

UPPER LEVEL SSAT PRACTICE TEST 7

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: You discover an old journal in your attic that contains predictions about the future—and every single one has come true so far. When you turn to today's date, you read something that changes everything.

Topic B: Describe a tradition or ritual that is important to you or your family. Explain what makes it meaningful and how participating in it has shaped who you are. What would be lost if this tradition disappeared?

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 $336 \div 28$?

- A. 12
- B. 13
- C. 14
- D. 11
- E. 15

2. If $k - 47 = 89$, then $k =$

- A. 42
- B. 47
- C. 136
- D. 89
- E. 142

3. A sequence follows the rule: subtract 9 from the previous number. If the first number is 81, what is the 7th number?

- A. 45
- B. 54
- C. 36
- D. 63
- E. 27

4. What is the area of a rectangle with length 27 and width 13?

- A. 40
- B. 351
- C. 80
- D. 340
- E. 360

5. If $22x = 286$, then $x =$

- A. 264
- B. 308
- C. 22
- D. 13
- E. 12

6. A team has 120 players. If $\frac{7}{10}$ of them are starters, how many are starters?

- A. 84
- B. 36
- C. 60
- D. 72
- E. 96

7. What is $85 - 12 \times 6 + 7$?

- A. 450
- B. 558
- C. 20
- D. 546
- E. 13

8. A deck has 52 cards. If 13 are hearts, what is the probability of drawing a heart?

- A. $13/52$
- B. $1/13$
- C. $13/39$
- D. $4/13$
- E. $1/4$

9. Which of the following is equivalent to 0.95?

- A. $95/10$
- B. $19/20$
- C. $9/5$
- D. $1/95$
- E. $95/1000$

10. A circle has a diameter of 56. What is its radius?

- A. 112
- B. 56
- C. 14
- D. 28
- E. 84

11. If $13y + 24 = 115$, then $y =$

- A. 7
- B. 24
- C. 139
- D. 13
- E. 8

12. A camera originally costs \$400. It's now on sale for 45% off. What is the sale price?

- A. \$355
- B. \$180
- C. \$220
- D. \$240
- E. \$160

13. What is $27^2 - 24^2$?

- A. 3
- B. 576
- C. 729
- D. 9
- E. 153

14. If $m > 155$ and $m < 160$, which could NOT be the value of m ?

- A. 156
- B. 160
- C. 158.5
- D. 157
- E. 159

15. A recipe requires 14 cups of flour to make 20 loaves. How many cups are needed for 35 loaves?

- A. 21
- B. 28
- C. 30
- D. 24.5
- E. 25

16. What is $21/29 - 13/29$?

- A. $8/29$
- B. $34/29$
- C. $13/29$
- D. $8/58$
- E. $21/58$

17. Round 15,628 to the nearest hundred.

- A. 16,000
- B. 15,630
- C. 15,600
- D. 15,700
- E. 15,500

18. What is the least common multiple (LCM) of 15 and 18?

- A. 3
- B. 270
- C. 45
- D. 30
- E. 90

19. If the pattern continues: 9, 27, 81, 243, ____, what is the next number?

- A. 252
- B. 729
- C. 486
- D. 324
- E. 972

20. A triangle has a base of 34 and a height of 25. What is its area?

- A. 59
- B. 850
- C. 118
- D. 425
- E. 680

21. What is 85% of 200?

- A. 170
- B. 85
- C. 160
- D. 180
- E. 150

22. If $25 \times n = 325$, then $n =$

- A. 12
- B. 25
- C. 13
- D. 14
- E. 300

23. A number is divided by 9, then 13 is added. The result is 22. What is the number?

- A. 198
- B. 315
- C. 117
- D. 99
- E. 81

24. The ratio of apples to oranges in a basket is 8:5. If there are 64 apples, how many oranges are there?

A. 80

B. 40

C. 48

D. 56

E. 32

25. What is $50 + 10^2 - 18$?

A. 68

B. 150

C. 100

D. 132

E. 82

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

The human skeleton serves multiple vital functions beyond simply providing structure. While most people think bones are hard, lifeless structures, they're actually living tissue that constantly rebuilds itself and plays crucial roles in maintaining overall health.

Bones provide the framework that supports the body and protects vital organs. The skull shields the brain, the rib cage protects the heart and lungs, and the spine safeguards the spinal cord. Without this protection, even minor injuries could damage essential organs.

Bones also serve as the body's mineral bank. They store calcium and phosphorus, releasing these minerals into the bloodstream when needed for other body functions. When calcium levels drop too low in the blood, bones release stored calcium to maintain proper nerve and muscle function.

Additionally, bones produce blood cells. Inside certain bones, like the femur and pelvis, bone marrow manufactures red blood cells (which carry oxygen), white blood cells (which fight infection), and platelets (which help blood clot). An adult produces about 200 billion red blood cells every day.

Finally, bones enable movement. When muscles contract, they pull on bones, which act as levers. Different bone shapes allow for different types of movement—your arm bones allow for wide swinging motions, while small bones in your fingers enable precise movements.

Understanding bone function highlights why maintaining bone health through proper nutrition, exercise, and adequate calcium intake is crucial throughout life, especially during childhood when bones are still developing.

1. According to the passage, bones are

- A. unchanging structures
- B. living tissue
- C. made of calcium only
- D. hollow throughout
- E. unnecessary for movement

2. The skull's primary function is to

- A. produce blood cells
- B. store minerals
- C. enable movement
- D. support weight
- E. protect the brain

3. Bones store and release

- A. calcium and phosphorus
- B. oxygen and carbon
- C. protein and fat
- D. vitamins and enzymes
- E. sugar and salt

4. Bone marrow produces approximately how many red blood cells daily in adults?

- A. 200 million
- B. 2 billion
- C. 20 billion
- D. 200 billion
- E. 2 trillion

5. The passage suggests bones should be maintained through

- A. surgery
- B. medication only
- C. proper nutrition and exercise
- D. rest alone
- E. avoiding all physical activity

Passage 2

The acceptance email sat in my inbox for three days before I opened it. Summer Music Intensive—eight weeks studying violin with world-class musicians in Boston. Full scholarship. Everything I'd worked toward for five years.

But opening that email meant confirming what I already knew: I couldn't go.

"Have you responded yet?" Mom asked, bringing me dinner. She'd been working double shifts since Dad left, trying to keep up with rent and my younger brother's medical bills.

"Not yet," I mumbled.

She sat down, looking tired. "This is about money, isn't it?"

"It's a full scholarship. But there's housing, food, transportation—"

"We'll figure it out."

"Mom, Jake needs that surgery. And you're already exhausted."

"Jake's surgery can wait a few months. Your music can't. You're seventeen. This opportunity won't come again."

I shook my head. "The program runs through August. Who'll watch Jake while you work? Who'll drive him to physical therapy?"

"Your aunt can—"

"She has her own kids. And you'd have to pay her." I closed my laptop. "It's okay. There'll be other programs."

Mom's eyes filled with tears. "You're giving up your dream to stay home with us."

"It's not giving up," I said, meaning it. "It's choosing what matters more. Music will always be there. But Jake needs me now. You need me now." I took her hand. "That's not sacrifice. That's family."

She squeezed my hand, crying quietly. And I knew I'd made the right choice—even if it hurt.

6. The narrator received

- A. a rejection letter
- B. a scholarship offer
- C. a college diploma
- D. a job offer
- E. a concert invitation

7. The narrator's father

- A. lives with the family
- B. pays all expenses
- C. teaches music
- D. works in Boston
- E. left the family

8. Jake needs

- A. surgery
- B. violin lessons
- C. a scholarship
- D. transportation
- E. music therapy

9. The Summer Music Intensive lasts

- A. four weeks
- B. six weeks
- C. three weeks
- D. eight weeks
- E. twelve weeks

10. The narrator decides not to attend because

- A. they lost interest in music
- B. they failed the audition
- C. their family needs them more
- D. the program was cancelled
- E. they found a better opportunity

Passage 3

Bioluminescence—the ability of living organisms to produce light—occurs in a surprising variety of creatures, from deep-sea fish to fireflies to certain types of fungi. While it might seem like magic, bioluminescence is actually a chemical reaction.

The process involves a light-producing chemical called luciferin and an enzyme called luciferase. When luciferin reacts with oxygen in the presence of luciferase, it produces light with very little heat—unlike a light bulb, which wastes much energy as heat. This "cold light" is remarkably efficient.

Different organisms use bioluminescence for different purposes. Fireflies flash to attract mates, with each species having its own unique flashing pattern. Deep-sea anglerfish dangle a glowing lure to attract prey in the darkness of the ocean depths. Some squid release glowing clouds to confuse predators, while others use light patterns to communicate with each other.

Perhaps the most spectacular display occurs with certain types of plankton that glow when disturbed. In some coastal areas, swimmers and boats create trails of blue-green light as they move through water filled with these bioluminescent organisms. Beaches can appear to sparkle at night when waves crash, agitating millions of tiny glowing creatures.

Scientists study bioluminescence not just out of curiosity but for practical applications. The genes responsible for bioluminescence have been used in medical research to track how cells move and function. Glowing proteins help researchers visualize biological processes that would otherwise be invisible.

While humans have created artificial light for thousands of years, nature has been producing its own light for hundreds of millions of years—and doing it far more efficiently than any technology we've invented.

11. Bioluminescence is described as

- A. magic
- B. a chemical reaction
- C. electrical energy
- D. nuclear fusion
- E. mechanical process

12. The chemical that produces light is called

- A. chlorophyll
- B. oxygen
- C. enzyme
- D. luciferase
- E. luciferin

13. Fireflies use bioluminescence to

- A. attract mates
- B. find food
- C. navigate
- D. stay warm
- E. breathe

14. Glowing plankton create light when they are

- A. hungry
- B. sleeping
- C. reproducing
- D. disturbed
- E. dying

15. Scientists use bioluminescence genes in medical research to

- A. create new light bulbs
- B. improve eyesight
- C. track cell movement and function
- D. cure diseases
- E. generate electricity

Passage 4

The Library of Alexandria, founded around 300 BCE in Egypt, was the ancient world's most important center of learning. At its height, it may have contained between 400,000 and 700,000 scrolls—essentially every significant work produced in the ancient world.

The library wasn't just a storage facility. It functioned more like a modern research university. Scholars from across the Mediterranean world came to study, conduct research, and exchange ideas. The institution provided them with housing, funding, and access to the vast collection. These scholars made groundbreaking contributions to mathematics, astronomy, medicine, and philosophy.

Acquiring texts for the library was a serious business. Legend says that ships arriving in Alexandria's harbor were searched for books. Any found would be confiscated, copied, and the copy returned to the owner while the original stayed in the library. Agents were sent throughout the known world to purchase or copy important works.

The library's destruction remains one of history's great mysteries and tragedies. Rather than a single catastrophic event, scholars believe the library declined gradually over centuries. Various fires, wars, and political changes damaged the collection. By 400 CE, the great library had effectively disappeared, taking with it countless works of literature, science, and philosophy that existed nowhere else.

The loss was immeasurable. We know ancient writers existed because other sources mention them, but their actual works vanished with the library. Imagine if every play Shakespeare wrote except Hamlet had been lost—that's the scale of what disappeared. The destruction of the Library of Alexandria reminds us how fragile human knowledge can be and why preserving information across multiple locations and formats is crucial.

16. The Library of Alexandria was founded around

- A. 200 BCE
- B. 300 BCE
- C. 400 CE
- D. 100 BCE
- E. 500 BCE

17. At its height, the library contained approximately

- A. 50,000 scrolls
- B. 100,000 scrolls
- C. 200,000 scrolls
- D. 1 million scrolls
- E. 400,000 to 700,000 scrolls

18. Scholars at the library received

- A. housing and funding

- B. free transportation
- C. political positions
- D. military training
- E. farmland

19. According to legend, ships arriving in Alexandria were searched for

- A. weapons
- B. gold
- C. criminals
- D. books
- E. spices

20. The library's destruction

- A. happened instantly
- B. was caused by an earthquake
- C. occurred gradually over centuries
- D. was planned by enemies
- E. never actually happened

Passage 5

Climate and weather are often confused, but they describe different things. Weather refers to short-term atmospheric conditions—what's happening outside your window right now. Climate describes long-term patterns of temperature, precipitation, and other atmospheric conditions in a region.

Think of it this way: climate is what you expect, weather is what you get. Phoenix, Arizona has a hot, dry climate—you expect summer temperatures over 100°F. But on any particular day, weather might bring unusual rain or cooler temperatures. That doesn't change Phoenix's climate; it's just temporary weather variation.

Climate zones across Earth result primarily from differences in solar energy distribution. The equator receives direct sunlight year-round, creating tropical climates. Polar regions receive slanted sunlight, resulting in cold climates. Between these extremes lie temperate zones with moderate temperatures and distinct seasons.

Ocean currents significantly influence climate. The Gulf Stream, for example, carries warm water from the Gulf of Mexico to northern Europe, giving places like Ireland and Scotland much milder winters than their latitude would suggest. Without this current, these regions would be far colder.

Human activities are now affecting global climate. Burning fossil fuels releases carbon dioxide and other greenhouse gases that trap heat in the atmosphere. This doesn't mean every location gets warmer or that weather stops varying—it means long-term climate patterns are shifting. Arctic ice melts earlier, storms may intensify, and precipitation patterns change. Understanding the difference between weather and climate helps us grasp why one cold winter doesn't disprove climate change—just as one hot day doesn't prove it. Climate change refers to long-term shifts in patterns, not day-to-day weather fluctuations.

21. Weather describes

- A. yearly patterns
- B. short-term atmospheric conditions
- C. ocean temperatures only
- D. climate change
- E. historical data

22. Climate is defined as

- A. today's temperature
- B. next week's forecast
- C. seasonal changes
- D. monthly rainfall
- E. long-term atmospheric patterns

23. The equator receives

- A. direct sunlight year-round

- B. no sunlight in winter
- C. slanted sunlight always
- D. sunlight only in summer
- E. less sunlight than poles

24. The Gulf Stream affects Europe by

- A. cooling it significantly
- B. creating storms
- C. blocking sunlight
- D. warming its climate
- E. causing drought

25. Understanding weather versus climate helps explain why

- A. it never rains
- B. seasons don't exist
- C. one cold winter doesn't disprove climate change
- D. temperatures never vary
- E. climate never changes

Passage 6

I found Grandpa's medals in a shoebox in the basement—Bronze Star, Purple Heart, unit citations from World War II. I'd heard he served, but he never talked about it. Now he was in the hospital, and I needed to understand why these small pieces of metal meant enough to keep in a box for seventy-five years.

At the hospital, I showed him what I'd found. His eyes, clouded with age, suddenly focused. "Where did you get those?"

"The basement. Grandpa, you never told me you were a hero."

"I'm not a hero," he said quietly. "The heroes didn't come home."

I sat down, holding the Bronze Star. "What did you do to earn this?"

He was quiet so long I thought he'd fallen asleep. Then: "I carried my friend Joe out of a burning tank. He'd have died if I'd left him. But I didn't feel brave—I felt terrified. My hands were shaking so hard I could barely hold him."

"But you did it anyway."

"Because he was my friend. Because leaving him wasn't an option I could live with." He looked at the medals. "They give you these to say thank you. But every time I look at them, I think about the men who deserved them more. The ones who didn't make it home to get thanked."

"Is that why you kept them hidden?"

"I kept them because they're part of my history. But I don't display them because I'm not proud of war. I'm grateful I survived. I'm grateful I could help Joe. But war itself? There's nothing in war to be proud of. Just things you had to do, and people you couldn't save."

He closed his eyes, tired. And I understood: these medals weren't trophies. They were memories—of fear, of loss, and of doing difficult things because someone needed you to.

26. The narrator found the medals in

- A. an attic
- B. a shoebox in the basement
- C. a safe
- D. a frame
- E. a desk drawer

27. Grandpa earned the Bronze Star by

- A. leading a charge
- B. flying missions
- C. operating a radio
- D. giving speeches
- E. rescuing his friend from a burning tank

28. When the narrator calls Grandpa a hero, he responds that

- A. the heroes didn't come home
- B. he's proud of his service
- C. everyone was equally brave
- D. medals don't matter
- E. he doesn't remember

29. Grandpa kept the medals hidden because

- A. they were damaged
- B. he forgot about them
- C. they were stolen
- D. he's not proud of war itself
- E. he wanted to sell them

30. The medals represent for Grandpa

- A. pride and glory
- B. financial value
- C. memories of fear, loss, and duty
- D. political beliefs
- E. family tradition

Passage 7

Vaccines work by training the immune system to recognize and fight specific diseases without causing the actual illness. When a vaccine is administered, it introduces a weakened, dead, or partial version of a pathogen (disease-causing organism) into the body. The immune system treats this introduction as a real threat and produces antibodies to fight it.

Here's the clever part: after defeating the vaccine's harmless version of the pathogen, the immune system remembers it. Special immune cells called memory cells remain in the body for years or even decades. If the real disease ever enters the body, these memory cells quickly recognize it and mount a rapid, powerful defense—often preventing illness entirely or making it much milder.

This principle of "immunological memory" has protected billions of people. Smallpox, a disease that killed millions throughout history, was completely eradicated through vaccination. Polio, which once paralyzed thousands of children annually, has been eliminated in most of the world. Measles, mumps, and rubella—common childhood diseases that caused serious complications—are now rare in countries with high vaccination rates.

Vaccines protect not just individuals but communities. When enough people are vaccinated, diseases can't spread easily, protecting even those who can't be vaccinated due to age, illness, or medical conditions. This "herd immunity" is crucial for protecting infants too young for certain vaccines and people with weakened immune systems.

Modern vaccines undergo rigorous testing for safety and effectiveness. Clinical trials involve thousands of participants and take years to complete. Regulatory agencies carefully review all data before approving vaccines. Side effects are typically mild—sore arm, low fever—and serious reactions are extremely rare, far less dangerous than the diseases vaccines prevent.

Understanding how vaccines work helps explain why they're among medicine's greatest achievements. They've saved more lives than perhaps any other medical intervention in human history.

31. Vaccines introduce into the body

- A. healthy cells
- B. a weakened or partial version of a pathogen
- C. antibiotics

- D. vitamins
- E. blood products

32. Memory cells allow the immune system to

- A. forget diseases
- B. weaken over time
- C. attack healthy tissue
- D. produce vitamins
- E. recognize and quickly fight diseases it has encountered

33. Smallpox was eliminated through

- A. vaccination
- B. antibiotics
- C. surgery
- D. quarantine alone
- E. natural immunity

34. "Herd immunity" protects

- A. animals only
- B. vaccinated people only
- C. no one
- D. people who cannot be vaccinated
- E. elderly people exclusively

35. Serious vaccine side effects are described as

- A. common
- B. guaranteed
- C. extremely rare

- D. always dangerous
- E. unpredictable

Passage 8

The Rosetta Stone, discovered in 1799 by French soldiers in Egypt, became the key to deciphering ancient Egyptian hieroglyphics—a writing system that had been unreadable for nearly 1,400 years.

The stone's importance lies in its text being written in three different scripts: hieroglyphics (used for important religious documents), Demotic (everyday Egyptian script), and ancient Greek. Scholars could read Greek, so they knew what the inscription said—a decree issued in 196 BCE honoring King Ptolemy V. The challenge was matching the Greek text to the mysterious hieroglyphics.

Many scholars tried and failed to crack the code. The breakthrough came from French scholar Jean-François Champollion, who spent years studying the stone. In 1822, he realized that hieroglyphics weren't purely symbolic—they also had phonetic components, representing sounds like our alphabet does. Some hieroglyphics represented whole ideas, while others represented sounds. This mixed system had confounded earlier scholars who assumed hieroglyphics worked only one way.

Champollion's discovery unlocked thousands of years of Egyptian history. Suddenly, inscriptions on temple walls, tombs, and monuments could be read. Scholars learned about Egyptian religion, government, daily life, medicine, and engineering. The voices of ancient Egyptians, silent for millennia, could speak again.

The Rosetta Stone itself now resides in the British Museum in London, though Egypt has requested its return. Regardless of where it physically sits, its impact endures. It reminds us that with persistence and insight, even mysteries that seem impenetrable can eventually be solved. Knowledge that appears lost forever may simply be waiting for the right key—or the right mind—to unlock it.

36. The Rosetta Stone was discovered in

- A. 1699
- B. 1799
- C. 1899
- D. 1822

E. 1900

37. The stone contains text in how many different scripts?

A. one

B. two

C. four

D. five

E. three

38. Jean-François Champollion realized that hieroglyphics

A. had both symbolic and phonetic components

B. were purely decorative

C. were impossible to translate

D. were identical to Greek

E. represented only sounds

39. Champollion made his breakthrough in

A. 1799

B. 1800

C. 1850

D. 1822

E. 1900

40. The Rosetta Stone currently resides in

A. Egypt

B. France

C. the British Museum

D. the Louvre

E. New York

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. IRATE:

- A. calm
- B. happy
- C. peaceful
- D. relaxed
- E. angry

2. AUDACIOUS:

- A. timid
- B. fearful
- C. bold
- D. shy
- E. hesitant

3. FRAGILE:

- A. delicate
- B. strong
- C. sturdy

D. durable

E. tough

4. AMPLE:

- A. small
- B. tiny
- C. scarce
- D. plentiful
- E. limited

5. TRANQUIL:

- A. noisy
- B. calm
- C. chaotic
- D. turbulent
- E. violent

6. CANDID:

- A. dishonest
- B. deceptive
- C. secretive
- D. vague
- E. frank

7. VIBRANT:

- A. dull
- B. pale
- C. lively
- D. faint
- E. dim

8. PRUDENT:

- A. wise
- B. foolish
- C. reckless
- D. careless
- E. impulsive

9. OBSOLETE:

- A. modern
- B. new
- C. current
- D. outdated
- E. fresh

10. LAVISH:

- A. simple
- B. extravagant
- C. plain
- D. modest
- E. frugal

11. SULLEN:

- A. cheerful
- B. happy
- C. joyful
- D. delighted
- E. gloomy

12. MUNDANE:

- A. exciting
- B. extraordinary
- C. ordinary
- D. unusual
- E. remarkable

13. SERENE:

- A. peaceful
- B. agitated
- C. disturbed
- D. troubled
- E. anxious

14. ADVERSE:

- A. favorable
- B. positive
- C. beneficial
- D. unfavorable
- E. helpful

15. PROFOUND:

- A. shallow
- B. deep
- C. superficial
- D. trivial
- E. minor

16. DILIGENT:

- A. lazy
- B. idle
- C. inactive
- D. sluggish
- E. hardworking

17. SKEPTICAL:

- A. trusting
- B. believing
- C. doubtful
- D. confident
- E. certain

18. VITAL:

- A. essential
- B. unnecessary
- C. unimportant
- D. trivial
- E. optional

19. ABRUPT:

- A. gradual
- B. smooth
- C. gentle
- D. sudden
- E. slow

20. SOMBER:

- A. cheerful
- B. serious
- C. happy
- D. bright
- E. joyful

21. RECKLESS:

- A. careful
- B. cautious
- C. prudent
- D. thoughtful
- E. careless

22. ELOQUENT:

- A. inarticulate
- B. unclear
- C. articulate
- D. confusing
- E. mumbling

23. METICULOUS:

- A. careful
- B. careless
- C. sloppy
- D. messy
- E. negligent

24. AMBIGUOUS:

- A. clear
- B. obvious
- C. plain
- D. unclear
- E. definite

25. GENEROUS:

- A. selfish
- B. giving
- C. stingy
- D. greedy
- E. mean

26. LETHAL:

- A. harmless
- B. safe
- C. beneficial
- D. helpful
- E. deadly

27. PRISTINE:

- A. dirty
- B. soiled
- C. pure
- D. polluted
- E. contaminated

28. FERVENT:

- A. passionate
- B. indifferent
- C. apathetic
- D. cold
- E. uncaring

29. TRIVIAL:

- A. important
- B. significant
- C. major
- D. unimportant
- E. crucial

30. ZEALOUS:

- A. indifferent
- B. enthusiastic

C. apathetic

- D. lazy
- E. uninterested

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. Pencil is to write as

- A. paint is to canvas
- B. scissors is to cut
- C. paper is to fold
- D. glue is to stick
- E. ruler is to measure

34. Petal is to flower as

- A. feather is to bird
- B. scale is to fish
- C. leaf is to tree
- D. branch is to trunk
- E. root is to soil

32. Hot is to cold as

- A. warm is to cool
- B. fire is to ice
- C. summer is to winter
- D. wet is to dry
- E. light is to dark

35. Hammer is to nail as

- A. saw is to wood
- B. drill is to hole
- C. screwdriver is to screw
- D. wrench is to bolt
- E. pliers is to wire

33. Pilot is to cockpit as

- A. teacher is to student
- B. doctor is to patient
- C. driver is to passenger
- D. chef is to kitchen
- E. judge is to courtroom

36. Ocean is to salty as

- A. river is to fresh
- B. desert is to dry
- C. mountain is to high
- D. lake is to deep
- E. pond is to small

37. Box is to square as

- A. circle is to round
- B. triangle is to three
- C. rectangle is to long
- D. ball is to sphere
- E. cube is to six

38. Seed is to plant as

- A. spark is to fire
- B. cloud is to rain
- C. wind is to storm
- D. egg is to bird
- E. foundation is to building

39. Thirsty is to drink as

- A. sleepy is to rest
- B. hungry is to food
- C. tired is to work
- D. cold is to shiver
- E. hot is to sweat

40. Barometer is to pressure as

- A. thermometer is to temperature
- B. scale is to weight
- C. ruler is to length
- D. clock is to time
- E. speedometer is to speed

41. Snow is to shovel as

- A. grass is to mower
- B. leaves is to rake
- C. dirt is to broom
- D. dust is to vacuum
- E. water is to mop

42. Note is to song as

- A. letter is to word
- B. sentence is to paragraph
- C. page is to chapter
- D. word is to sentence
- E. chapter is to book

43. Author is to novel as

- A. painter is to museum
- B. sculptor is to gallery
- C. director is to theater
- D. composer is to symphony
- E. architect is to blueprint

44. Inflate is to deflate as

- A. expand is to shrink
- B. grow is to plant
- C. rise is to fall
- D. increase is to number
- E. swell is to size

45. Embarrassed is to compliment as

- A. angry is to insult
- B. happy is to praise
- C. proud is to criticism
- D. sad is to joke
- E. nervous is to encouragement

46. Veterinarian is to animals as

- A. teacher is to students
- B. pediatrician is to children
- C. chef is to food
- D. pilot is to planes
- E. farmer is to crops

47. Sunrise is to day as

- A. noon is to afternoon
- B. evening is to night
- C. midnight is to morning
- D. sunset is to night
- E. dawn is to dusk

48. Chrysalis is to moth as

- A. tadpole is to frog
- B. seed is to tree
- C. caterpillar is to butterfly
- D. larva is to beetle
- E. egg is to snake

49. Steam is to condense as

- A. ice is to melt
- B. water is to freeze
- C. liquid is to evaporate
- D. solid is to dissolve
- E. gas is to expand

50. Compass is to navigate as

- A. map is to travel
- B. telescope is to observe
- C. microscope is to magnify
- D. binoculars is to see
- E. camera is to photograph

51. Web is to spider as

- A. hive is to bee
- B. dam is to beaver
- C. nest is to bird
- D. hole is to rabbit
- E. den is to bear

52. Antibody is to infection as

- A. shield is to attack
- B. medicine is to illness
- C. bandage is to wound
- D. firewall is to virus
- E. lock is to theft

53. Mirror is to reflect as

- A. window is to open
- B. door is to close
- C. wall is to support
- D. lens is to focus
- E. prism is to refract

54. Preview is to movie as

- A. sample is to product
- B. test is to exam
- C. practice is to game
- D. rehearsal is to play
- E. outline is to essay

55. Wink is to eye as

- A. blink is to eyelid
- B. smile is to mouth
- C. nod is to head
- D. wave is to hand
- E. shrug is to shoulder

56. Stone is to statue as

- A. wood is to furniture
- B. clay is to pottery
- C. metal is to machine
- D. glass is to window
- E. fabric is to clothing

57. Active is to volcano as

- A. flowing is to river
- B. growing is to plant
- C. burning is to fire
- D. dormant is to seed
- E. sleeping is to bear

58. Recipe is to cook as

- A. map is to navigator
- B. script is to actor
- C. score is to musician
- D. blueprint is to architect
- E. instructions is to builder

59. Drizzle is to rain as

- A. breeze is to wind
- B. storm is to hurricane
- C. cloud is to sky
- D. thunder is to lightning
- E. fog is to mist

60. Quarantine is to spread as

- A. study is to learn
- B. exercise is to health
- C. dam is to flood
- D. medicine is to cure
- E. vaccine is to disease

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 $375 \div 25$?

- A. 12
- B. 14
- C. 16
- D. 15
- E. 13

2. If $p + 59 = 143$, then $p =$

- A. 202
- B. 84
- C. 59
- D. 143
- E. 92

3. A sequence follows the rule: add 17 to the previous number. If the first number is 19, what is the 6th number?

- A. 87
- B. 70
- C. 53
- D. 36
- E. 104

4. What is the area of a rectangle with length 29 and width 14?

- A. 406
- B. 43
- C. 86
- D. 400
- E. 420

5. If $24x = 312$, then $x =$

- A. 288
- B. 336
- C. 13
- D. 24
- E. 12

6. A school has 132 students. If $\frac{3}{11}$ of them walk to school, how many walk to school?

- A. 12
- B. 24
- C. 48
- D. 36
- E. 44

7. What is $96 - 14 \times 5 + 11$?

- A. 421
- B. 37
- C. 410
- D. 430
- E. 26

8. A jar contains 5 red marbles, 7 blue marbles, and 8 green marbles. What is the probability of selecting a blue marble?

- A. $1/7$
- B. $7/13$
- C. $5/20$
- D. $8/20$
- E. $7/20$

9. Which of the following is equivalent to 0.75?

- A. $3/4$
- B. $7/5$
- C. $75/10$
- D. $1/75$
- E. $75/1000$

10. A circle has a radius of 27. What is its diameter?

- A. 13.5
- B. 81
- C. 54
- D. 27
- E. 108

11. If $15y + 28 = 133$, then $y =$

- A. 28
- B. 161
- C. 15
- D. 7
- E. 8

12. A tablet originally costs \$480. It's now on sale for 40% off. What is the sale price?

- A. \$440
- B. \$288
- C. \$192
- D. \$320
- E. \$240

13. What is $29^2 - 26^2$?

- A. 3
- B. 676
- C. 841
- D. 9
- E. 165

14. If $s > 170$ and $s < 175$, which could NOT be the value of s ?

- A. 175
- B. 171
- C. 173.5
- D. 172
- E. 174

15. A recipe requires 16 ounces of butter to make 24 cupcakes. How many ounces are needed for 42 cupcakes?

- A. 24
- B. 32
- C. 28
- D. 30
- E. 26

16. What is $\frac{23}{31} - \frac{15}{31}$?

A. $\frac{38}{31}$

B. $\frac{15}{31}$

C. $\frac{8}{62}$

D. $\frac{8}{31}$

E. $\frac{23}{62}$

17. Round 17,863 to the nearest hundred.

A. 18,000

B. 17,900

C. 17,860

D. 17,800

E. 17,850

18. What is the least common multiple (LCM) of 16 and 24?

A. 8

B. 384

C. 32

D. 24

E. 48

19. If the pattern continues: 11, 33, 99, 297, ____, what is the next number?

A. 891

B. 594

C. 396

D. 308

E. 1188

20. A triangle has a base of 36 and a height of 27. What is its area?

- A. 63
- B. 972
- C. 486
- D. 126
- E. 810

21. What is 90% of 220?

- A. 90
- B. 180
- C. 200
- D. 198
- E. 220

22. If $27 \times w = 351$, then $w =$

- A. 12
- B. 13
- C. 14
- D. 27
- E. 324

23. A number is multiplied by 13, then 22 is subtracted. The result is 82. What is the number?

- A. 6
- B. 7
- C. 9
- D. 10
- E. 8

24. The ratio of soccer balls to basketballs in a gym is 9:4. If there are 72 soccer balls, how many basketballs are there?

A. 32

B. 36

C. 48

D. 54

E. 28

25. What is $55 + 11^2 - 19$?

A. 147

B. 121

C. 157

D. 66

E. 36

ANSWERS AND EXPLANATIONS

Quantitative

- 1. A: 12** - Divide 336 by 28: $336 \div 28 = 12$. This is a division fact from the 28 times table. Check: $28 \times 12 = 336$ ✓ Knowing multiplication facts helps solve division problems quickly.
- 2. C: 136** - Solve $k - 47 = 89$ by adding 47 to both sides: $k = 89 + 47 = 136$. Check: $136 - 47 = 89$ ✓ To undo subtraction, use addition.
- 3. E: 27** - The sequence subtracts 9 each time. 1st: 81. 2nd: $81 - 9 = 72$. 3rd: $72 - 9 = 63$. 4th: $63 - 9 = 54$. 5th: $54 - 9 = 45$. 6th: $45 - 9 = 36$. 7th: $36 - 9 = 27$. This is an arithmetic sequence with common difference -9 .
- 4. B: 351** - Area of a rectangle = length \times width = $27 \times 13 = 351$ square units. Don't confuse with perimeter, which would be $2(27 + 13) = 80$. Area measures the space inside.
- 5. D: 13** - Solve $22x = 286$ by dividing both sides by 22: $x = 286 \div 22 = 13$. Check: $22 \times 13 = 286$ ✓ Division is the inverse of multiplication.
- 6. A: 84** - To find $7/10$ of 120 players, multiply: $(7/10) \times 120$. Divide 120 by 10 first: $120 \div 10 = 12$. Then multiply by 7: $12 \times 7 = 84$ starters.
- 7. C: 20** - Follow order of operations (PEMDAS). Multiply first: $12 \times 6 = 72$. Then work left to right: $85 - 72 = 13$, then $13 + 7 = 20$. Multiplication must be done before addition and subtraction.
- 8. E: 1/4** - Total cards = 52, hearts = 13. Probability = $13/52$. Simplify by dividing both by 13: $13/52 = 1/4$. Count favorable outcomes over total possible outcomes.
- 9. B: 19/20** - Convert 0.95 to a fraction: $0.95 = 95/100$. Simplify by dividing both numerator and denominator by 5: $95 \div 5 = 19$ and $100 \div 5 = 20$, giving $19/20$. Check: $19 \div 20 = 0.95$ ✓
- 10. D: 28** - The radius of a circle is half the diameter. If diameter = 56, then radius = $56 \div 2 = 28$. Remember: diameter goes all the way across, radius goes from center to edge.
- 11. A: 7** - Solve $13y + 24 = 115$ in two steps. Subtract 24 from both sides: $13y = 91$. Divide both sides by 13: $y = 7$. Check: $13(7) + 24 = 91 + 24 = 115$ ✓
- 12. C: \$220** - Calculate 45% off of \$400. Method 1: Find discount: $0.45 \times \$400 = \180 , then subtract: $\$400 - \$180 = \$220$. Method 2: If 45% off, you pay 55%: $0.55 \times \$400 = \220 .
- 13. E: 153** - Calculate each exponent first, then subtract. $27^2 = 27 \times 27 = 729$. Then $24^2 = 24 \times 24 = 576$. Finally subtract: $729 - 576 = 153$. Exponents must be calculated before subtraction.

14. B: 160 - The compound inequality $m > 155$ and $m < 160$ means m must be greater than 155 AND less than 160. This is a "could NOT" question. 160 does NOT satisfy $m < 160$ (160 is not less than 160; it's equal). All other choices fall between 155 and 160.

15. D: 24.5 - Set up a proportion: $14 \text{ cups}/20 \text{ loaves} = x \text{ cups}/35 \text{ loaves}$. Cross-multiply: $14 \times 35 = 20 \times x$, so $490 = 20x$. Divide: $x = 24.5$ cups. Or find cups per loaf: $14/20 = 0.7$ cup per loaf, so $35 \times 0.7 = 24.5$ cups.

16. A: 8/29 - When subtracting fractions with the same denominator, keep the denominator and subtract numerators: $21/29 - 13/29 = (21 - 13)/29 = 8/29$. The denominator stays 29; only subtract the numerators.

17. C: 15,600 - When rounding to the nearest hundred, look at the tens digit. In 15,628, the tens digit is 2. Since $2 < 5$, round down: keep the hundreds digit as 6, making 15,600.

18. E: 90 - The LCM is the smallest number both numbers divide into evenly. List multiples: 15: 15, 30, 45, 60, 75, 90... and 18: 18, 36, 54, 72, 90... The first common multiple is 90. Verify: $90 \div 15 = 6 \checkmark$ and $90 \div 18 = 5 \checkmark$

19. B: 729 - Examine the pattern: 9 to 27 is $\times 3$, 27 to 81 is $\times 3$, 81 to 243 is $\times 3$. Each number triples. This is a geometric sequence with ratio 3. Next number: $243 \times 3 = 729$.

20. D: 425 - Area of a triangle = $(\text{base} \times \text{height}) \div 2 = (34 \times 25) \div 2 = 850 \div 2 = 425$ square units. You can also use formula $A = \frac{1}{2}bh$. A triangle's area is always half that of a rectangle with the same base and height.

21. A: 170 - To find 85% of 200, multiply: $0.85 \times 200 = 170$. Mental math: 10% of 200 is 20, so 80% is 160, and 5% is 10, giving $160 + 10 = 170$.

22. C: 13 - Solve $25 \times n = 325$ by dividing both sides by 25: $n = 325 \div 25 = 13$. Check: $25 \times 13 = 325 \checkmark$
Think "25 times what equals 325?"

23. E: 81 - Work backwards from the result. If the result is 22 after adding 13, then before adding the value was $22 - 13 = 9$. If dividing by 9 gave 9, the original number was $9 \times 9 = 81$. Check: $81 \div 9 = 9$, then $9 + 13 = 22 \checkmark$

24. B: 40 - The ratio 8:5 means for every 8 apples, there are 5 oranges. If there are 64 apples, find how many groups of 8: $64 \div 8 = 8$ groups. Each group has 5 oranges, so total oranges = $8 \times 5 = 40$. Or proportion: $8/5 = 64/x$, cross multiply: $8x = 320$, so $x = 40$.

25. D: 132 - Follow order of operations. Calculate the exponent first: $10^2 = 100$. Then work left to right: $50 + 100 = 150$, then $150 - 18 = 132$. Exponents are calculated before addition and subtraction.

Reading

- 1. B: living tissue** - The passage explicitly states: "While most people think bones are hard, lifeless structures, they're actually living tissue that constantly rebuilds itself and plays crucial roles in maintaining overall health." Bones are alive and active.
- 2. E: protect the brain** - The passage notes: "The skull shields the brain, the rib cage protects the heart and lungs, and the spine safeguards the spinal cord." Protection of the brain is the skull's primary function mentioned.
- 3. A: calcium and phosphorus** - The passage states: "They store calcium and phosphorus, releasing these minerals into the bloodstream when needed for other body functions." These two minerals are specifically mentioned.
- 4. D: 200 billion** - The passage specifies: "An adult produces about 200 billion red blood cells every day." This impressive number is clearly stated.
- 5. C: proper nutrition and exercise** - The passage concludes: "Understanding bone function highlights why maintaining bone health through proper nutrition, exercise, and adequate calcium intake is crucial." These methods are recommended.
- 6. B: a scholarship offer** - The narrator mentions: "Summer Music Intensive—eight weeks studying violin with world-class musicians in Boston. Full scholarship." A complete scholarship was offered.
- 7. E: left the family** - The passage notes: "She'd been working double shifts since Dad left, trying to keep up with rent and my younger brother's medical bills." Dad's departure is mentioned.
- 8. A: surgery** - The narrator says: "Mom, Jake needs that surgery" and later "Jake's surgery can wait a few months." Surgery is what Jake requires.
- 9. D: eight weeks** - The opening line states: "Summer Music Intensive—eight weeks studying violin with world-class musicians in Boston." The duration is specified.
- 10. C: their family needs them more** - The narrator concludes: "It's choosing what matters more...Jake needs me now. You need me now...That's not sacrifice. That's family." Family need drives the decision.
- 11. B: a chemical reaction** - The passage states: "While it might seem like magic, bioluminescence is actually a chemical reaction." The scientific nature is emphasized.
- 12. E: luciferin** - The passage explains: "The process involves a light-producing chemical called luciferin and an enzyme called luciferase." Luciferin is the light-producing chemical.
- 13. A: attract mates** - The passage notes: "Fireflies flash to attract mates, with each species having its own unique flashing pattern." Mate attraction is their purpose.

- 14. D: disturbed** - The passage describes: "Perhaps the most spectacular display occurs with certain types of plankton that glow when disturbed." Disturbance triggers their light.
- 15. C: track cell movement and function** - The passage explains: "The genes responsible for bioluminescence have been used in medical research to track how cells move and function." This research application is specified.
- 16. B: 300 BCE** - The opening sentence states: "The Library of Alexandria, founded around 300 BCE in Egypt, was the ancient world's most important center of learning." This date is clearly given.
- 17. E: 400,000 to 700,000 scrolls** - The passage notes: "At its height, it may have contained between 400,000 and 700,000 scrolls." This range is specified.
- 18. A: housing and funding** - The passage states: "The institution provided them with housing, funding, and access to the vast collection." These benefits are mentioned.
- 19. D: books** - The passage explains: "Legend says that ships arriving in Alexandria's harbor were searched for books. Any found would be confiscated, copied, and the copy returned to the owner." Books were the target of searches.
- 20. C: occurred gradually over centuries** - The passage clarifies: "Rather than a single catastrophic event, scholars believe the library declined gradually over centuries. Various fires, wars, and political changes damaged the collection." Gradual decline is described.
- 21. B: short-term atmospheric conditions** - The passage defines: "Weather refers to short-term atmospheric conditions—what's happening outside your window right now." This immediate definition is provided.
- 22. E: long-term atmospheric patterns** - The passage explains: "Climate describes long-term patterns of temperature, precipitation, and other atmospheric conditions in a region." Long-term patterns define climate.
- 23. A: direct sunlight year-round** - The passage states: "The equator receives direct sunlight year-round, creating tropical climates." Direct sunlight characterizes the equator.
- 24. D: warming its climate** - The passage explains: "The Gulf Stream...carries warm water from the Gulf of Mexico to northern Europe, giving places like Ireland and Scotland much milder winters than their latitude would suggest." It warms Europe's climate.
- 25. C: one cold winter doesn't disprove climate change** - The passage concludes: "Understanding the difference between weather and climate helps us grasp why one cold winter doesn't disprove climate change—just as one hot day doesn't prove it." This distinction is emphasized.
- 26. B: a shoebox in the basement** - The opening sentence states: "I found Grandpa's medals in a shoebox in the basement—Bronze Star, Purple Heart, unit citations from World War II." The specific location is given.

27. E: rescuing his friend from a burning tank - Grandpa explains: "I carried my friend Joe out of a burning tank. He'd have died if I'd left him." This heroic action earned his medal.

28. A: the heroes didn't come home - When called a hero, Grandpa responds: "I'm not a hero...The heroes didn't come home." He deflects the label to fallen soldiers.

29. D: he's not proud of war itself - Grandpa explains: "But I don't display them because I'm not proud of war. I'm grateful I survived...But war itself? There's nothing in war to be proud of." His view of war keeps them hidden.

30. C: memories of fear, loss, and duty - The passage concludes: "these medals weren't trophies. They were memories—of fear, of loss, and of doing difficult things because someone needed you to." They represent complex memories, not glory.

31. B: a weakened or partial version of a pathogen - The passage explains: "When a vaccine is administered, it introduces a weakened, dead, or partial version of a pathogen (disease-causing organism) into the body." This is what vaccines contain.

32. E: recognize and quickly fight diseases it has encountered - The passage describes: "If the real disease ever enters the body, these memory cells quickly recognize it and mount a rapid, powerful defense." Memory cells enable quick recognition and response.

33. A: vaccination - The passage states: "Smallpox, a disease that killed millions throughout history, was completely eradicated through vaccination." Vaccination eliminated smallpox.

34. D: people who cannot be vaccinated - The passage explains: "When enough people are vaccinated, diseases can't spread easily, protecting even those who can't be vaccinated due to age, illness, or medical conditions." Herd immunity protects the unvaccinated.

35. C: extremely rare - The passage notes: "Side effects are typically mild—sore arm, low fever—and serious reactions are extremely rare, far less dangerous than the diseases vaccines prevent." Serious side effects are very uncommon.

36. B: 1799 - The opening sentence states: "The Rosetta Stone, discovered in 1799 by French soldiers in Egypt, became the key to deciphering ancient Egyptian hieroglyphics." The year is specified.

37. E: three - The passage explains: "The stone's importance lies in its text being written in three different scripts: hieroglyphics...Demotic...and ancient Greek." Three scripts are mentioned.

38. A: had both symbolic and phonetic components - The passage describes Champollion's realization: "hieroglyphics weren't purely symbolic—they also had phonetic components, representing sounds like our alphabet does. Some hieroglyphics represented whole ideas, while others represented sounds." The mixed system is explained.

39. D: 1822 - The passage states: "The breakthrough came from French scholar Jean-François Champollion...In 1822, he realized that hieroglyphics weren't purely symbolic." This breakthrough year is given.

40. C: the British Museum - The passage notes: "The Rosetta Stone itself now resides in the British Museum in London, though Egypt has requested its return." Its current location is specified.

Verbal

1. E: angry - Irate and angry both mean extremely mad or enraged, furious. "An irate customer" and "an angry customer" describe someone who is very upset. Both indicate intense anger or displeasure.

2. C: bold - Audacious and bold both mean showing willingness to take risks, daring. "An audacious plan" and "a bold plan" describe the same fearless approach. Both indicate courage and daring.

3. A: delicate - Fragile and delicate both mean easily broken or damaged, frail. "Fragile glass" and "delicate glass" describe the same breakable material. Both indicate vulnerability to damage.

4. D: plentiful - Ample and plentiful both mean more than enough, abundant. "Ample supplies" and "plentiful supplies" describe sufficient quantities. Both indicate abundance or adequacy.

5. B: calm - Tranquil and calm both mean peaceful and quiet, free from disturbance. "A tranquil lake" and "a calm lake" describe the same undisturbed water. Both indicate peacefulness.

6. E: frank - Candid and frank both mean truthful and straightforward, honest. "A candid opinion" and "a frank opinion" describe honest, direct communication. Both indicate openness and honesty.

7. C: lively - Vibrant and lively both mean full of energy and life, animated. "A vibrant community" and "a lively community" describe the same energetic atmosphere. Both indicate energy and vitality.

8. A: wise - Prudent and wise both mean showing good judgment, sensible. "A prudent decision" and "a wise decision" describe the same careful choice. Both indicate sound judgment.

9. D: outdated - Obsolete and outdated both mean no longer in use, out of date. "Obsolete technology" and "outdated technology" describe the same old systems. Both indicate being replaced or surpassed.

10. B: extravagant - Lavish and extravagant both mean elaborate and expensive, luxurious. "A lavish party" and "an extravagant party" describe the same costly celebration. Both indicate excessive spending or luxury.

11. E: gloomy - Sullen and gloomy both mean bad-tempered and morose, showing gloom. "A sullen mood" and "a gloomy mood" describe the same dark emotional state. Both indicate sadness or darkness.

12. C: ordinary - Mundane and ordinary both mean lacking interest or excitement, commonplace. "Mundane tasks" and "ordinary tasks" describe the same routine activities. Both indicate lack of excitement.

13. A: peaceful - Serene and peaceful both mean calm and untroubled, tranquil. "A serene expression" and "a peaceful expression" describe the same calm demeanor. Both indicate calmness and tranquility.

14. D: unfavorable - Adverse and unfavorable both mean harmful or unfavorable, negative. "Adverse conditions" and "unfavorable conditions" describe the same difficult circumstances. Both indicate negativity or opposition.

15. B: deep - Profound and deep both mean very great or intense, having deep meaning. "Profound wisdom" and "deep wisdom" describe the same significant understanding. Both indicate depth and significance.

16. E: hardworking - Diligent and hardworking both mean showing care and effort, industrious. "A diligent student" and "a hardworking student" describe the same dedicated learner. Both indicate persistent effort.

17. C: doubtful - Skeptical and doubtful both mean not easily convinced, questioning. "A skeptical attitude" and "a doubtful attitude" describe the same questioning stance. Both indicate lack of ready belief.

18. A: essential - Vital and essential both mean absolutely necessary, crucial. "Vital information" and "essential information" describe the same critical data. Both indicate absolute necessity.

19. D: sudden - Abrupt and sudden both mean happening quickly and unexpectedly. "An abrupt change" and "a sudden change" describe the same quick shift. Both indicate unexpectedness and speed.

20. B: serious - Somber and serious both mean dark, gloomy, or grave in mood. "A somber occasion" and "a serious occasion" describe the same solemn event. Both indicate gravity or darkness of mood.

21. E: careless - Reckless and careless both mean without thinking or caring about consequences, irresponsible. "Reckless behavior" and "careless behavior" describe the same thoughtless actions. Both indicate lack of caution.

22. C: articulate - Eloquent and articulate both mean fluent and persuasive in speaking or writing. "An eloquent speaker" and "an articulate speaker" describe someone who communicates effectively. Both indicate skilled expression.

23. A: careful - Meticulous and careful both mean showing great attention to detail, thorough. "Meticulous work" and "careful work" describe the same detailed approach. Both indicate precision and thoroughness.

24. D: unclear - Ambiguous and unclear both mean open to more than one interpretation, vague. "An ambiguous statement" and "an unclear statement" can both be misunderstood. Both indicate lack of clarity.

- 25. B: giving** - Generous and giving both mean willing to give more than necessary, unselfish. "A generous donation" and "a giving spirit" both indicate willingness to share. Both emphasize liberality.
- 26. E: deadly** - Lethal and deadly both mean capable of causing death, fatal. "A lethal weapon" and "a deadly weapon" describe the same dangerous instrument. Both indicate life-threatening danger.
- 27. C: pure** - Pristine and pure both mean in its original condition, unspoiled. "Pristine wilderness" and "pure wilderness" describe the same untouched nature. Both indicate cleanliness or original state.
- 28. A: passionate** - Fervent and passionate both mean having or showing strong feeling, ardent. "Fervent support" and "passionate support" describe the same intense backing. Both indicate strong emotion or conviction.
- 29. D: unimportant** - Trivial and unimportant both mean of little value or importance, insignificant. "A trivial matter" and "an unimportant matter" describe the same minor issue. Both indicate lack of significance.
- 30. B: enthusiastic** - Zealous and enthusiastic both mean filled with or showing great excitement and interest. "Zealous supporters" and "enthusiastic supporters" describe the same eager fans. Both indicate fervent support or interest.
- 31. B: scissors is to cut - Relationship: Tool to action it performs.** A pencil is used to write, just as scissors are used to cut. Both show implements paired with their primary functions.
- 32. D: wet is to dry - Relationship: Opposite conditions.** Hot and cold are opposite temperature conditions, just as wet and dry are opposite moisture conditions. Both pairs show contrasting states.
- 33. E: judge is to courtroom - Relationship: Professional to their primary workplace.** A pilot works in a cockpit, just as a judge works in a courtroom. Both show professionals in their characteristic work environments.
- 34. A: feather is to bird - Relationship: Covering to what it covers.** A petal is part of a flower's outer covering, just as a feather is part of a bird's outer covering. Both show components that form external surfaces.
- 35. C: screwdriver is to screw - Relationship: Tool to fastener it manipulates.** A hammer is used to drive nails, just as a screwdriver is used to turn screws. Both show tools paired with the fasteners they work with.
- 36. B: desert is to dry - Relationship: Environment to characteristic moisture condition.** An ocean is characterized by being salty, just as a desert is characterized by being dry. Both show ecosystems paired with their defining characteristics.
- 37. D: ball is to sphere - Relationship: Object to its geometric shape.** A box has a square shape (in cross-section), just as a ball has a spherical shape. Both show objects and their geometric forms.

- 38. E: foundation is to building - Relationship: Starting/base element to complete structure.** A seed grows into a plant, just as a foundation supports a building. Both show foundational elements and what develops from or on them.
- 39. A: sleepy is to rest - Relationship: Physical need to action that addresses it.** Being thirsty prompts you to drink, just as being sleepy prompts you to rest. Both show needs and their natural responses.
- 40. C: ruler is to length - Relationship: Measuring instrument to what it measures.** A barometer measures pressure, just as a ruler measures length. Both show devices paired with the quantities they measure.
- 41. B: leaves is to rake - Relationship: Material to tool used to gather/remove it.** Snow is removed with a shovel, just as leaves are removed with a rake. Both show materials and tools used to handle them.
- 42. D: word is to sentence - Relationship: Small unit to larger unit composed of it.** A note is a component of a song, just as a word is a component of a sentence. Both show building blocks and what they form.
- 43. E: architect is to blueprint - Relationship: Designer to design document they create.** An author creates a novel, just as an architect creates a blueprint. Both show creators and their characteristic design works.
- 44. A: expand is to shrink - Relationship: Opposite actions (increase vs. decrease in size).** Inflate and deflate are opposite actions, just as expand and shrink are opposite actions. Both pairs show contrasting size changes.
- 45. C: proud is to criticism - Relationship: Emotion to paradoxical trigger.** Feeling embarrassed from a compliment is unexpected, just as feeling proud from criticism would be paradoxical. Both show emotions paired with unusual triggers.
- 46. B: pediatrician is to children - Relationship: Medical specialist to patient population.** A veterinarian treats animals, just as a pediatrician treats children. Both show doctors and their patient groups.
- 47. D: sunset is to night - Relationship: Transition event to period it introduces.** Sunrise marks the beginning of day, just as sunset marks the beginning of night. Both show celestial events that initiate time periods.
- 48. E: egg is to snake - Relationship: Protective casing during development to what emerges.** A chrysalis protects a developing moth, just as an egg protects a developing snake. Both show developmental containers and what hatches/emerges.
- 49. A: ice is to melt - Relationship: State of matter to process that changes it.** Steam condenses (gas to liquid), just as ice melts (solid to liquid). Both show matter and phase transitions.

50. C: microscope is to magnify - Relationship: Optical instrument to its function. A compass is used to navigate, just as a microscope is used to magnify. Both show instruments and their primary purposes.

51. B: dam is to beaver - Relationship: Structure to animal that builds it. A web is built by a spider, just as a dam is built by a beaver. Both show animals and the structures they construct.

52. D: firewall is to virus - Relationship: Protection to threat it guards against. An antibody protects against infection, just as a firewall protects against computer viruses. Both show defensive mechanisms and what they defend against.

53. E: prism is to refract - Relationship: Optical object to what it does to light. A mirror reflects light, just as a prism refracts light. Both show objects and how they interact with light.

54. A: sample is to product - Relationship: Small portion to full version. A preview shows part of a movie, just as a sample shows part of a product. Both show partial versions that represent the whole.

55. C: nod is to head - Relationship: Gesture to body part performing it. A wink is done with the eye, just as a nod is done with the head. Both show actions and the body parts that perform them.

56. B: clay is to pottery - Relationship: Raw material to crafted product. Stone is shaped into a statue, just as clay is shaped into pottery. Both show materials transformed through artistic work.

57. D: dormant is to seed - Relationship: Inactive state to living thing in that state. An active volcano is currently erupting, just as a dormant seed is currently inactive but has potential. Both show states of activity/inactivity.

58. E: instructions is to builder - Relationship: Directions to person following them. A recipe guides a cook, just as instructions guide a builder. Both show guidance documents and the people who use them.

59. A: breeze is to wind - Relationship: Mild version to general term. A drizzle is light rain, just as a breeze is light wind. Both show gentle versions of weather phenomena.

60. C: dam is to flood - Relationship: Barrier to what it prevents. Quarantine prevents spread of disease, just as a dam prevents flooding. Both show preventive measures and what they prevent.

Quantitative

1. D: 15 - Divide 375 by 25: $375 \div 25 = 15$. This is a division fact from the 25 times table. Check: $25 \times 15 = 375$ ✓ Knowing multiplication facts helps solve division problems quickly.

2. B: 84 - Solve $p + 59 = 143$ by subtracting 59 from both sides: $p = 143 - 59 = 84$. Check: $84 + 59 = 143$ ✓ To undo addition, use subtraction.

- 3. E: 104** - The sequence adds 17 each time. 1st: 19. 2nd: $19 + 17 = 36$. 3rd: $36 + 17 = 53$. 4th: $53 + 17 = 70$. 5th: $70 + 17 = 87$. 6th: $87 + 17 = 104$. This is an arithmetic sequence with common difference 17.
- 4. A: 406** - Area of a rectangle = length \times width = $29 \times 14 = 406$ square units. Don't confuse with perimeter, which would be $2(29 + 14) = 86$. Area measures the space inside.
- 5. C: 13** - Solve $24x = 312$ by dividing both sides by 24: $x = 312 \div 24 = 13$. Check: $24 \times 13 = 312$ \checkmark
Division is the inverse of multiplication.
- 6. D: 36** - To find $\frac{3}{11}$ of 132 students, multiply: $(\frac{3}{11}) \times 132$. Divide 132 by 11 first: $132 \div 11 = 12$. Then multiply by 3: $12 \times 3 = 36$ students walk to school.
- 7. B: 37** - Follow order of operations (PEMDAS). Multiply first: $14 \times 5 = 70$. Then work left to right: $96 - 70 = 26$, then $26 + 11 = 37$. Multiplication must be done before addition and subtraction.
- 8. E: 7/20** - Total marbles: 5 red + 7 blue + 8 green = 20 marbles. Probability of blue = blue marbles/total marbles = $\frac{7}{20}$. This fraction is already in simplest form. Count favorable outcomes over total possible outcomes.
- 9. A: 3/4** - Convert 0.75 to a fraction: $0.75 = \frac{75}{100}$. Simplify by dividing both numerator and denominator by 25: $75 \div 25 = 3$ and $100 \div 25 = 4$, giving $\frac{3}{4}$. Check: $3 \div 4 = 0.75$ \checkmark
- 10. C: 54** - The diameter of a circle is twice the radius. If radius = 27, then diameter = $2 \times 27 = 54$. Remember: diameter goes all the way across through the center, radius goes from center to edge.
- 11. D: 7** - Solve $15y + 28 = 133$ in two steps. Subtract 28 from both sides: $15y = 105$. Divide both sides by 15: $y = 7$. Check: $15(7) + 28 = 105 + 28 = 133$ \checkmark
- 12. B: \$288** - Calculate 40% off of \$480. Method 1: Find discount: $0.40 \times \$480 = \192 , then subtract: $\$480 - \$192 = \$288$. Method 2: If 40% off, you pay 60%: $0.60 \times \$480 = \288 .
- 13. E: 165** - Calculate each exponent first, then subtract. $29^2 = 29 \times 29 = 841$. Then $26^2 = 26 \times 26 = 676$. Finally subtract: $841 - 676 = 165$. Exponents must be calculated before subtraction.
- 14. A: 175** - The compound inequality $s > 170$ and $s < 175$ means s must be greater than 170 AND less than 175. This is a "could NOT" question. 175 does NOT satisfy $s < 175$ (175 is not less than 175; it's equal). All other choices fall between 170 and 175.
- 15. C: 28** - Set up a proportion: 16 oz/24 cupcakes = x oz/42 cupcakes. Cross-multiply: $16 \times 42 = 24 \times x$, so $672 = 24x$. Divide: $x = 28$ ounces. Or find oz per cupcake: $16/24 = \frac{2}{3}$ oz per cupcake, so $42 \times (\frac{2}{3}) = 28$ oz.
- 16. D: 8/31** - When subtracting fractions with the same denominator, keep the denominator and subtract numerators: $\frac{23}{31} - \frac{15}{31} = \frac{23 - 15}{31} = \frac{8}{31}$. The denominator stays 31; only subtract the numerators.

- 17. B: 17,900** - When rounding to the nearest hundred, look at the tens digit. In 17,863, the tens digit is 6. Since $6 \geq 5$, round up: increase the hundreds digit from 8 to 9, making 17,900.
- 18. E: 48** - The LCM is the smallest number both numbers divide into evenly. List multiples: 16: 16, 32, 48, 64... and 24: 24, 48, 72... The first common multiple is 48. Verify: $48 \div 16 = 3 \checkmark$ and $48 \div 24 = 2 \checkmark$
- 19. A: 891** - Examine the pattern: 11 to 33 is $\times 3$, 33 to 99 is $\times 3$, 99 to 297 is $\times 3$. Each number triples. This is a geometric sequence with ratio 3. Next number: $297 \times 3 = 891$.
- 20. C: 486** - Area of a triangle = $(\text{base} \times \text{height}) \div 2 = (36 \times 27) \div 2 = 972 \div 2 = 486$ square units. You can also use formula $A = \frac{1}{2}bh$. A triangle's area is always half that of a rectangle with the same base and height.
- 21. D: 198** - To find 90% of 220, multiply: $0.90 \times 220 = 198$. Mental math: 10% of 220 is 22, so 90% is 9 times that: $9 \times 22 = 198$.
- 22. B: 13** - Solve $27 \times w = 351$ by dividing both sides by 27: $w = 351 \div 27 = 13$. Check: $27 \times 13 = 351 \checkmark$
Think "27 times what equals 351?"
- 23. E: 8** - Work backwards or set up an equation. Let n be the number: $(n \times 13) - 22 = 82$. So $13n - 22 = 82$. Add 22: $13n = 104$. Divide by 13: $n = 8$. Check: $8 \times 13 = 104$, then $104 - 22 = 82 \checkmark$
- 24. A: 32** - The ratio 9:4 means for every 9 soccer balls, there are 4 basketballs. If there are 72 soccer balls, find how many groups of 9: $72 \div 9 = 8$ groups. Each group has 4 basketballs, so total basketballs = $8 \times 4 = 32$. Or proportion: $9/4 = 72/x$, cross multiply: $9x = 288$, so $x = 32$.
- 25. C: 157** - Follow order of operations. Calculate the exponent first: $11^2 = 121$. Then work left to right: $55 + 121 = 176$, then $176 - 19 = 157$. Exponents are calculated before addition and subtraction.