. What is its radius?

A. 6

B. 36

C. 9

D. 12

E. 27
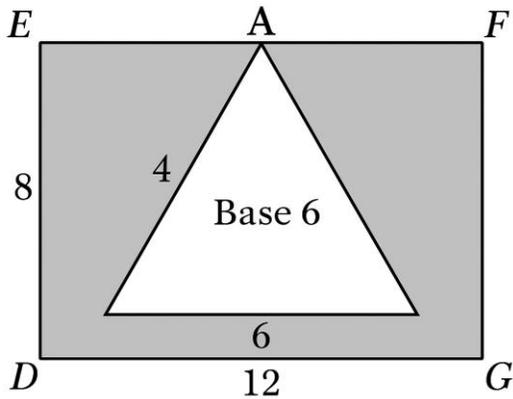
11. If $3y + 7 = 28$, then $y =$

A. 35

B. 7

C. 21

D. 10

E. 8

12. A jacket originally costs $80. It's now on sale for 30% off. What is the sale price?

A. $50

B. $60

C. $24

D. $56

E. $70

13. What is $11^2 - 9^2$?

A. 40

B. 2

C. 4

D. 121

E. 20

14. In the figure shown, triangle ABC is inside rectangle DEFG. What is the area of the shaded region (the rectangle minus the triangle)?

A. 96

B. 72

C. 12

D. 24

E. 84

15. If $b > 50$ and $b < 55$, which could NOT be the value of b?

A. 51

B. 52.5

C. 55

D. 54

E. 53

16. A recipe requires 4 eggs to make 20 cookies. How many eggs are needed to make 35 cookies?

A. 6

B. 7

C. 8

D. 5

E. 9

17. What is $7/9 - 2/9$?

A. 5/18

B. 9/9

C. 2/3

D. 5/9

E. 7/18

18. Round 4,562 to the nearest ten.

A. 4,560

B. 4,570

C. 4,500

D. 4,600

E. 4,550

19. What is the least common multiple (LCM) of 8 and 12?

A. 4

B. 96

C. 12

D. 8

E. 24

20. If the pattern continues: 3, 6, 12, 24, ___, what is the next number?

A. 30

B. 36

C. 48

D. 42

E. 28

21. A triangle has a base of 16 and a height of 7. What is its area?

A. 112

B. 56

C. 23

D. 32

E. 46

22. What is 45% of 120?

A. 45

B. 50

C. 60

D. 54

E. 48

23. If $11 \times p = 132$, then $p =$

A. 12

B. 11

C. 10

D. 143

E. 121

24. A number is divided by 4, then 6 is added. The result is 13. What is the number?

A. 76

B. 34

C. 52

D. 46

E. 28

25. The ratio of apples to bananas in a basket is 7:3. If there are 21 apples, how many bananas are there?

A. 7

B. 12

C. 9

D. 15

E. 6

Section 2: Reading

Time – 40 Minutes

40 Questions

Directions: Read each passage carefully and then answer the questions about it. For each question, decide on the basis of the passage which one of the choices best answers the question.

Passage 1

Earthquakes occur when massive rock plates beneath Earth's surface suddenly shift. These plates, called tectonic plates, are constantly moving—usually just inches per year. Most of the time, friction keeps them locked together. When stress builds up enough to overcome this friction, the plates suddenly slip, releasing energy as seismic waves that shake the ground.

Scientists measure earthquake strength using the Richter scale. Each whole number increase represents a tenfold increase in amplitude. An earthquake measuring 6.0 is ten times stronger than one measuring 5.0, and one hundred times stronger than a 4.0 earthquake.

The most earthquake-prone areas lie along plate boundaries. The "Ring of Fire" around the Pacific Ocean is particularly active, experiencing about 90% of the world's earthquakes. While scientists can identify high-risk zones, predicting exactly when earthquakes will strike remains impossible. The best protection is preparation: earthquake-resistant buildings, emergency supplies, and practiced response plans.

1. Tectonic plates are described as moving

A. inches per year

B. feet per day

C. miles per hour

D. rapidly and constantly

E. only during earthquakes

2. According to the Richter scale, an earthquake measuring 7.0 is how many times stronger than a 6.0 earthquake?

A. 2 times

B. 7 times

C. 10 times

D. 100 times

E. 1,000 times

3. The "Ring of Fire" experiences approximately what percentage of the world's earthquakes?

A. 50%

B. 75%

C. 80%

D. 85%

E. 90%

4. According to the passage, scientists currently

A. can predict earthquakes accurately

B. cannot predict exactly when earthquakes will occur

C. have stopped all earthquake research

D. know earthquakes will never happen again

E. can prevent earthquakes

5. The passage suggests the best earthquake protection includes

A. moving away from all coasts

B. ignoring the danger

C. avoiding all buildings

D. preparation and planning

E. stopping plate movement

Passage 2

Liam stared at the acceptance letter, his heart sinking. The prestigious music academy wanted him—his dream since age five. But the letter arrived the same day his dad sat him down for "the talk."

"The company's downsizing," Dad had said, voice strained. "I'll find work, but money will be tight."

The academy cost $15,000 a year. Liam had a partial scholarship, but his family would still need to pay $8,000 annually. He looked at the list of community colleges on his desk—practical, affordable, close to home where he could help out.

"What's that?" His younger sister Maya peeked over his shoulder. "Is that from the academy?" Her eyes widened. "Liam, you have to go! You've worked so hard!"

"It's expensive, Maya."

"So what? You can't give up your dream because of money. Dad wouldn't want that."

Liam wasn't so sure. But Maya's fierce expression reminded him why he loved music in the first place—because it made people feel something. Maybe his family needed him to chase this dream more than they needed him to play it safe.

6. Liam's main conflict is between

A. music and sports

B. two different schools

C. his dream and his family's financial situation

D. staying home and moving away

E. his sister's wishes and his father's demands

7. The academy would cost Liam's family

A. $8,000 per year

B. $15,000 per year

C. nothing with the scholarship

D. $7,000 per year

E. $23,000 per year

8. Maya's reaction to the acceptance letter shows she

A. is jealous of Liam

B. doesn't understand money

C. wants Liam far away

D. dislikes the academy

E. believes Liam should pursue his dream

9. Liam's father's company is

A. expanding rapidly

B. downsizing

C. closing permanently

D. moving locations

E. hiring more workers

10. By the end of the passage, Liam is beginning to think

A. he should definitely reject the offer

B. music isn't important

C. Maya is being selfish

D. pursuing his dream might be important for his family too

E. he should quit music entirely

Passage 3

The Great Library of Alexandria, founded around 300 BCE in Egypt, was the ancient world's most important center of learning. Scholars estimate it held between 400,000 and 700,000 scrolls covering

mathematics, astronomy, medicine, literature, and philosophy. Thinkers from across the Mediterranean world came to study there.

The library's destruction remains one of history's great mysteries. No single event destroyed it. Instead, it declined gradually through several incidents: Julius Caesar's siege in 48 BCE caused fires that damaged part of the collection. Later conflicts and neglect continued the destruction. By 642 CE, the library had vanished completely.

The loss was catastrophic for human knowledge. Countless ancient texts disappeared forever, including works by brilliant minds whose names we'll never know. Scientists estimate that the library's destruction set back scientific progress by centuries. Today, the loss reminds us how fragile knowledge is and why preserving information matters.

11. The Great Library of Alexandria was founded around

A. 300 BCE

B. 48 BCE

C. 642 CE

D. 300 CE

E. 100 BCE

12. The library held approximately

A. 1,000 scrolls

B. 50,000 scrolls

C. 400,000-700,000 scrolls

D. 10 million scrolls

E. 100,000 scrolls

13. According to the passage, the library was destroyed by

A. one massive fire

B. an earthquake

C. a flood

D. invading armies in a single attack

E. gradual damage from multiple events

14. Julius Caesar's siege occurred in

A. 300 BCE

B. 48 BCE

C. 642 CE

D. 100 CE

E. 500 BCE

15. The passage suggests the library's loss

A. didn't matter much

B. only affected Egypt

C. was quickly recovered

D. set back scientific progress by centuries

E. has been completely forgotten

Passage 4

Bioluminescence is the ability of living organisms to produce light through chemical reactions. This remarkable phenomenon occurs in many marine creatures, including jellyfish, squid, and certain fish species. Some land animals like fireflies also possess this ability.

The light is created when a substance called luciferin reacts with oxygen, catalyzed by an enzyme called luciferase. Different species produce different colors—most marine organisms emit blue or green light because these colors travel farthest through water.

Organisms use bioluminescence for various purposes. Some deep-sea fish use lights to attract prey—the anglerfish dangles a glowing lure to draw smaller fish close. Others use light for communication, like fireflies flashing patterns to attract mates. Some squid emit bright clouds of bioluminescent fluid to confuse predators, similar to how other animals use ink.

Scientists are now using bioluminescence in medical research. By attaching luciferase to specific cells, researchers can track biological processes that were previously invisible, leading to advances in understanding diseases.

16. Bioluminescence is produced through

A. chemical reactions

B. absorbed sunlight

C. heat generation

D. electrical currents

E. magnetic fields

17. Most marine bioluminescence appears

A. red or orange

B. yellow or white

C. blue or green

D. purple or pink

E. black or brown

18. The anglerfish uses bioluminescence to

A. communicate with others

B. hide from predators

C. navigate in darkness

D. scare enemies

E. attract prey

19. Fireflies use bioluminescent flashing primarily for

A. finding food

B. attracting mates

C. defending territory

D. navigating

E. staying warm

20. Scientists use bioluminescence in medical research to

A. create new light sources

B. make medicines glow

C. power medical equipment

D. track biological processes

E. replace microscopes

Passage 5

In 1848, a railroad worker named Phineas Gage suffered a bizarre accident. An explosion drove a large iron rod completely through his skull, entering below his left cheekbone and exiting through the top of his head. Remarkably, Gage survived. He remained conscious, walked to a cart, and rode to town to see a doctor.

Even more remarkable were the changes to his personality. Before the accident, Gage was responsible, hardworking, and well-liked. Afterward, he became impulsive, unreliable, and unable to plan for the future. His intelligence and memory remained intact, but his personality had fundamentally changed.

Gage's case became crucial for neuroscience. It provided early evidence that different brain regions control different functions, particularly that the frontal lobe plays a key role in personality, decision-making, and social behavior. The iron rod had damaged this area specifically.

Today, Gage's skull and the iron rod are preserved at Harvard Medical School. His case reminds us that who we are—our personality and behavior—is intimately connected to the physical structure of our brain.

21. The iron rod passed through Gage's head

A. from side to side

B. from back to front

C. from bottom to top

D. horizontally

E. without entering the brain

22. After the accident, Gage's personality became

A. impulsive and unreliable

B. more intelligent

C. exactly the same

D. more cautious

E. more hardworking

23. Gage's case was important for neuroscience because it showed

A. the brain doesn't affect personality

B. all brain damage is fatal

C. memory and personality are unrelated

D. injuries always improve behavior

E. different brain regions control different functions

24. The accident damaged Gage's

A. memory

B. frontal lobe

C. vision

D. hearing

E. speech

25. Gage's skull is currently preserved at

A. a cemetery

B. a private collection

C. the Smithsonian

D. Harvard Medical School

E. Oxford University

Passage 6

Plastic pollution has become one of the ocean's greatest threats. Every year, approximately 8 million tons of plastic waste enter the oceans. This plastic doesn't decompose—instead, it breaks down into smaller pieces called microplastics that float in the water and accumulate on the ocean floor.

Marine animals often mistake plastic for food. Sea turtles eat plastic bags thinking they're jellyfish. Seabirds feed plastic pieces to their chicks. Fish consume microplastics that then enter the human food chain when we eat seafood. The Great Pacific Garbage Patch, a massive accumulation of plastic debris, now covers an area twice the size of Texas.

However, solutions exist. Many countries are banning single-use plastics. Companies are developing biodegradable alternatives. Ocean cleanup organizations are designing systems to remove existing plastic. Individual actions matter too: using reusable bags and bottles, properly recycling, and choosing products with minimal plastic packaging all help.

The ocean's health affects everyone. Since oceans produce over half the world's oxygen and regulate climate, protecting them from plastic pollution isn't just about saving sea life—it's about protecting humanity's future.

26. Approximately how much plastic waste enters oceans annually?

A. 1 million tons

B. 5 million tons

C. 8 million tons

D. 15 million tons

E. 20 million tons

27. Microplastics are

A. small pieces of broken-down plastic

B. a type of sea creature

C. plastic that dissolves

D. tiny organisms

E. a cleaning product

28. Sea turtles often eat plastic bags because they resemble

A. fish

B. seaweed

C. coral

D. rocks

E. jellyfish

29. The Great Pacific Garbage Patch is approximately

A. the size of California

B. twice the size of Texas

C. the size of Rhode Island

D. the size of the Atlantic Ocean

E. the size of a football field

30. The passage suggests individual actions to reduce plastic pollution include

A. moving away from oceans

B. stopping all ocean activities

C. avoiding all seafood

D. using reusable bags and bottles

E. giving up recycling

Passage 7

I never meant to eavesdrop. I was shelving books in the library when I heard Ms. Patterson's voice on the other side of the bookcase.

"I'm sorry, Robert," she said softly. "But I have to report you for plagiarism. The essay you submitted was copied almost word-for-word from an online source."

Robert—I recognized his voice immediately. He was the star of our debate team, heading to state finals next week. "But Ms. Patterson, if you report this now, I'll be suspended. I'll miss the championship. Please, just give me zero on the essay. I'll accept that."

"It's not about punishment, Robert. It's about integrity. If I let this slide, what am I teaching you?"

"You're teaching me that one mistake destroys everything I've worked for!"

"No," Ms. Patterson said firmly. "I'm teaching you that choices have consequences. You chose to cheat. That destroyed what you worked for, not me reporting it."

I heard footsteps retreating, then silence. I stood there, thinking about last month when I'd found a lost wallet containing $200. I'd returned it, even though I desperately needed money for new basketball shoes. At the time, doing the right thing felt like losing. Now, listening to Robert, I realized I hadn't lost anything. I'd kept something much more valuable.

31. The narrator overhears the conversation while

A. shelving books

B. studying for a test

C. hiding intentionally

D. walking by the door

E. cleaning the library

32. Robert plagiarized

A. a book report

B. a science project

C. an essay

D. a poem

E. a presentation

33. Robert will miss the championship if suspended because

A. he'll be injured

B. he'll be traveling

C. he'll be grounded

D. he'll move away

E. the timing of the suspension

34. Ms. Patterson believes the situation is about

A. punishment

B. integrity and consequences

C. protecting the school

D. being mean to Robert

E. winning the debate

35. The narrator's experience with the wallet taught them

A. money isn't important

B. being honest is foolish

C. losing wallets is common

D. integrity is valuable

E. basketball isn't worth it

Passage 8

Sleep is far more important than many people realize. During sleep, the brain doesn't simply rest—it performs crucial maintenance tasks. It consolidates memories, moving information from short-term to long-term storage. It removes toxic waste products that build up during waking hours. It strengthens connections between neurons that were used during the day.

Teenagers need 8-10 hours of sleep nightly, but most get far less. Lack of sleep impairs judgment, slows reaction time, and weakens the immune system. Students who sleep poorly perform worse academically, not because they're less intelligent, but because their brains haven't had time to process and store what they learned.

The modern world isn't sleep-friendly. Artificial light from screens suppresses melatonin, the hormone that signals bedtime. Caffeine remains in the system for hours. Busy schedules push sleep lower on the priority list. Yet sacrificing sleep to study more is counterproductive—exhausted brains learn less efficiently than rested ones.

Improving sleep starts with simple changes: maintaining consistent sleep and wake times, avoiding screens an hour before bed, and keeping bedrooms dark and cool. These small adjustments can dramatically improve both sleep quality and daytime functioning.

36. During sleep, the brain

A. performs maintenance and consolidates memories

B. shuts down completely

C. works harder than when awake

D. stops all activity

E. only rests

37. Teenagers need approximately how many hours of sleep nightly?

A. 4-6 hours

B. 6-8 hours

C. 8-10 hours

D. 10-12 hours

E. 12-14 hours

38. According to the passage, artificial light from screens affects sleep by

A. making people more alert

B. improving melatonin production

C. having no effect

D. making rooms brighter

E. suppressing melatonin

39. Students who sleep poorly perform worse academically primarily because

A. they're less intelligent

B. their brains haven't processed information properly

C. they're lazy

D. they don't care about school

E. they have poor teachers

40. The passage suggests that sacrificing sleep to study more is

A. very effective

B. necessary for success

C. recommended by doctors

D. counterproductive

E. the best strategy

Section 3: Verbal

Time – 30 Minutes

60 Questions

Directions: This section consists of two different types of questions. There are directions and a sample question for each type.

SYNONYMS (Questions 1-30)

Directions: Each question consists of one word followed by five words or phrases. Select the word or phrase whose meaning is closest to the word in capital letters.

1. MEEK:

A. bold

B. timid

C. loud

D. angry

E. fierce

2. HALT:

A. continue

B. proceed

C. advance

D. stop

E. start

3. DENSE:

A. thin

B. light

C. empty

D. hollow

E. thick

4. CHERISH:

A. treasure

B. discard

C. throw

D. reject

E. hate

5. TRANQUIL:

A. noisy

B. chaotic

C. peaceful

D. busy

E. stormy

6. WITHER:

A. bloom

B. grow

C. flourish

D. expand

E. shrivel

7. DILIGENT:

A. lazy

B. hardworking

C. careless

D. sloppy

E. idle

8. HINDER:

A. help

B. assist

C. support

D. obstruct

E. aid

9. LIBERTY:

A. freedom

B. prison

C. captivity

D. slavery

E. restriction

10. MEDIOCRE:

A. excellent

B. outstanding

C. average

D. superior

E. exceptional

11. BLUNT:

A. sharp

B. pointed

C. keen

D. fine

E. dull

12. TRANQUIL:

A. violent

B. calm

C. stormy

D. rough

E. turbulent

13. HUMBLE:

A. modest

B. arrogant

C. proud

D. boastful

E. conceited

14. PECULIAR:

A. normal

B. ordinary

C. common

D. strange

E. typical

15. TRIUMPH:

A. defeat

B. loss

C. victory

D. failure

E. surrender

16. HOSTILE:

A. friendly

B. unfriendly

C. kind

D. warm

E. welcoming

17. PLEDGE:

A. break

B. deny

C. refuse

D. reject

E. promise

18. SLUMBER:

A. sleep

B. wake

C. rise

D. awaken

E. stir

19. HARMONY:

A. peace

B. conflict

C. war

D. discord

E. disagreement

20. HASTY:

A. slow

B. careful

C. quick

D. deliberate

E. cautious

21. GENUINE:

A. fake

B. false

C. artificial

D. authentic

E. counterfeit

22. PERSEVERE:

A. quit

B. stop

C. surrender

D. abandon

E. persist

23. BENEVOLENT:

A. cruel

B. kind

C. mean

D. harsh

E. evil

24. HARSH:

A. gentle

B. soft

C. severe

D. mild

E. tender

25. MEAGER:

A. scanty

B. abundant

C. plentiful

D. generous

E. ample

26. DEPART:

A. arrive

B. come

C. stay

D. remain

E. leave

27. HAZARD:

A. safety

B. security

C. protection

D. danger

E. shelter

28. KEEN:

A. dull

B. sharp

C. blunt

D. slow

E. weak

29. VITAL:

A. essential

B. unnecessary

C. unimportant

D. trivial

E. insignificant

30. SERENE:

A. agitated

B. disturbed

C. calm

D. troubled

E. anxious

ANALOGIES (Questions 31-60)

Directions: The following questions ask you to find relationships between words. For each question, select the answer choice that best completes the meaning of the sentence.

31. Seed is to garden as

A. fish is to ocean

B. bird is to nest

C. idea is to mind

D. book is to library

E. car is to garage

32. Needle is to thread as

A. hammer is to nail

B. scissors is to paper

C. knife is to fork

D. spoon is to soup

E. pen is to ink

33. Freezer is to cold as

A. oven is to hot

B. refrigerator is to food

C. microwave is to quick

D. stove is to cook

E. toaster is to bread

34. Author is to novel as

A. singer is to song

B. painter is to museum

C. teacher is to school

D. composer is to symphony

E. actor is to theater

35. Egg is to shell as

A. nut is to tree

B. grape is to skin

C. banana is to yellow

D. orange is to juice

E. apple is to core

36. Accelerate is to speed as

A. brake is to stop

B. turn is to corner

C. amplify is to volume

D. reduce is to size

E. increase is to decrease

37. Mountain is to valley as

A. hill is to plain

B. river is to stream

C. ocean is to lake

D. peak is to base

E. peak is to trough

38. Needle is to sew as

A. hammer is to build

B. scissors is to cut

C. spoon is to eat

D. pencil is to erase

E. brush is to paint

39. Laugh is to comedy as

A. sleep is to bed

B. eat is to food

C. run is to race

D. cry is to tragedy

E. dance is to music

40. Root is to tree as

A. stem is to flower

B. foundation is to building

C. wheel is to car

D. wing is to bird

E. fin is to fish

41. Telescope is to distant as

A. binoculars is to far

B. glasses is to near

C. microscope is to small

D. camera is to picture

E. mirror is to reflection

42. Grateful is to gratitude as

A. angry is to anger

B. happy is to sad

C. joyful is to sorrow

D. fearful is to brave

E. anxious is to anxiety

43. Rehearsal is to performance as

A. practice is to game

B. study is to rest

C. work is to play

D. effort is to laziness

E. training is to competition

44. Kiln is to pottery as

A. easel is to painting

B. stage is to play

C. canvas is to art

D. oven is to bread

E. frame is to picture

45. Drought is to rain as

A. storm is to calm

B. famine is to food

C. flood is to water

D. heat is to cold

E. winter is to snow

46. Sanctuary is to refuge as

A. prison is to freedom

B. hospital is to illness

C. fortress is to protection

D. school is to education

E. library is to books

47. Thread is to fabric as

A. brick is to mortar

B. stone is to wall

C. wood is to forest

D. metal is to iron

E. strand is to rope

48. Lens is to camera as

A. dial is to clock

B. key is to lock

C. button is to shirt

D. window is to house

E. door is to room

49. Quarantine is to disease as

A. study is to knowledge

B. exercise is to health

C. medicine is to cure

D. isolation is to spread

E. vaccine is to prevention

50. Boast is to modesty as

A. praise is to criticism

B. conceal is to honesty

C. whisper is to volume

D. complain is to gratitude

E. argue is to agreement

51. Drought is to arid as

A. rain is to wet

B. snow is to cold

C. flood is to wet

D. wind is to fast

E. storm is to loud

52. Referee is to game as

A. teacher is to student

B. coach is to team

C. player is to sport

D. judge is to trial

E. moderator is to debate

53. Melody is to song as

A. plot is to story

B. chapter is to book

C. verse is to poem

D. scene is to play

E. paragraph is to essay

54. Magnify is to microscope as

A. reflect is to mirror

B. measure is to ruler

C. weigh is to scale

D. amplify is to microphone

E. record is to camera

55. Shiver is to cold as

A. sweat is to hot

B. sweat is to heat

C. shake is to fear

D. yawn is to tired

E. sneeze is to sick

56. Apprentice is to journeyman as

A. student is to graduate

B. child is to adult

C. novice is to expert

D. beginner is to professional

E. trainee is to master

57. Signature is to document as

A. stamp is to letter

B. seal is to envelope

C. title is to book

D. label is to jar

E. fingerprint is to identity

58. Nomad is to wander as

A. settler is to stay

B. traveler is to journey

C. explorer is to discover

D. tourist is to visit

E. migrant is to move

59. Eclipse is to sun as

A. cloud is to sky

B. shadow is to light

C. night is to day

D. obstruction is to view

E. darkness is to brightness

60. Quarry is to stone as

A. forest is to tree

B. mine is to ore

C. ocean is to fish

D. farm is to crop

E. garden is to flower

Section 4: Quantitative

Time – 30 Minutes

25 Questions

Directions: Following each problem in this section, there are five suggested answers. Work each problem in your head or in the blank space provided. Then select the best answer.

1. What is $168 \div 14$?

A. 11

B. 10

C. 12

D. 13

E. 14

2. If $p - 19 = 38$, then $p =$

A. 57

B. 19

C. 38

D. 47

E. 67

3. A sequence follows the rule: subtract 6 from the previous number. If the first number is 50, what is the 5th number?

A. 44

B. 32

C. 38

D. 20

E. 26

4. What is the area of a rectangle with length 14 and width 9?

A. 23

B. 126

C. 46

D. 140

E. 63

5. If 9x = 108, then x =

A. 99

B. 117

C. 11

D. 12

E. 10

6. A box contains 60 marbles. If 2/3 of them are blue, how many are NOT blue?

A. 40

B. 30

C. 20

D. 15

E. 10

7. What is $50 - 6 \times 5 + 8$?

A. 28

B. 228

C. 63

D. 220

E. 30

8. A bag contains 4 green balls and 8 yellow balls. What is the probability of selecting a green ball?

A. 1/2

B. 4/8

C. 8/12

D. 4/12

E. 1/3

9. Which of the following is equivalent to 0.45?

A. 45/10

B. 9/20

C. 4/5

D. 1/4

E. 45/1000

10. A circle has a radius of 11. What is its diameter?

A. 5.5

B. 33

C. 11

D. 22

E. 44

11. If $5y + 9 = 44$, then $y =$

A. 35

B. 9

C. 7

D. 8

E. 53

12. A computer originally costs $600. It's now on sale for 25% off. What is the sale price?

A. $450

B. $500

C. $150

D. $575

E. $425

13. What is $13^2 - 10^2$?

A. 3

B. 69

C. 100

D. 169

E. 69

14. If $z > 60$ and $z < 65$, which could NOT be the value of z?

A. 61

B. 65

C. 63

D. 62

E. 64

15. A recipe requires 3 tablespoons of butter to make 18 muffins. How many tablespoons are needed for 30 muffins?

A. 4

B. 6

C. 3

D. 5

E. 7

16. What is 8/11 − 3/11?

A. 5/22

B. 11/11

C. 5/11

D. 8/22

E. 3/11

17. Round 6,847 to the nearest hundred.

A. 6,900

B. 6,800

C. 7,000

D. 6,850

E. 6,840

18. What is the least common multiple (LCM) of 6 and 8?

A. 2

B. 48

C. 6

D. 8

E. 24

19. If the pattern continues: 5, 10, 20, 40, ___, what is the next number?

A. 50

B. 80

C. 60

D. 45

E. 100

20. A triangle has a base of 18 and a height of 11. What is its area?

A. 29

B. 198

C. 58

D. 99

E. 36

21. What is 35% of 140?

A. 35

B. 45

C. 49

D. 40

E. 50

22. If $14 \times q = 168$, then $q =$

A. 12

B. 13

C. 11

D. 14

E. 154

23. A number is multiplied by 5, then 8 is subtracted. The result is 37. What is the number?

A. 7

B. 8

C. 10

D. 6

E. 9

24. The ratio of red balls to blue balls in a jar is 4:7. If there are 16 red balls, how many blue balls are there?

A. 20

B. 28

C. 24

D. 32

E. 12

25. What is $20 + 4^2 - 7$?

A. 27

B. 25

C. 31

D. 29

E. 17

ANSWERS AND EXPLANATIONS

Quantitative

1. B: 12 - Divide 156 by 13: 156 ÷ 13 = 12. This is a division fact from the 13 times table. Check: 13 × 12 = 156 ✓ Knowing multiplication facts helps solve division problems quickly.

2. D: 43 - Solve m + 24 = 67 by subtracting 24 from both sides: m = 67 − 24 = 43. Check: 43 + 24 = 67 ✓ To undo addition, use subtraction.

3. A: 54 - The sequence multiplies by 3 each time. 1st number: 2. 2nd number: 2 × 3 = 6. 3rd number: 6 × 3 = 18. 4th number: 18 × 3 = 54. This is a geometric sequence with common ratio 3.

4. E: 78 - Area of a rectangle = length × width = 13 × 6 = 78 square units. Don't confuse with perimeter, which would be 2(13 + 6) = 38. Area measures the space inside.

5. C: 12 - Solve 7x = 84 by dividing both sides by 7: x = 84 ÷ 7 = 12. Check: 7 × 12 = 84 ✓ Division is the inverse of multiplication.

6. B: 27 - To find 3/5 of 45 students, multiply: (3/5) × 45. Divide 45 by 5 first: 45 ÷ 5 = 9. Then multiply by 3: 9 × 3 = 27 students play sports.

7. D: 21 - Follow order of operations (PEMDAS). Multiply first: 8 × 3 = 24. Then work left to right: 40 − 24 = 16, then 16 + 5 = 21. Multiplication must be done before addition and subtraction.

8. A: 3/8 - Numbers greater than 5 on the spinner are: 6, 7, and 8 (that's 3 numbers out of 8 possible outcomes). Probability = 3/8. Count favorable outcomes over total possible outcomes.

9. E: 3/5 - Convert 0.6 to a fraction: 0.6 = 6/10. Simplify by dividing both numerator and denominator by 2: 6 ÷ 2 = 3 and 10 ÷ 2 = 5, giving 3/5. Check: 3 ÷ 5 = 0.6 ✓

10. C: 9 - The radius of a circle is half the diameter. If diameter = 18, then radius = 18 ÷ 2 = 9. Remember: diameter goes all the way across, radius goes from center to edge (halfway).

11. B: 7 - Solve 3y + 7 = 28 in two steps. Subtract 7 from both sides: 3y = 21. Divide both sides by 3: y = 7. Check: 3(7) + 7 = 21 + 7 = 28 ✓

12. D: $56 - Calculate 30% off of $80. Method 1: Find discount: 0.30 × $80 = $24, then subtract: $80 − $24 = $56. Method 2: If 30% off, you pay 70%: 0.70 × $80 = $56.

13. A: 40 - Calculate each exponent first, then subtract. 11^2 = 11 × 11 = 121. Then 9^2 = 9 × 9 = 81. Finally subtract: 121 − 81 = 40. Exponents must be calculated before subtraction.

14. E: 84 - The shaded region equals the rectangle area minus the triangle area. Rectangle area: $12 \times 8 = 96$. Triangle area: $(6 \times 4) \div 2 = 12$. Shaded area $= 96 − 12 = 84$ square units.

15. C: 55 - The compound inequality $b > 50$ and $b < 55$ means b must be greater than 50 AND less than 55. This is a "could NOT" question. 55 does NOT satisfy $b < 55$ (55 is not less than 55; it's equal). All other choices fall between 50 and 55.

16. B: 7 - Set up a proportion: 4 eggs/20 cookies = x eggs/35 cookies. Cross-multiply: $4 \times 35 = 20 \times x$, so $140 = 20x$. Divide: $x = 7$ eggs. Or find eggs per cookie: $4/20 = 1/5$ egg per cookie, so $35 \times (1/5) = 7$ eggs.

17. D: 5/9 - When subtracting fractions with the same denominator, keep the denominator and subtract numerators: $7/9 − 2/9 = (7 − 2)/9 = 5/9$. The denominator stays 9; only subtract the numerators.

18. A: 4,560 - When rounding to the nearest ten, look at the ones digit. In 4,562, the ones digit is 2. Since $2 < 5$, round down: keep the tens digit as 6, making 4,560.

19. E: 24 - The LCM is the smallest number both numbers divide into evenly. List multiples: 8: 8, 16, 24, 32... and 12: 12, 24, 36... The first common multiple is 24. Verify: $24 \div 8 = 3$ ✓ and $24 \div 12 = 2$ ✓

20. C: 48 - Examine the pattern: 3 to 6 is ×2, 6 to 12 is ×2, 12 to 24 is ×2. Each number doubles. This is a geometric sequence with ratio 2. Next number: $24 \times 2 = 48$.

21. B: 56 - Area of a triangle $=$ (base $\times$ height) $\div 2 = (16 \times 7) \div 2 = 112 \div 2 = 56$ square units. You can also use formula A = ½bh. A triangle's area is always half that of a rectangle with the same base and height.

22. D: 54 - To find 45% of 120, multiply: $0.45 \times 120 = 54$. Mental math: 10% of 120 is 12, so 40% is 48 (4×12), and 5% is 6, giving $48 + 6 = 54$.

23. A: 12 - Solve $11 \times p = 132$ by dividing both sides by 11: $p = 132 \div 11 = 12$. Check: $11 \times 12 = 132$ ✓ Think "11 times what equals 132?"

24. E: 28 - Work backwards from the result. If the result is 13 after adding 6, then before adding the value was $13 − 6 = 7$. If dividing by 4 gave 7, the original number was $7 \times 4 = 28$. Check: $28 \div 4 = 7$, then $7 + 6 = 13$ ✓

25. C: 9 - The ratio 7:3 means for every 7 apples, there are 3 bananas. If there are 21 apples, find how many groups of 7: $21 \div 7 = 3$ groups. Each group has 3 bananas, so total bananas $= 3 \times 3 = 9$. Or proportion: $7/3 = 21/x$, cross multiply: $7x = 63$, so $x = 9$.

Reading

1. A: inches per year - The passage explicitly states: "These plates, called tectonic plates, are constantly moving—usually just inches per year." This slow but constant movement is specified in the first paragraph.

2. C: 10 times - The passage explains: "Each whole number increase represents a tenfold increase in amplitude." Therefore, a 7.0 is ten times stronger than a 6.0. The scale is logarithmic, not arithmetic.

3. E: 90% - The passage states: "The 'Ring of Fire' around the Pacific Ocean is particularly active, experiencing about 90% of the world's earthquakes." This specific percentage is clearly mentioned.

4. B: cannot predict exactly when earthquakes will occur - The passage concludes: "While scientists can identify high-risk zones, predicting exactly when earthquakes will strike remains impossible." They know where, but not when.

5. D: preparation and planning - The final sentence states: "The best protection is preparation: earthquake-resistant buildings, emergency supplies, and practiced response plans." Preparation is emphasized as the key protection.

6. C: his dream and his family's financial situation - Liam must choose between attending the expensive music academy (his dream) and staying home to help his financially struggling family. This internal conflict drives the narrative.

7. A: $8,000 per year - The passage specifies: "The academy cost $15,000 a year. Liam had a partial scholarship, but his family would still need to pay $8,000 annually." Despite the scholarship, $8,000 remains.

8. E: believes Liam should pursue his dream - Maya insists: "You can't give up your dream because of money. Dad wouldn't want that." Her fierce expression and words show she believes he should go.

9. B: downsizing - Dad explains: "The company's downsizing. I'll find work, but money will be tight." Downsizing means reducing employees, explaining the financial difficulties.

10. D: pursuing his dream might be important for his family too - The passage ends: "Maybe his family needed him to chase this dream more than they needed him to play it safe." Liam is reconsidering his initial inclination to give up the academy.

11. A: 300 BCE - The opening sentence states: "The Great Library of Alexandria, founded around 300 BCE in Egypt, was the ancient world's most important center of learning." The date is clearly specified.

12. C: 400,000-700,000 scrolls - The passage states: "Scholars estimate it held between 400,000 and 700,000 scrolls covering mathematics, astronomy, medicine, literature, and philosophy." This range represents different scholarly estimates.

13. E: gradual damage from multiple events - The passage explains: "No single event destroyed it. Instead, it declined gradually through several incidents" including Caesar's fires, later conflicts, and neglect. It wasn't one catastrophe.

14. B: 48 BCE - The passage specifies: "Julius Caesar's siege in 48 BCE caused fires that damaged part of the collection." This is one of several damaging events mentioned.

15. D: set back scientific progress by centuries - The passage states: "Scientists estimate that the library's destruction set back scientific progress by centuries." The loss of ancient knowledge had long-lasting consequences for human advancement.

16. A: chemical reactions - The opening sentence defines bioluminescence as "the ability of living organisms to produce light through chemical reactions." The chemical nature is fundamental to the phenomenon.

17. C: blue or green - The passage explains: "Different species produce different colors—most marine organisms emit blue or green light because these colors travel farthest through water." The physics of water transmission determines color.

18. E: attract prey - The passage states: "Some deep-sea fish use lights to attract prey—the anglerfish dangles a glowing lure to draw smaller fish close." The light acts as bait.

19. B: attracting mates - The passage mentions: "Others use light for communication, like fireflies flashing patterns to attract mates." Their bioluminescence serves a reproductive function.

20. D: track biological processes - The final paragraph explains: "By attaching luciferase to specific cells, researchers can track biological processes that were previously invisible." This tracking capability advances disease understanding.

21. C: from bottom to top - The passage describes: "entering below his left cheekbone and exiting through the top of his head." This clearly describes a bottom-to-top trajectory through the skull.

22. A: impulsive and unreliable - After the accident, "he became impulsive, unreliable, and unable to plan for the future," contrasting with his previous responsible nature. His personality fundamentally changed.

23. E: different brain regions control different functions - The passage states: "It provided early evidence that different brain regions control different functions, particularly that the frontal lobe plays a key role in personality." This localization of function was groundbreaking.

24. B: frontal lobe - The passage specifies: "The iron rod had damaged this area [the frontal lobe] specifically." This localized damage explained the personality changes while other functions remained intact.

25. D: Harvard Medical School - The passage concludes: "Today, Gage's skull and the iron rod are preserved at Harvard Medical School." This specific location is mentioned as the current home of these historical artifacts.

26. C: 8 million tons - The passage states: "Every year, approximately 8 million tons of plastic waste enter the oceans." This staggering figure is specified in the first paragraph.

27. A: small pieces of broken-down plastic - The passage explains: "This plastic doesn't decompose—instead, it breaks down into smaller pieces called microplastics." These fragments result from larger plastic breaking apart.

28. E: jellyfish - The passage provides this specific example: "Sea turtles eat plastic bags thinking they're jellyfish." The visual similarity causes this fatal confusion.

29. B: twice the size of Texas - The passage states: "The Great Pacific Garbage Patch, a massive accumulation of plastic debris, now covers an area twice the size of Texas." This comparison emphasizes its enormous scale.

30. D: using reusable bags and bottles - The passage lists individual actions: "using reusable bags and bottles, properly recycling, and choosing products with minimal plastic packaging all help." These practical steps reduce personal plastic consumption.

31. A: shelving books - The narrator explains: "I was shelving books in the library when I heard Ms. Patterson's voice on the other side of the bookcase." This activity placed them in position to overhear accidentally.

32. C: an essay - Ms. Patterson states: "The essay you submitted was copied almost word-for-word from an online source." The plagiarized work was specifically an essay.

33. E: the timing of the suspension - Robert says: "if you report this now, I'll be suspended. I'll miss the championship." The suspension would occur right before the state finals next week, preventing his participation.

34. B: integrity and consequences - Ms. Patterson explicitly states: "It's not about punishment, Robert. It's about integrity" and "I'm teaching you that choices have consequences." She frames it as a lesson about personal integrity.

35. D: integrity is valuable - The narrator reflects: "I realized I hadn't lost anything. I'd kept something much more valuable." Returning the wallet preserved their integrity, which they now recognize as more valuable than the money.

36. A: performs maintenance and consolidates memories - The passage explains: "During sleep, the brain doesn't simply rest—it performs crucial maintenance tasks. It consolidates memories, moving information from short-term to long-term storage." Sleep is active, not passive.

37. C: 8-10 hours - The passage specifies: "Teenagers need 8-10 hours of sleep nightly, but most get far less." This is the recommended range for adolescent sleep.

38. E: suppressing melatonin - The passage states: "Artificial light from screens suppresses melatonin, the hormone that signals bedtime." Screen light interferes with the body's natural sleep signals.

39. B: their brains haven't processed information properly - The passage explains students perform worse "not because they're less intelligent, but because their brains haven't had time to process and store what they learned." Sleep deprivation impairs learning processing, not intelligence.

40. D: counterproductive - The passage explicitly states: "Yet sacrificing sleep to study more is counterproductive—exhausted brains learn less efficiently than rested ones." Less sleep means less effective learning, making it self-defeating.

Verbal

1. B: timid - Meek and timid both mean quiet, gentle, and submissive, lacking confidence or assertiveness. "A meek person" and "a timid person" describe someone who is shy and easily frightened. Both indicate lack of boldness.

2. D: stop - Halt and stop both mean to cease movement or action, to come to a standstill. "Halt your progress" and "stop your progress" mean the same thing. Both indicate ending motion or activity.

3. E: thick - Dense and thick both mean closely compacted or crowded together, having parts close together. "Dense fog" and "thick fog" describe the same impenetrable mist. Both indicate concentration of matter.

4. A: treasure - Cherish and treasure both mean to hold dear, to value highly and care for lovingly. "I cherish this memory" and "I treasure this memory" express the same deep appreciation. Both indicate high value and care.

5. C: peaceful - Tranquil and peaceful both mean calm, quiet, and undisturbed, free from turmoil. "A tranquil lake" and "a peaceful lake" describe the same serene water. Both indicate absence of disturbance.

6. E: shrivel - Wither and shrivel both mean to dry up and become shrunken, to lose vitality and freshness. "The plants withered" and "the plants shriveled" describe the same deterioration. Both indicate drying and shrinking.

7. B: hardworking - Diligent and hardworking both mean showing persistent effort and dedication to tasks. "A diligent student" and "a hardworking student" describe someone who applies steady, earnest effort. Both emphasize consistent, careful work.

8. D: obstruct - Hinder and obstruct both mean to create difficulties or obstacles, to impede progress. "Don't hinder my work" and "don't obstruct my work" mean the same. Both indicate creating barriers or delays.

9. A: freedom - Liberty and freedom both mean the state of being free from oppressive restrictions, the power to act as one chooses. "Liberty and justice for all" uses liberty as "freedom and justice for all" would. Both indicate independence and autonomy.

10. C: average - Mediocre and average both mean of moderate or low quality, neither good nor bad. "A mediocre performance" and "an average performance" describe something unexceptional. Both indicate ordinary, middle-range quality.

11. E: dull - Blunt and dull both mean not sharp, having a thick edge or point. "A blunt knife" and "a dull knife" describe the same ineffective cutting tool. Both indicate lack of sharpness.

12. B: calm - Tranquil and calm both mean peaceful, quiet, and undisturbed, free from agitation. "A tranquil evening" and "a calm evening" describe the same peaceful time. Both indicate serenity and lack of disturbance.

13. A: modest - Humble and modest both mean having or showing a modest or low view of one's importance, not arrogant. "A humble person" and "a modest person" describe someone who doesn't boast. Both indicate lack of pride or pretension.

14. D: strange - Peculiar and strange both mean unusual or odd, different from what is normal or expected. "A peculiar smell" and "a strange smell" describe something unusual. Both indicate deviation from the normal.

15. C: victory - Triumph and victory both mean a great success or achievement, winning a battle or competition. "The team's triumph" and "the team's victory" describe the same successful outcome. Both indicate winning or succeeding.

16. B: unfriendly - Hostile and unfriendly both mean showing opposition or dislike, not friendly or welcoming. "A hostile attitude" and "an unfriendly attitude" describe the same unwelcoming demeanor. Both indicate antagonism or coldness.

17. E: promise - Pledge and promise both mean a solemn commitment to do something, a formal vow or guarantee. "I pledge to help" and "I promise to help" express the same commitment. Both indicate a binding commitment.

18. A: sleep - Slumber and sleep both mean to be in a state of rest with eyes closed and consciousness suspended. "A peaceful slumber" and "a peaceful sleep" describe the same restful state. Both indicate the resting state.

19. A: peace - Harmony and peace both mean a state of agreement and cooperation, freedom from conflict. "Living in harmony" and "living in peace" describe the same cooperative state. Both indicate accord and tranquility.

20. C: quick - Hasty and quick both mean done with excessive speed or urgency, rapid or hurried. "A hasty decision" and "a quick decision" both describe something done rapidly. Both indicate speed, though hasty often implies too much speed.

21. D: authentic - Genuine and authentic both mean truly what something is said to be, real and not counterfeit. "Genuine leather" and "authentic leather" describe the same real material. Both indicate truthfulness and reality.

22. E: persist - Persevere and persist both mean to continue steadfastly despite difficulties or opposition. "Persevere through hardship" and "persist through hardship" mean the same. Both indicate determination and continuation.

23. B: kind - Benevolent and kind both mean well-meaning and kindly, showing goodwill toward others. "A benevolent donor" and "a kind donor" describe someone generous and caring. Both indicate goodness and generosity.

24. C: severe - Harsh and severe both mean unpleasantly rough, cruel, or strict. "Harsh punishment" and "severe punishment" describe the same strict penalty. Both indicate sternness or cruelty.

25. A: scanty - Meager and scanty both mean lacking in quantity or quality, insufficient. "Meager supplies" and "scanty supplies" describe the same inadequate resources. Both indicate scarcity or inadequacy.

26. E: leave - Depart and leave both mean to go away from a place, to exit or set off. "Depart for the airport" and "leave for the airport" mean the same. Both indicate going away.

27. D: danger - Hazard and danger both mean a source of risk or peril, something that could cause harm. "A hazard to health" and "a danger to health" describe the same threat. Both indicate potential harm.

28. B: sharp - Keen and sharp both mean having a fine edge or point, acute or intense. "A keen blade" and "a sharp blade" describe the same effective cutting edge. Both can also mean mentally acute.

29. A: essential - Vital and essential both mean absolutely necessary or important, crucial for survival or success. "Vital information" and "essential information" describe equally important data. Both indicate necessity and importance.

30. C: calm - Serene and calm both mean peaceful, tranquil, and untroubled. "A serene expression" and "a calm expression" describe the same peaceful face. Both indicate peace and lack of disturbance.

31. C: idea is to mind - **Relationship: Starting point/origin to place where it develops.** A seed starts in a garden where it grows, just as an idea starts in the mind where it develops. Both show something beginning in its natural environment.

32. E: pen is to ink - **Relationship: Tool to substance it uses/contains.** A needle uses thread to function, just as a pen uses ink to function. Both show implements paired with the materials they require.

33. A: oven is to hot - Relationship: Appliance to its characteristic temperature. A freezer is characterized by being cold, just as an oven is characterized by being hot. Both show appliances paired with their defining temperatures.

34. D: composer is to symphony - Relationship: Creator to their creation. An author creates a novel, just as a composer creates a symphony. Both show artists paired with the works they produce.

35. B: grape is to skin - Relationship: Food to its protective outer covering. An egg has a shell as its outer protection, just as a grape has skin as its outer covering. Both show items with their protective exteriors.

36. C: amplify is to volume - Relationship: Action to what it increases. To accelerate is to increase speed, just as to amplify is to increase volume. Both show verbs that mean increasing a specific quality.

37. E: peak is to trough - Relationship: High point to low point (opposites). A mountain is the high point while a valley is the low point, just as a peak is the high point while a trough is the low point. Both contrast elevated and depressed geographical features.

38. A: hammer is to build - Relationship: Tool to action it performs/enables. A needle is used to sew, just as a hammer is used to build. Both show tools paired with the primary actions they enable.

39. D: cry is to tragedy - Relationship: Emotional response to genre that evokes it. Comedy makes people laugh, just as tragedy makes people cry. Both show natural emotional responses to theatrical genres.

40. B: foundation is to building - Relationship: Underground support structure to what it supports. Roots provide underground support for a tree, just as a foundation provides underground support for a building. Both show base structures that anchor and support what's above.

41. C: microscope is to small - Relationship: Viewing instrument to size of what it views. A telescope views distant objects, just as a microscope views small objects. Both show optical instruments paired with what they help observe.

42. E: anxious is to anxiety - Relationship: Adjective to its noun form. Grateful is the adjective form of gratitude (the noun), just as anxious is the adjective form of anxiety (the noun). Both show adjectives and their corresponding nouns.

43. A: practice is to game - Relationship: Preparatory activity to main event. A rehearsal prepares you for a performance, just as practice prepares you for a game. Both show training activities that precede the actual event.

44. D: oven is to bread - Relationship: Heating device to product made in it. A kiln fires pottery to harden it, just as an oven bakes bread. Both show heating devices paired with products they help create.

45. B: famine is to food - Relationship: Shortage condition to what is lacking. A drought is a severe shortage of rain, just as a famine is a severe shortage of food. Both show crisis conditions defined by lack of something essential.

46. C: fortress is to protection - Relationship: Place to its primary purpose. A sanctuary provides refuge/safety, just as a fortress provides protection. Both show structures paired with the security they offer.

47. E: strand is to rope - Relationship: Individual fiber to what it's woven into. Thread is woven together to make fabric, just as strands are twisted together to make rope. Both show individual components that combine to form the whole.

48. A: dial is to clock - Relationship: Component that displays information to device. A lens is the component that captures images in a camera, just as a dial is the component that displays time on a clock. Both show key functional parts of their devices.

49. D: isolation is to spread - Relationship: Preventive measure to what it prevents. Quarantine prevents disease from spreading, just as isolation prevents something from spreading. Both show containment methods that stop transmission.

50. B: conceal is to honesty - Relationship: Action that contradicts quality. To boast contradicts modesty (being modest means not boasting), just as to conceal contradicts honesty (being honest means not hiding truth). Both show actions opposite to the stated virtues.

51. C: flood is to wet - Relationship: Weather condition to resulting state. A drought creates arid (very dry) conditions, just as a flood creates wet conditions. Both show weather events paired with the conditions they create.

52. E: moderator is to debate - Relationship: Official who oversees to event they oversee. A referee oversees a game enforcing rules, just as a moderator oversees a debate managing discussion. Both show authority figures who ensure fair proceedings.

53. A: plot is to story - Relationship: Central organizing element to literary work. A melody is the central musical element of a song, just as a plot is the central narrative element of a story. Both show the core structure around which the whole is built.

54. D: amplify is to microphone - Relationship: Primary function to device that performs it. A microscope's function is to magnify small things, just as a microphone's function is to amplify sound. Both show devices paired with what they do.

55. B: sweat is to heat - Relationship: Physical response to condition. Shivering is the body's response to cold, just as sweating is the body's response to heat. Both show involuntary physical reactions to temperature.

56. C: novice is to expert - Relationship: Beginning level to advanced level. An apprentice is a beginner learning a trade while a journeyman has completed training, just as a novice is a beginner while an expert has mastered their field. Both show progression from inexperience to mastery.

57. E: fingerprint is to identity - Relationship: Unique mark to what it verifies. A signature authenticates a document by confirming who signed it, just as a fingerprint confirms identity. Both show marks that verify or authenticate.

58. A: settler is to stay - Relationship: Type of person to their characteristic behavior. A nomad characteristically wanders (moves from place to place), just as a settler characteristically stays (establishes permanent residence). Both show people defined by their movement patterns.

59. D: obstruction is to view - Relationship: Blocking phenomenon to what it blocks. An eclipse temporarily blocks the sun, just as an obstruction blocks a view. Both show something that prevents seeing something else.

60. B: mine is to ore - Relationship: Extraction site to what is extracted. A quarry is where stone is extracted, just as a mine is where ore is extracted. Both show places where natural resources are harvested from the earth.

Quantitative

1. C: 12 - Divide 168 by 14: $168 \div 14 = 12$. This is a division fact from the 14 times table. Check: $14 \times 12 = 168$ ✓ Knowing multiplication facts helps solve division problems quickly.

2. A: 57 - Solve $p - 19 = 38$ by adding 19 to both sides: $p = 38 + 19 = 57$. Check: $57 - 19 = 38$ ✓ To undo subtraction, use addition.

3. E: 26 - The sequence subtracts 6 each time. 1st number: 50. 2nd number: $50 - 6 = 44$. 3rd number: $44 - 6 = 38$. 4th number: $38 - 6 = 32$. 5th number: $32 - 6 = 26$. This is an arithmetic sequence with common difference of -6.

4. B: 126 - Area of a rectangle = length × width = $14 \times 9 = 126$ square units. Don't confuse with perimeter, which would be $2(14 + 9) = 46$. Area measures the space inside.

5. D: 12 - Solve $9x = 108$ by dividing both sides by 9: $x = 108 \div 9 = 12$. Check: $9 \times 12 = 108$ ✓ Division is the inverse of multiplication.

6. C: 20 - If 2/3 of 60 marbles are blue, then 1/3 are NOT blue (since $3/3 - 2/3 = 1/3$). Calculate: $(1/3) \times 60 = 20$ marbles are not blue. Alternatively, find blue first: $(2/3) \times 60 = 40$ blue, then $60 - 40 = 20$ not blue.

7. A: 28 - Follow order of operations (PEMDAS). Multiply first: $6 \times 5 = 30$. Then work left to right: $50 - 30 = 20$, then $20 + 8 = 28$. Multiplication must be done before addition and subtraction.

8. E: 1/3 - Total balls: 4 green + 8 yellow = 12 balls. Probability of green = green balls/total balls = 4/12. Simplify by dividing both by 4: 4/12 = 1/3. Always reduce fractions to simplest form.

9. B: 9/20 - Convert 0.45 to a fraction: 0.45 = 45/100. Simplify by dividing both numerator and denominator by 5: 45 ÷ 5 = 9 and 100 ÷ 5 = 20, giving 9/20. Check: 9 ÷ 20 = 0.45 ✓

10. D: 22 - The diameter of a circle is twice the radius. If radius = 11, then diameter = 2 × 11 = 22. Remember: diameter goes all the way across through the center, radius goes from center to edge.

11. C: 7 - Solve 5y + 9 = 44 in two steps. Subtract 9 from both sides: 5y = 35. Divide both sides by 5: y = 7. Check: 5(7) + 9 = 35 + 9 = 44 ✓

12. A: $450 - Calculate 25% off of $600. Method 1: Find discount: 0.25 × $600 = $150, then subtract: $600 − $150 = $450. Method 2: If 25% off, you pay 75%: 0.75 × $600 = $450.

13. E: 69 - Calculate each exponent first, then subtract. $13^2 = 13 × 13 = 169$. Then $10^2 = 10 × 10 = 100$. Finally subtract: 169 − 100 = 69. Exponents must be calculated before subtraction.

14. B: 65 - The compound inequality $z > 60$ and $z < 65$ means z must be greater than 60 AND less than 65. This is a "could NOT" question. 65 does NOT satisfy $z < 65$ (65 is not less than 65; it's equal). All other choices fall between 60 and 65.

15. D: 5 - Set up a proportion: 3 tbsp/18 muffins = x tbsp/30 muffins. Cross-multiply: 3 × 30 = 18 × x, so 90 = 18x. Divide: x = 5 tablespoons. Or find tbsp per muffin: 3/18 = 1/6 tbsp per muffin, so 30 × (1/6) = 5 tbsp.

16. C: 5/11 - When subtracting fractions with the same denominator, keep the denominator and subtract numerators: 8/11 − 3/11 = (8 − 3)/11 = 5/11. The denominator stays 11; only subtract the numerators.

17. A: 6,900 - When rounding to the nearest hundred, look at the tens digit. In 6,867, the tens digit is 6. Since 6 ≥ 5, round up: increase the hundreds digit from 8 to 9, making 6,900.

18. E: 24 - The LCM is the smallest number both numbers divide into evenly. List multiples: 6: 6, 12, 18, 24, 30... and 8: 8, 16, 24, 32... The first common multiple is 24. Verify: 24 ÷ 6 = 4 ✓ and 24 ÷ 8 = 3 ✓

19. B: 80 - Examine the pattern: 5 to 10 is ×2, 10 to 20 is ×2, 20 to 40 is ×2. Each number doubles. This is a geometric sequence with ratio 2. Next number: 40 × 2 = 80.

20. D: 99 - Area of a triangle = (base × height) ÷ 2 = (18 × 11) ÷ 2 = 198 ÷ 2 = 99 square units. You can also use formula A = ½bh. A triangle's area is always half that of a rectangle with the same base and height.

21. C: 49 - To find 35% of 140, multiply: 0.35 × 140 = 49. Mental math: 10% of 140 is 14, so 30% is 42 (3 × 14), and 5% is 7, giving 42 + 7 = 49.

22. A: 12 - Solve $14 \times q = 168$ by dividing both sides by 14: $q = 168 \div 14 = 12$. Check: $14 \times 12 = 168$ ✓ Think "14 times what equals 168?"

23. E: 9 - Work backwards or set up an equation. Let n be the number: $(n \times 5) - 8 = 37$. So $5n - 8 = 37$. Add 8: $5n = 45$. Divide by 5: $n = 9$. Check: $9 \times 5 = 45$, then $45 - 8 = 37$ ✓

24. B: 28 - The ratio 4:7 means for every 4 red balls, there are 7 blue balls. If there are 16 red balls, find how many groups of 4: $16 \div 4 = 4$ groups. Each group has 7 blue balls, so total blue $= 4 \times 7 = 28$. Or proportion: $4/7 = 16/x$, cross multiply: $4x = 112$, so $x = 28$.

25. D: 29 - Follow order of operations. Calculate the exponent first: $4^2 = 16$. Then work left to right: $20 + 16 = 36$, then $36 - 7 = 29$. Exponents are calculated before addition and subtraction.