MIDDLE LEVEL SSAT PRACTICE TEST 8

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 wake up one morning to discover you can understand what animals are saying. At first it seems amazing, but by the end of the day, you realize this ability comes with unexpected challenges.

Topic B: Describe a time when you had to choose between doing what was easy and doing what was right. What factors influenced your decision? Looking back, would you make the same choice again?

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 392 ÷ 28?

A. 12

B. 15

C. 14

D. 13

E. 16

2. If m − 53 = 91, then m =

A. 144

B. 53

C. 91

D. 38

E. 154

3. A sequence follows the rule: subtract 11 from the previous number. If the first number is 92, what is the 8th number?

A. 37

B. 48

C. 59

D. 70

E. 15

4. What is the area of a rectangle with length 31 and width 16?

A. 47

B. 496

C. 94

D. 480

E. 500

5. If $26x = 338$, then $x =$

A. 312

B. 364

C. 26

D. 13

E. 12

6. A chorus has 144 members. If 5/8 of them are altos, how many are altos?

A. 72

B. 54

C. 90

D. 108

E. 96

7. What is $103 - 15 \times 6 + 9$?

A. 22

B. 537

C. 528

D. 546

E. 13

8. A spinner has 25 equal sections numbered 1 through 25. What is the probability of landing on a multiple of 5?

A. 4/25

B. 6/25

C. 5/20

D. 1/25

E. 1/5

9. Which of the following is equivalent to 0.55?

A. 55/10

B. 11/20

C. 5/5

D. 1/55

E. 55/1000

10. A circle has a diameter of 62. What is its radius?

A. 124

B. 62

C. 15.5

D. 31

E. 93

11. If $17y + 31 = 150$, then $y =$

A. 31

B. 181

C. 7

D. 17

E. 8

12. A bicycle originally costs $560. It's now on sale for 35% off. What is the sale price?

A. $364

B. $196

C. $525

D. $420

E. $280

13. What is $31^2 - 28^2$?

A. 3

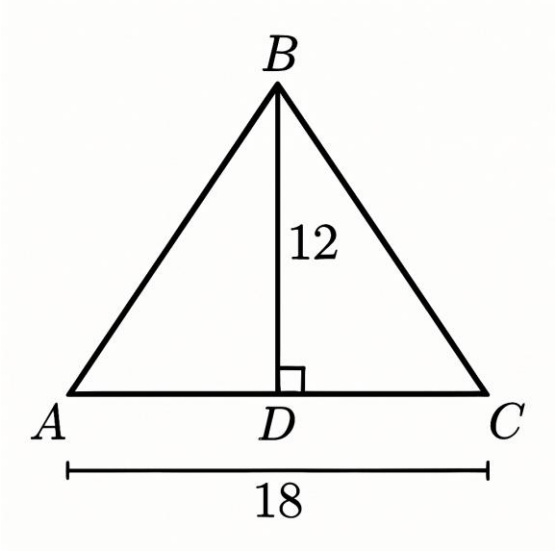
B. 784

C. 961

D. 9

E. 177

Questions 14-15 refer to the following figure.



14. What is the area of triangle ABC?

A. 30

B. 108

C. 216

D. 60

E. 180

15. If the perimeter of triangle ABC is 48, what is the length of side AB + BC?

A. 18

B. 24

C. 36

D. 30

E. 12

16. A recipe requires 18 cups of sugar to make 27 servings. How many cups are needed for 45 servings?

A. 27

B. 36

C. 30

D. 33

E. 24

17. What is 25/33 − 17/33?

A. 8/33

B. 42/33

C. 17/33

D. 8/66

E. 25/66

18. Round 19,473 to the nearest hundred.

A. 20,000

B. 19,470

C. 19,400

D. 19,450

E. 19,500

19. What is the least common multiple (LCM) of 22 and 33?

A. 11

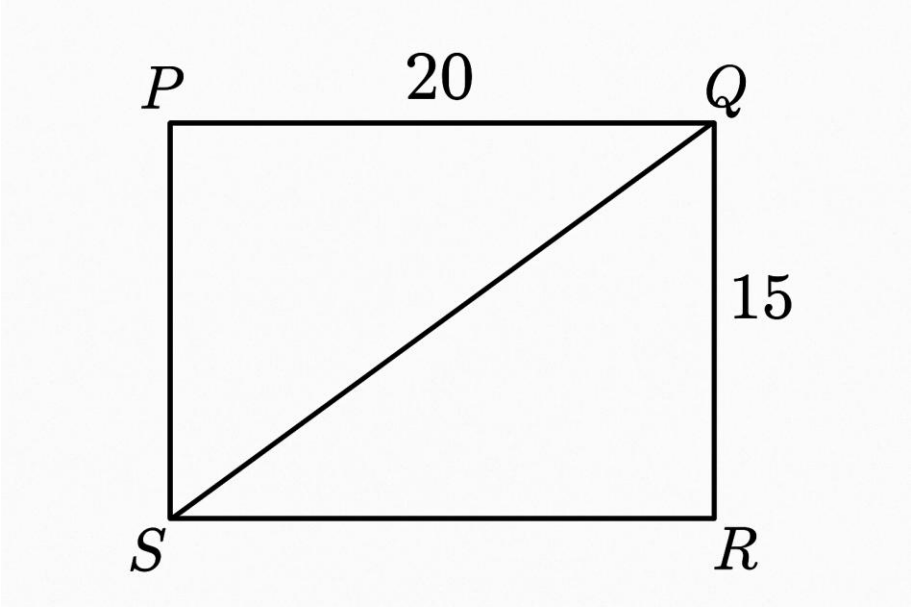
B. 66

C. 726

D. 44

E. 55

Questions 20-21 refer to the following figure.



20. What is the perimeter of rectangle PQRS?

A. 35

B. 300

C. 50

D. 70

E. 140

21. What is the area of rectangle PQRS?

A. 35

B. 70

C. 300

D. 150

E. 600

22. If the pattern continues: 12, 36, 108, 324, ___, what is the next number?

A. 972

B. 648

C. 432

D. 336

E. 1296

23. A triangle has a base of 38 and a height of 29. What is its area?

A. 67

B. 1102

C. 134

D. 729

E. 551

24. What is 95% of 240?

A. 95

B. 228

C. 200

D. 220

E. 240

25. If $29 \times v = 377$, then $v =$

A. 12

B. 14

C. 29

D. 13

E. 348

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 Great Barrier Reef, stretching over 1,400 miles along Australia's northeastern coast, is the world's largest coral reef system and one of Earth's most complex ecosystems. Composed of over 2,900 individual reefs and 900 islands, it's so vast that astronauts can see it from space—the only living structure visible from orbit.

Coral reefs are often called "rainforests of the sea" because they support incredible biodiversity despite covering less than 1% of the ocean floor. The Great Barrier Reef alone houses approximately 1,500 species of fish, 400 types of coral, 4,000 species of mollusks, and countless other organisms. Many creatures found nowhere else on Earth live within this ecosystem.

Corals themselves are fascinating organisms. Though they look like plants or rocks, corals are actually colonies of tiny animals called polyps. These polyps have a symbiotic relationship with algae called zooxanthellae, which live inside the coral tissue. The algae perform photosynthesis, providing the coral with nutrients, while the coral provides the algae with protection and access to sunlight. This partnership gives healthy coral its vibrant colors.

However, the reef faces serious threats. Rising ocean temperatures cause "coral bleaching"—when water becomes too warm, corals expel their zooxanthellae, losing both their color and their primary food source. If temperatures don't return to normal quickly, the coral dies. Pollution, overfishing, and ocean acidification also damage the reef. Scientists estimate that half of the reef's coral has died since 1995.

Conservation efforts aim to protect this natural wonder. Marine protected areas limit fishing and development. Scientists are developing heat-resistant coral varieties and researching ways to help damaged reefs recover. The Great Barrier Reef is not just Australia's treasure—it's a global resource that supports marine life, protects coastlines from storms, and provides livelihoods for thousands of people. Its fate affects us all.

1. The Great Barrier Reef can be seen from space because it

A. glows at night

B. is extremely large

C. reflects sunlight

D. is very colorful

E. floats on the surface

2. Coral reefs are called "rainforests of the sea" because they

A. receive heavy rainfall

B. have tall structures

C. grow quickly

D. exist in tropical areas

E. support high biodiversity

3. Zooxanthellae are

A. algae that live inside coral

B. fish species

C. coral predators

D. types of polyps

E. ocean currents

4. Coral bleaching occurs when

A. corals age naturally

B. fish eat the coral

C. pollution darkens water

D. warm temperatures cause corals to expel algae

E. corals reproduce

5. According to the passage, approximately what fraction of the reef's coral has died since 1995?

A. one-quarter

B. one-third

C. one-half

D. two-thirds

E. three-quarters

Passage 2

The scholarship ceremony was supposed to be the best day of my life. I'd won the Regional Science Award—$5,000 toward college and a fancy plaque with my name. Mom had taken off work early, wearing her nicest dress. My little sister Sofia carried a bouquet of flowers.

Then Dr. Chen, the awards director, announced: "Due to a clerical error, we must rescind Mia Rodriguez's award. The scholarship actually goes to another student."

The room went silent. I felt everyone's eyes on me. My face burned.

"There must be a mistake," Mom said, standing up. "Mia's project was selected weeks ago. We have the email."

Dr. Chen looked uncomfortable. "I apologize, but the committee's final decision stands. The scholarship goes to..." He paused. "...Brandon Miller."

Brandon. Student council president. Soccer team captain. His father was on the school board.

I grabbed Mom's arm. "Let's just go."

Outside, Mom was shaking with anger. "This isn't right. Your solar panel efficiency project was brilliant. Everyone said so."

"It doesn't matter," I said, though my chest felt hollow. "They made their choice."

Sofia, only eight, looked up at me with fierce eyes. "But you worked so hard."

She was right. I'd spent six months on that project, sacrificing weekends and sleep. And for what? To be humiliated?

Then Sofia said something that changed everything: "Are you going to let them think you don't deserve it?"

I stopped walking. She was right again. Whether or not I got the scholarship, I knew my work was worthy. More importantly, if there really was a "clerical error," other students needed to know decisions could be changed arbitrarily.

"Mom," I said slowly, "can we talk to someone at the district office tomorrow?"

She smiled—proud, sad, determined all at once. "Yes. We absolutely can."

6. Mia won an award for

A. athletics

B. science

C. music

D. writing

E. art

7. The scholarship was rescinded due to what Dr. Chen called

A. academic dishonesty

B. missing paperwork

C. budget cuts

D. rule violations

E. a clerical error

8. Brandon Miller is described as

A. student council president

B. Mia's friend

C. a science teacher

D. Sofia's classmate

E. the awards director

9. Sofia is Mia's

A. friend

B. cousin

C. classmate

D. little sister

E. teacher

10. By the end, Mia decides to

A. give up on science

B. thank the committee

C. appeal to the district office

D. confront Brandon directly

E. accept the decision quietly

Passage 3

Sleep is far more important than many people realize. While we sleep, our bodies and brains perform essential maintenance that affects everything from memory and learning to immune function and emotional well-being.

During sleep, the brain consolidates memories, transferring information from short-term to long-term storage. Studies show that students who get adequate sleep after studying perform significantly better on tests than those who stay up late cramming. The brain also clears out waste products that accumulate during waking hours—a cleaning process that may help prevent neurological diseases later in life.

Sleep affects physical health dramatically. During deep sleep, the body releases growth hormone, which repairs tissues, builds muscle, and strengthens bones. The immune system also ramps up production of infection-fighting cells and antibodies during sleep. People who regularly sleep less than seven hours per night are three times more likely to catch a cold than those who sleep eight hours or more.

Teenagers need 8-10 hours of sleep per night, but most get far less. Biological changes during adolescence shift the body's internal clock, making teens naturally inclined to stay up later and wake later. However, early school start times force them to wake before their bodies are ready. This chronic sleep deprivation affects mood, judgment, and academic performance. Many researchers advocate for later school start times to align with teen biology.

The consequences of sleep deprivation extend beyond tiredness. It impairs judgment and reaction time—drowsy driving causes thousands of accidents annually. Chronic sleep loss increases risks of obesity, diabetes, heart disease, and depression. Given how critical sleep is to health and functioning, treating it as a luxury rather than a necessity is a mistake with serious consequences.

11. During sleep, the brain transfers information from

A. long-term to working memory

B. short-term to long-term storage

C. one hemisphere to another

D. neurons to synapses

E. conscious to unconscious

12. Growth hormone released during sleep helps

A. process emotions

B. consolidate learning

C. clear brain waste

D. fight infection

E. repair tissues and build muscle

13. People who sleep less than seven hours nightly are how many times more likely to catch a cold?

A. three times

B. twice

C. five times

D. slightly

E. ten times

14. Teenagers' internal clocks naturally shift to make them

A. wake earlier

B. need less sleep

C. sleep more lightly

D. stay up later

E. nap frequently

15. Drowsy driving causes

A. minor inconveniences

B. improved reflexes

C. thousands of accidents annually

D. better focus

E. no significant problems

Passage 4

The printing press, invented by Johannes Gutenberg around 1440 in Germany, revolutionized human communication and knowledge sharing. Before this invention, books were copied by hand—a slow, expensive process that made books rare and accessible only to the wealthy and powerful, particularly clergy and nobility.

Gutenberg's innovation was movable type—individual metal letters that could be arranged into words, inked, and pressed onto paper, then rearranged for the next page. While Chinese and Korean inventors had used movable type earlier, Gutenberg's press was the first to combine movable type with a practical pressing mechanism, creating a system efficient enough for mass production.

The first major work printed on Gutenberg's press was the Bible, completed around 1455. These Gutenberg Bibles, with their beautiful typography and decoration, proved that printed books could match the quality of hand-copied manuscripts. Within 50 years, printing presses spread across Europe, and thousands of books were in circulation.

The printing press democratized knowledge. As books became more affordable, literacy rates increased. Ideas could spread rapidly across vast distances. Martin Luther's Protestant Reformation gained momentum partly because his writings could be printed and distributed widely. Scientific discoveries reached more researchers, accelerating the pace of scientific advancement. The Renaissance, the Reformation, and the Scientific Revolution all owed much to the printing press.

Today, we're experiencing another revolution—digital communication and the internet. Like Gutenberg's press, these technologies are transforming how we share information. The printing press shows us that innovations in communication don't just change how we talk; they change how we think, organize societies, and understand our world.

16. Before the printing press, books were

A. unavailable

B. hand-copied

C. printed on stone

D. made of metal

E. not illustrated

17. Gutenberg's innovation combined movable type with

A. handwriting

B. stone tablets

C. computer technology

D. digital scanning

E. a practical pressing mechanism

18. The first major work printed by Gutenberg was

A. the Bible

B. a dictionary

C. a novel

D. a newspaper

E. scientific journals

19. The Protestant Reformation gained momentum partly because

A. books became obsolete

B. people stopped reading

C. churches banned printing

D. Luther's writings could be widely distributed

E. printing was outlawed

20. The passage compares the printing press to

A. the telephone

B. ancient scrolls

C. digital communication and the internet

D. television

E. radio broadcasting

Passage 5

I found the letter on the last day of cleaning out Grandma's house. Tucked inside an old cookbook, yellowed and fragile, it was addressed to "My Future Self" and dated 1952—when Grandma was just sixteen.

"Dear Future Me," it began. "I'm writing this the night before I leave home for the first time. Tomorrow I start work at the textile mill in the city. Mama cried all day, and Papa won't look at me, but I know this is right. I have to see what's beyond these mountains."

I'd never known Grandma had worked in a mill. She'd always been just Grandma—the woman who baked cookies, tended roses, and hummed while washing dishes.

The letter continued: "I'm scared. The city is 200 miles away, and I'll know no one. But I've saved $37, and Miss Henderson says the mill pays fair wages. I have a room arranged at Mrs. Cooper's boarding house—$4 a week including breakfast."

My grandmother, young and brave, leaving everything familiar for a dream she'd never spoken about.

"I promise myself three things," the letter read. "First, I'll learn to read better. Second, I'll save money for my own place. Third, I'll never let anyone tell me what I can't do because I'm a girl from the mountains. If I'm reading this years from now, I hope I kept these promises."

I thought about what I knew of her life. She'd worked at that mill for three years before meeting Grandpa. She'd put herself through night school, eventually becoming a bookkeeper. She'd bought a house—this house—before she married, insisting she own it herself.

She'd kept every promise.

I carefully folded the letter and put it in my pocket. Grandma had passed away last month at ninety-two, and cleaning out her house had felt like saying goodbye again. But this letter was a gift—a reminder that the quiet, gentle woman I knew had once been a fierce teenager with big dreams.

And that courage doesn't always look like courage when you're living it. Sometimes it looks like saving $37 and buying a bus ticket.

21. The narrator found the letter in

A. a drawer

B. a cookbook

C. a photo album

D. a jewelry box

E. an attic trunk

22. The letter was dated

A. 1942

B. 1962

C. 1982

D. 1932

E. 1952

23. Grandma was leaving home to

A. work at a textile mill

B. attend university

C. get married

D. join the military

E. travel abroad

24. Grandma promised herself she would

A. return home quickly

B. become famous

C. stay in the mountains

D. learn to read better

E. avoid the city

25. The narrator realizes that courage can look like

A. loud declarations

B. dramatic gestures

C. saving money and taking small steps

D. giving up dreams

E. staying where you're comfortable

Passage 6

Earthquakes occur when energy is suddenly released along fault lines—cracks in Earth's crust where tectonic plates meet. These massive plates constantly move, usually just inches per year, but friction prevents smooth motion. Stress builds until it exceeds the strength of the rock, causing it to rupture and send seismic waves through the ground.

The point underground where the rupture begins is called the focus or hypocenter. Directly above it on Earth's surface lies the epicenter—typically where shaking is strongest. Seismic waves radiate outward from the focus in all directions, like ripples on a pond, though they travel through solid rock rather than water.

Scientists measure earthquake magnitude using the Richter scale, though many now prefer the moment magnitude scale for large earthquakes. These logarithmic scales mean each whole number increase represents roughly 32 times more energy released. A magnitude 7 earthquake releases about 1,000 times more energy than a magnitude 5 quake. The intensity of shaking experienced at any location depends not just on magnitude but also on distance from the epicenter, depth of the focus, and local soil conditions.

Earthquakes can't be predicted with precision, but scientists can identify high-risk areas. The "Ring of Fire" around the Pacific Ocean hosts 90% of the world's earthquakes and most active volcanoes because several major tectonic plates meet there. California's San Andreas Fault is part of this system. Building codes in earthquake-prone regions require special construction techniques—flexible foundations, reinforced frames, and automatic gas shut-offs—to help structures survive shaking.

The most dangerous earthquakes occur in populated areas with poor construction. When a magnitude 7.0 earthquake struck Haiti in 2010, inadequate building standards led to catastrophic damage and over 200,000 deaths. A similar magnitude earthquake in California, though still devastating, typically causes far fewer casualties due to strict building codes and emergency preparedness.

26. Earthquakes occur when energy is released along

A. rivers

B. fault lines

C. mountain peaks

D. ocean trenches

E. volcanoes exclusively

27. The epicenter is located

A. underground where rupture begins

B. at a volcano

C. in the ocean

D. in a laboratory

E. on the surface above the focus

28. On a logarithmic magnitude scale, each whole number increase represents

A. about 32 times more energy

B. twice the energy

C. ten times more energy

D. exactly the same energy

E. slightly more energy

29. The Ring of Fire hosts approximately what percentage of the world's earthquakes?

A. 50%

B. 25%

C. 75%

D. 90%

E. 100%

30. The passage suggests earthquake damage depends heavily on

A. the day it occurs

B. the season

C. building construction standards

D. population size only

E. government type

Passage 7

The college acceptance letter arrived on a Tuesday—full scholarship to my dream school, 800 miles away. I should have been ecstatic. Instead, I felt like I was drowning.

"This is amazing!" Mom said, reading over my shoulder. Then she saw my face. "What's wrong?"

How could I explain? For two years, since Dad died, I'd been her anchor. I handled bills when she couldn't focus. I made dinner when grief paralyzed her. I drove my younger brothers to school and helped with homework. Our family worked because I held it together.

"Who's going to help if I leave?" I finally said.

Mom sat down heavily. "Is that why you've been so quiet about college?"

I nodded. "You need me here. The boys need me. How can I leave when everything's still so hard?"

She was quiet for a long moment. When she looked up, her eyes were wet but clear. "When your dad died, I didn't just lose my husband. I lost myself for a while. And you—you stopped being a kid because I stopped being a parent."

"That's not—"

"It is true. And it was wrong." She took my hand. "You've been incredible, but it's not your job to fix us. I'm your mother. Your brothers' mother. We'll figure it out."

"But what if—"

"What if you miss this chance and regret it forever?" She squeezed my hand. "Honey, the greatest gift you can give us is showing your brothers that dreams matter. That you don't sacrifice everything when life gets hard. You go. You thrive. And you teach them what courage looks like."

"I'm scared," I whispered.

"I know. So am I." She smiled through tears. "But we'll be scared together, 800 miles apart. And we'll be proud—so, so proud."

That night, I accepted the scholarship. Mom started seeing a therapist. My brothers complained about my leaving, then threw me a going-away party. Life didn't magically fix itself.

But we learned something important: sometimes the most loving thing you can do is let go and trust that the people you love are stronger than you think. Including yourself.

31. The narrator has been helping their family since

A. starting high school

B. their father died

C. graduating

D. moving away

E. last summer

32. The narrator received a scholarship to a school

A. across town

B. in another country

C. in the same city

D. nearby

E. 800 miles away

33. The narrator's mother realizes she

A. needs to move away too

B. should stop the narrator from leaving

C. must quit her job

D. needs more help

E. stopped being a parent after Dad died and let the narrator take over

34. The mother believes the narrator should

A. stay home forever

B. wait several years

C. transfer closer

D. pursue the opportunity

E. reject the scholarship

35. By the end, the narrator learns that sometimes loving means

A. never leaving

B. sacrificing dreams

C. trusting people are stronger than you think

D. ignoring problems

E. avoiding difficult choices

Passage 8

The human sense of smell is often underestimated, but it's remarkably sophisticated and deeply connected to memory and emotion. The olfactory system can distinguish more than one trillion different odors—far more than previously thought.

When you smell something, airborne molecules enter your nose and bind to receptors on olfactory neurons. These neurons send signals directly to the olfactory bulb in the brain, which processes the information and sends it to several brain regions. Uniquely among senses, smell has direct connections to the limbic system—the brain's emotional center—and the hippocampus, which is crucial for memory formation.

This direct connection explains why smells can trigger vivid memories and strong emotions instantly. A whiff of fresh-baked cookies might transport you to your grandmother's kitchen; the scent of a particular perfume might remind you of a former friend. This phenomenon, sometimes called the "Proust effect" after the French author who wrote eloquently about smell-triggered memories, demonstrates how powerfully scent links to our personal histories.

Smell also plays crucial roles beyond nostalgia. It warns us of danger—spoiled food, smoke, gas leaks. It influences our food choices and enjoyment; when you have a cold and "can't taste" food, you're actually unable to smell it, since flavor combines taste and smell. Some research suggests humans can even subconsciously detect chemical signals from other people, though this remains controversial.

Interestingly, smell is one of the first senses to decline with age or certain neurological conditions. Difficulty identifying odors can be an early warning sign of Alzheimer's disease or Parkinson's disease, often appearing before other symptoms. This makes smell tests potentially useful diagnostic tools.

Despite its importance, smell remains underappreciated in modern society, where visual and auditory information dominate. Yet this ancient sense continues to shape our experiences, trigger our memories, and connect us to the world in profound ways.

36. The human olfactory system can distinguish approximately

A. one million odors

B. one trillion odors

C. one billion odors

D. one hundred thousand odors

E. countless odors

37. Unlike other senses, smell has direct connections to

A. the spinal cord

B. the stomach

C. the hands

D. the feet

E. the limbic system and hippocampus

38. The "Proust effect" refers to

A. smell-triggered memories

B. taste preferences

C. visual illusions

D. hearing loss

E. touch sensitivity

39. When you have a cold and "can't taste" food, you actually

A. have damaged taste buds

B. need more salt

C. should eat sweeter foods

D. can't smell it

E. are imagining it

40. Difficulty identifying odors can be an early sign of

A. nothing significant

B. excellent health

C. Alzheimer's or Parkinson's disease

D. improved senses

E. allergies only

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. CONCISE:

A. brief

B. lengthy

C. wordy

D. verbose

E. rambling

2. TIMID:

A. brave

B. bold

C. courageous

D. shy

E. fearless

3. ABSURD:

A. sensible

B. ridiculous

C. logical

D. reasonable

E. rational

4. SUMMIT:

A. bottom

B. valley

C. depth

D. base

E. peak

5. LANGUID:

A. energetic

B. active

C. sluggish

D. lively

E. vigorous

6. BARREN:

A. empty

B. fertile

C. productive

D. lush

E. abundant

7. CUNNING:

A. honest

B. straightforward

C. naive

D. clever

E. simple

8. BENIGN:

A. harmful

B. harmless

C. dangerous

D. malicious

E. threatening

9. SCORN:

A. admiration

B. respect

C. praise

D. honor

E. contempt

10. PERPETUAL:

A. temporary

B. brief

C. constant

D. short

E. occasional

11. VAGUE:

A. unclear

B. specific

C. precise

D. exact

E. detailed

12. CRUCIAL:

A. unimportant

B. trivial

C. minor

D. critical

E. insignificant

13. MELANCHOLY:

A. cheerful

B. sad

C. happy

D. joyful

E. excited

14. STIFLE:

A. release

B. free

C. liberate

D. encourage

E. suppress

15. ARID:

A. wet

B. moist

C. dry

D. humid

E. damp

16. BLUNT:

A. direct

B. subtle

C. indirect

D. tactful

E. diplomatic

17. FICKLE:

A. loyal

B. faithful

C. constant

D. changeable

E. steadfast

18. MEEK:

A. aggressive

B. gentle

C. fierce

D. bold

E. assertive

19. THRIFTY:

A. wasteful

B. extravagant

C. lavish

D. generous

E. economical

20. STUBBORN:

A. flexible

B. yielding

C. obstinate

D. compliant

E. agreeable

21. BIZARRE:

A. strange

B. normal

C. ordinary

D. common

E. typical

22. HOSTILE:

A. friendly

B. kind

C. warm

D. aggressive

E. welcoming

23. NOBLE:

A. common

B. honorable

C. lowly

D. base

E. ignoble

24. SPARSE:

A. dense

B. thick

C. abundant

D. crowded

E. scattered

25. LUCID:

A. confused

B. unclear

C. clear

D. vague

E. obscure

26. RIGID:

A. inflexible

B. flexible

C. bendable

D. pliable

E. elastic

27. TURMOIL:

A. peace

B. calm

C. tranquility

D. chaos

E. serenity

28. SHREWD:

A. foolish

B. astute

C. naive

D. simple

E. gullible

29. COMPLY:

A. resist

B. oppose

C. refuse

D. rebel

E. obey

30. AUSTERE:

A. luxurious

B. ornate

C. plain

D. decorated

E. elaborate

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. Rain is to umbrella as

A. snow is to shovel

B. wind is to hat

C. sun is to sunscreen

D. fog is to light

E. thunder is to earplugs

32. Hungry is to eat as

A. full is to stop

B. tired is to run

C. cold is to swim

D. happy is to cry

E. thirsty is to drink

33. Scissors is to cut as

A. hammer is to break

B. brush is to paint

C. needle is to sew

D. pencil is to erase

E. ruler is to measure

34. Curious is to question as

A. tired is to yawn

B. happy is to laugh

C. angry is to smile

D. sad is to dance

E. excited is to sleep

35. Library is to books as

A. kitchen is to bedroom

B. school is to teachers

C. store is to customers

D. museum is to artifacts

E. park is to trees

36. Caterpillar is to chrysalis as

A. tadpole is to fish

B. egg is to nest

C. seed is to sprout

D. baby is to crib

E. flower is to petal

37. Thermometer is to temperature as

A. clock is to watch

B. ruler is to pencil

C. scale is to height

D. compass is to location

E. barometer is to pressure

38. Drought is to water as

A. cold is to winter

B. famine is to food

C. storm is to rain

D. wind is to air

E. heat is to summer

39. Optimistic is to pessimistic as

A. hopeful is to hopeless

B. happy is to joyful

C. sad is to unhappy

D. excited is to thrilled

E. angry is to furious

40. Page is to book as

A. sentence is to word

B. letter is to envelope

C. chapter is to novel

D. brick is to wall

E. tile is to roof

41. Kernel is to corn as

A. shell is to nut

B. skin is to apple

C. pit is to peach

D. stem is to flower

E. leaf is to tree

42. Palette is to painter as

A. canvas is to easel

B. piano is to musician

C. brush is to artist

D. stage is to actor

E. keyboard is to writer

43. Shiver is to cold as

A. laugh is to sad

B. perspire is to hot

C. yawn is to energetic

D. sneeze is to healthy

E. cough is to well

44. Telescope is to far as

A. magnifying glass is to small

B. mirror is to backward

C. lens is to blurry

D. window is to clear

E. binoculars is to close

45. Rehearsal is to performance as

A. game is to practice

B. test is to study

C. concert is to song

D. practice is to game

E. performance is to applause

46. Transparent is to glass as

A. heavy is to metal

B. soft is to cotton

C. opaque is to wood

D. smooth is to silk

E. rough is to sandpaper

47. Shepherd is to sheep as

A. teacher is to books

B. doctor is to hospital

C. farmer is to barn

D. pilot is to passengers

E. cowboy is to cattle

48. Evaporate is to liquid as

A. freeze is to ice

B. melt is to solid

C. condense is to gas

D. boil is to steam

E. cool is to heat

49. Compliment is to praise as

A. insult is to criticize

B. question is to answer

C. statement is to response

D. greeting is to farewell

E. thanks is to welcome

50. Intermission is to play as

A. beginning is to end

B. chapter is to book

C. verse is to song

D. halftime is to game

E. scene is to act

51. Dentist is to teeth as

A. optometrist is to glasses

B. surgeon is to hospital

C. cardiologist is to heart

D. teacher is to students

E. chef is to kitchen

52. Anchor is to ship as

A. wheel is to car

B. wing is to plane

C. sail is to boat

D. engine is to train

E. brake is to bicycle

53. Prologue is to epilogue as

A. beginning is to middle

B. introduction is to conclusion

C. first is to second

D. start is to pause

E. opening is to intermission

54. Quarantine is to disease as

A. cage is to animal

B. fence is to property

C. lock is to door

D. wall is to house

E. barrier is to water

55. Nomad is to wander as

A. settler is to move

B. tourist is to visit

C. traveler is to stay

D. hermit is to isolate

E. explorer is to discover

56. Metaphor is to literal as

A. simile is to comparison

B. poem is to prose

C. figurative is to actual

D. symbol is to meaning

E. story is to tale

57. Sculptor is to chisel as

A. writer is to reader

B. painter is to gallery

C. musician is to audience

D. dancer is to stage

E. carpenter is to saw

58. Pulse is to heartbeat as

A. breath is to lung

B. blink is to eye

C. digestion is to stomach

D. thought is to brain

E. reflex is to nerve

59. Eclipse is to obscure as

A. magnify is to enlarge

B. shrink is to grow

C. hide is to reveal

D. show is to conceal

E. cover is to expose

60. Archipelago is to islands as

A. mountain is to peak

B. forest is to tree

C. desert is to sand

D. constellation is to stars

E. ocean is to wave

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 420 ÷ 30?

A. 13

B. 14

C. 15

D. 12

E. 16

2. If r + 67 = 155, then r =

A. 222

B. 67

C. 155

D. 78

E. 88

3. A sequence follows the rule: add 19 to the previous number. If the first number is 23, what is the 5th number?

A. 99

B. 80

C. 61

D. 42

E. 118

4. What is the area of a rectangle with length 33 and width 18?

A. 51

B. 102

C. 594

D. 600

E. 580

5. If $28x = 364$, then $x =$

A. 336

B. 392

C. 28

D. 13

E. 12

6. A school has 156 students. If 2/3 of them are in afterschool programs, how many students are in afterschool programs?

A. 52

B. 104

C. 78

D. 156

E. 130

7. What is $115 - 16 \times 7 + 8$?

A. 685

B. 693

C. 701

D. 23

E. 11

8. A bag contains 6 red chips, 8 blue chips, and 11 yellow chips. What is the probability of selecting a red chip?

A. 6/25

B. 6/19

C. 1/6

D. 8/25

E. 11/25

9. Which of the following is equivalent to 0.85?

A. 85/10

B. 8/5

C. 17/20

D. 1/85

E. 85/1000

10. A circle has a radius of 29. What is its diameter?

A. 14.5

B. 87

C. 29

D. 58

E. 116

11. If $19y + 35 = 168$, then $y =$

A. 35

B. 7

C. 203

D. 19

E. 8

12. A laptop originally costs $640. It's now on sale for 30% off. What is the sale price?

A. $610

B. $192

C. $480

D. $384

E. $448

13. What is $33^2 - 30^2$?

A. 189

B. 3

C. 900

D. 1089

E. 9

14. If $t > 185$ and $t < 190$, which could NOT be the value of t?

A. 186

B. 187.5

C. 190

D. 188

E. 189

15. A recipe requires 20 tablespoons of butter to make 30 muffins. How many tablespoons are needed for 48 muffins?

A. 30

B. 36

C. 28

D. 32

E. 24

16. What is 27/35 − 19/35?

A. 46/35

B. 8/35

C. 19/35

D. 8/70

E. 27/70

17. Round 21,548 to the nearest hundred.

A. 22,000

B. 21,550

C. 21,400

D. 21,600

E. 21,500

18. What is the least common multiple (LCM) of 18 and 27?

A. 54

B. 486

C. 36

D. 27

E. 72

19. If the pattern continues: 15, 45, 135, 405, ___, what is the next number?

A. 810

B. 675

C. 1215

D. 540

E. 1620

20. A triangle has a base of 40 and a height of 31. What is its area?

A. 71

B. 1240

C. 142

D. 620

E. 496

21. What is 88% of 250?

A. 88

B. 220

C. 200

D. 240

E. 250

22. If $31 \times q = 403$, then $q =$

A. 12

B. 14

C. 31

D. 372

E. 13

23. A number is multiplied by 15, then 27 is subtracted. The result is 93. What is the number?

A. 9

B. 7

C. 8

D. 6

E. 10

24. The ratio of soccer balls to volleyballs in a gym is 7:3. If there are 56 soccer balls, how many volleyballs are there?

A. 24

B. 21

C. 28

D. 35

E. 18

25. What is $60 + 12^2 - 21$?

A. 123

B. 144

C. 204

D. 183

E. 39

ANSWERS AND EXPLANATIONS

Quantitative

1. C: 14 - Divide 392 by 28: 392 ÷ 28 = 14. This is a division fact from the 28 times table. Check: 28 × 14 = 392 ✓ Knowing multiplication facts helps solve division problems quickly.

2. A: 144 - Solve m − 53 = 91 by adding 53 to both sides: m = 91 + 53 = 144. Check: 144 − 53 = 91 ✓ To undo subtraction, use addition.

3. E: 15 - The sequence subtracts 11 each time. 1st: 92. 2nd: 92 − 11 = 81. 3rd: 81 − 11 = 70. 4th: 70 − 11 = 59. 5th: 59 − 11 = 48. 6th: 48 − 11 = 37. 7th: 37 − 11 = 26. 8th: 26 − 11 = 15. This is an arithmetic sequence with common difference −11.

4. B: 496 - Area of a rectangle = length × width = 31 × 16 = 496 square units. Don't confuse with perimeter, which would be 2(31 + 16) = 94. Area measures the space inside.

5. D: 13 - Solve 26x = 338 by dividing both sides by 26: x = 338 ÷ 26 = 13. Check: 26 × 13 = 338 ✓ Division is the inverse of multiplication.

6. C: 90 - To find 5/8 of 144 members, multiply: (5/8) × 144. Divide 144 by 8 first: 144 ÷ 8 = 18. Then multiply by 5: 18 × 5 = 90 altos.

7. A: 22 - Follow order of operations (PEMDAS). Multiply first: 15 × 6 = 90. Then work left to right: 103 − 90 = 13, then 13 + 9 = 22. Multiplication must be done before addition and subtraction.

8. E: 1/5 - Multiples of 5 from 1 to 25 are: 5, 10, 15, 20, 25 (that's 5 numbers out of 25 possible outcomes). Probability = 5/25. Simplify by dividing both by 5: 5/25 = 1/5. Count favorable outcomes over total possible outcomes.

9. B: 11/20 - Convert 0.55 to a fraction: 0.55 = 55/100. Simplify by dividing both numerator and denominator by 5: 55 ÷ 5 = 11 and 100 ÷ 5 = 20, giving 11/20. Check: 11 ÷ 20 = 0.55 ✓

10. D: 31 - The radius of a circle is half the diameter. If diameter = 62, then radius = 62 ÷ 2 = 31. Remember: diameter goes all the way across, radius goes from center to edge.

11. C: 7 - Solve 17y + 31 = 150 in two steps. Subtract 31 from both sides: 17y = 119. Divide both sides by 17: y = 7. Check: 17(7) + 31 = 119 + 31 = 150 ✓

12. A: $364 - Calculate 35% off of $560. Method 1: Find discount: 0.35 × $560 = $196, then subtract: $560 − $196 = $364. Method 2: If 35% off, you pay 65%: 0.65 × $560 = $364.

13. E: 177 - Calculate each exponent first, then subtract. $31^2 = 31 \times 31 = 961$. Then $28^2 = 28 \times 28 = 784$. Finally subtract: 961 − 784 = 177. Exponents must be calculated before subtraction.

14. B: 108 - Area of a triangle = (base × height) ÷ 2. From Figure 1, base AC = 18 and height = 12. Area = (18 × 12) ÷ 2 = 216 ÷ 2 = 108 square units. The formula A = ½bh can also be used.

15. D: 30 - The perimeter is the sum of all three sides: AB + BC + AC = 48. From Figure 1, AC = 18. Therefore, AB + BC = 48 − 18 = 30. The perimeter minus the known side gives the sum of the other two sides.

16. C: 30 - Set up a proportion: 18 cups/27 servings = x cups/45 servings. Cross-multiply: 18 × 45 = 27 × x, so 810 = 27x. Divide: x = 30 cups. Or find cups per serving: 18/27 = 2/3 cup per serving, so 45 × (2/3) = 30 cups.

17. A: 8/33 - When subtracting fractions with the same denominator, keep the denominator and subtract numerators: 25/33 − 17/33 = (25 − 17)/33 = 8/33. The denominator stays 33; only subtract the numerators.

18. E: 19,500 - When rounding to the nearest hundred, look at the tens digit. In 19,473, the tens digit is 7. Since 7 ≥ 5, round up: increase the hundreds digit from 4 to 5, making 19,500.

19. B: 66 - The LCM is the smallest number both numbers divide into evenly. List multiples: 22: 22, 44, 66, 88... and 33: 33, 66, 99... The first common multiple is 66. Verify: 66 ÷ 22 = 3 ✓ and 66 ÷ 33 = 2 ✓

20. D: 70 - Perimeter of a rectangle = 2(length + width). From Figure 2, length PQ = 20 and width QR = 15. Perimeter = 2(20 + 15) = 2(35) = 70. The perimeter is the distance around the entire rectangle.

21. C: 300 - Area of a rectangle = length × width. From Figure 2, length PQ = 20 and width QR = 15. Area = 20 × 15 = 300 square units. Area measures the space inside the rectangle.

22. A: 972 - Examine the pattern: 12 to 36 is ×3, 36 to 108 is ×3, 108 to 324 is ×3. Each number triples. This is a geometric sequence with ratio 3. Next number: 324 × 3 = 972.

23. E: 551 - Area of a triangle = (base × height) ÷ 2 = (38 × 29) ÷ 2 = 1102 ÷ 2 = 551 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.

24. B: 228 - To find 95% of 240, multiply: 0.95 × 240 = 228. Mental math: 100% of 240 is 240, so 95% is 240 − (5% of 240) = 240 − 12 = 228.

25. D: 13 - Solve 29 × v = 377 by dividing both sides by 29: v = 377 ÷ 29 = 13. Check: 29 × 13 = 377 ✓ Think "29 times what equals 377?"

Reading

1. B: is extremely large - The passage states: "it's so vast that astronauts can see it from space—the only living structure visible from orbit." Its enormous size makes it visible from space, spanning over 1,400 miles.

2. E: support high biodiversity - The passage explains: "Coral reefs are often called 'rainforests of the sea' because they support incredible biodiversity despite covering less than 1% of the ocean floor." The nickname refers to the diversity of life, not physical characteristics.

3. A: algae that live inside coral - The passage describes: "The polyps have a symbiotic relationship with algae called zooxanthellae, which live inside the coral tissue." They are specifically identified as algae living symbiotically with coral.

4. D: warm temperatures cause corals to expel algae - The passage explains: "Rising ocean temperatures cause 'coral bleaching'—when water becomes too warm, corals expel their zooxanthellae." High temperatures trigger the expulsion.

5. C: one-half - The passage states: "Scientists estimate that half of the reef's coral has died since 1995." This is explicitly stated as half or 50%.

6. B: science - The opening mentions: "I'd won the Regional Science Award...My solar panel efficiency project was brilliant." The award was for science.

7. E: a clerical error - Dr. Chen announced: "Due to a clerical error, we must rescind Mia Rodriguez's award." This was the stated reason, though its validity is questioned.

8. A: student council president - The passage describes Brandon as: "Student council president. Soccer team captain. His father was on the school board." Student council president is mentioned first.

9. D: little sister - The passage refers to "My little sister Sofia" multiple times. Their relationship is clearly established.

10. C: appeal to the district office - The passage ends: "'Mom,' I said slowly, 'can we talk to someone at the district office tomorrow?' She smiled....'Yes. We absolutely can.'" Mia decides to pursue an official appeal.

11. B: short-term to long-term storage - The passage states: "During sleep, the brain consolidates memories, transferring information from short-term to long-term storage." This memory transfer process is specified.

12. E: repair tissues and build muscle - The passage explains: "During deep sleep, the body releases growth hormone, which repairs tissues, builds muscle, and strengthens bones." These are the functions listed for growth hormone.

13. A: three times - The passage notes: "People who regularly sleep less than seven hours per night are three times more likely to catch a cold than those who sleep eight hours or more." The multiple is clearly stated.

14. D: stay up later - The passage describes: "Biological changes during adolescence shift the body's internal clock, making teens naturally inclined to stay up later and wake later." The shift is toward later bedtimes.

15. C: thousands of accidents annually - The passage warns: "It impairs judgment and reaction time—drowsy driving causes thousands of accidents annually." The number and frequency are specified.

16. B: hand-copied - The passage explains: "Before this invention, books were copied by hand—a slow, expensive process that made books rare." Hand-copying was the method before printing.

17. E: a practical pressing mechanism - The passage describes: "Gutenberg's innovation was movable type...Gutenberg's press was the first to combine movable type with a practical pressing mechanism." The combination is what made it revolutionary.

18. A: the Bible - The passage states: "The first major work printed on Gutenberg's press was the Bible, completed around 1455." This was explicitly the first major printed work.

19. D: Luther's writings could be widely distributed - The passage notes: "Martin Luther's Protestant Reformation gained momentum partly because his writings could be printed and distributed widely." Wide distribution enabled the movement's spread.

20. C: digital communication and the internet - The passage concludes: "Today, we're experiencing another revolution—digital communication and the internet. Like Gutenberg's press, these technologies are transforming how we share information." The comparison is explicit.

21. B: a cookbook - The opening states: "I found the letter on the last day of cleaning out Grandma's house. Tucked inside an old cookbook, yellowed and fragile." The cookbook was its hiding place.

22. E: 1952 - The letter is described as "dated 1952—when Grandma was just sixteen." The year is clearly stated.

23. A: work at a textile mill - The letter says: "Tomorrow I start work at the textile mill in the city." This was her reason for leaving.

24. D: learn to read better - The letter lists: "First, I'll learn to read better. Second, I'll save money for my own place. Third, I'll never let anyone tell me what I can't do." Learning to read better was the first promise.

25. C: saving money and taking small steps - The passage concludes: "And that courage doesn't always look like courage when you're living it. Sometimes it looks like saving $37 and buying a bus ticket." Small, practical actions can be courageous.

26. B: fault lines - The opening sentence states: "Earthquakes occur when energy is suddenly released along fault lines—cracks in Earth's crust where tectonic plates meet." Fault lines are the location.

27. E: on the surface above the focus - The passage explains: "The point underground where the rupture begins is called the focus or hypocenter. Directly above it on Earth's surface lies the epicenter." The epicenter is on the surface directly above.

28. A: about 32 times more energy - The passage notes: "These logarithmic scales mean each whole number increase represents roughly 32 times more energy released." This factor is specified.

29. D: 90% - The passage states: "The 'Ring of Fire' around the Pacific Ocean hosts 90% of the world's earthquakes and most active volcanoes." The percentage is clearly given.

30. C: building construction standards - The passage concludes: "When a magnitude 7.0 earthquake struck Haiti in 2010, inadequate building standards led to catastrophic damage...A similar magnitude earthquake in California...typically causes far fewer casualties due to strict building codes." Construction standards are emphasized as crucial.

31. B: their father died - The narrator explains: "For two years, since Dad died, I'd been her anchor. I handled bills when she couldn't focus." The father's death two years earlier started this role.

32. E: 800 miles away - The passage describes: "full scholarship to my dream school, 800 miles away" and later "'We'll be scared together, 800 miles apart.'" The distance is repeatedly mentioned.

33. A: stopped being a parent after Dad died - The mother realizes: "When your dad died, I didn't just lose my husband. I lost myself for a while. And you—you stopped being a kid because I stopped being a parent." She recognizes her failure to maintain her parental role.

34. D: pursue the opportunity - The mother says: "What if you miss this chance and regret it forever?...the greatest gift you can give us is showing your brothers that dreams matter...You go. You thrive." She wants the narrator to take the scholarship.

35. C: trusting people are stronger than you think - The passage concludes: "But we learned something important: sometimes the most loving thing you can do is let go and trust that the people you love are stronger than you think. Including yourself." Trust in others' strength is the lesson.

Passage 8: Sense of Smell

36. B: one trillion odors - The passage states: "The olfactory system can distinguish more than one trillion different odors—far more than previously thought." This impressive number is specified.

37. E: the limbic system and hippocampus - The passage explains: "Uniquely among senses, smell has direct connections to the limbic system—the brain's emotional center—and the hippocampus, which is crucial for memory formation." These direct connections are what make smell unique.

38. A: smell-triggered memories - The passage describes: "This phenomenon, sometimes called the 'Proust effect' after the French author who wrote eloquently about smell-triggered memories." The effect specifically refers to smell triggering memories.

39. D: can't smell it - The passage explains: "when you have a cold and 'can't taste' food, you're actually unable to smell it, since flavor combines taste and smell." The inability to smell, not taste, is the issue.

40. C: Alzheimer's or Parkinson's disease - The passage states: "Difficulty identifying odors can be an early warning sign of Alzheimer's disease or Parkinson's disease, often appearing before other symptoms." Both diseases are mentioned as possibilities.

Verbal

1. A: brief - Concise and brief both mean expressing much in few words, succinct. "A concise summary" and "a brief summary" describe the same economical use of language. Both indicate shortness and clarity.

2. D: shy - Timid and shy both mean showing a lack of courage or confidence, hesitant. "A timid child" and "a shy child" describe the same reserved behavior. Both indicate lack of boldness.

3. B: ridiculous - Absurd and ridiculous both mean wildly unreasonable or illogical, nonsensical. "An absurd idea" and "a ridiculous idea" describe the same foolish notion. Both indicate lack of sense.

4. E: peak - Summit and peak both mean the highest point or top, apex. "The summit of the mountain" and "the peak of the mountain" describe the same highest point. Both indicate the topmost position.

5. C: sluggish - Languid and sluggish both mean displaying or having a lack of energy, lethargic. "A languid afternoon" and "a sluggish pace" both indicate slowness. Both convey lack of vigor.

6. A: empty - Barren and empty both mean producing no results, unproductive. "Barren land" and "empty fields" describe places without growth or yield. Both indicate lack of productivity.

7. D: clever - Cunning and clever both mean having or showing skill in achieving one's ends, crafty. "A cunning plan" and "a clever strategy" describe the same shrewd approach. Both indicate skillful thinking.

8. B: harmless - Benign and harmless both mean gentle and kind, not harmful. "A benign tumor" and "a harmless growth" describe non-threatening conditions. Both indicate absence of danger.

9. E: contempt - Scorn and contempt both mean the feeling that someone or something is worthless, disdain. "To treat with scorn" and "to hold in contempt" express the same disrespect. Both indicate disdain.

10. C: constant - Perpetual and constant both mean never ending or changing, continuous. "Perpetual motion" and "constant movement" describe the same unceasing action. Both indicate continuity.

11. A: unclear - Vague and unclear both mean not clearly expressed or identified, ambiguous. "A vague answer" and "an unclear response" both lack precision. Both indicate lack of clarity.

12. D: critical - Crucial and critical both mean of great importance, decisive. "A crucial moment" and "a critical juncture" describe the same pivotal point. Both emphasize importance.

13. B: sad - Melancholy and sad both mean feeling or showing sorrow, gloomy. "A melancholy mood" and "a sad disposition" describe the same sorrowful state. Both indicate sadness.

14. E: suppress - Stifle and suppress both mean to prevent or restrain, hold back. "To stifle creativity" and "to suppress innovation" describe the same restrictive action. Both indicate restraint.

15. C: dry - Arid and dry both mean having little or no rain, parched. "Arid climate" and "dry desert" describe the same moisture-free conditions. Both indicate lack of water.

16. A: direct - Blunt and direct both mean saying what you think without trying to be polite, frank. "A blunt statement" and "a direct comment" both lack subtlety. Both indicate straightforwardness.

17. D: changeable - Fickle and changeable both mean changing frequently, unstable. "Fickle weather" and "changeable conditions" describe the same unpredictability. Both indicate instability.

18. B: gentle - Meek and gentle both mean quiet, soft, and submissive, mild. "A meek manner" and "a gentle nature" describe the same quiet demeanor. Both indicate softness.

19. E: economical - Thrifty and economical both mean using money carefully, frugal. "Thrifty spending" and "economical habits" describe the same careful use of resources. Both indicate frugality.

20. C: obstinate - Stubborn and obstinate both mean refusing to change one's mind, inflexible. "A stubborn attitude" and "an obstinate refusal" describe the same unwillingness to yield. Both indicate inflexibility.

21. A: strange - Bizarre and strange both mean very unusual or weird, odd. "Bizarre behavior" and "strange actions" describe the same unusual conduct. Both indicate unusualness.

22. D: aggressive - Hostile and aggressive both mean showing opposition or dislike, unfriendly. "A hostile environment" and "an aggressive atmosphere" describe the same threatening conditions. Both indicate unfriendliness.

23. B: honorable - Noble and honorable both mean having high moral qualities, distinguished. "Noble character" and "honorable conduct" describe the same admirable behavior. Both indicate moral excellence.

24. E: scattered - Sparse and scattered both mean thinly distributed, not dense. "Sparse vegetation" and "scattered plants" describe the same spread-out distribution. Both indicate low density.

25. C: clear - Lucid and clear both mean easy to understand, intelligible. "A lucid explanation" and "a clear description" both convey information effectively. Both indicate clarity.

26. A: inflexible - Rigid and inflexible both mean not able to be changed or adapted, stiff. "Rigid rules" and "inflexible requirements" describe the same unchangeable standards. Both indicate lack of flexibility.

27. D: chaos - Turmoil and chaos both mean a state of great disturbance or confusion, disorder. "Political turmoil" and "social chaos" describe the same disorder. Both indicate confusion.

28. B: astute - Shrewd and astute both mean having sharp judgment, perceptive. "A shrewd observer" and "an astute analyst" both demonstrate keen insight. Both indicate sharp intelligence.

29. E: obey - Comply and obey both mean to act in accordance with rules or requests, conform. "To comply with regulations" and "to obey laws" mean following requirements. Both indicate conformity.

30. C: plain - Austere and plain both mean severe or strict in manner or appearance, simple. "Austere surroundings" and "plain décor" describe the same unadorned environment. Both indicate simplicity.

31. C: sun is to sunscreen - **Relationship: Weather condition to protective item.** Rain prompts the use of an umbrella for protection, just as sun prompts the use of sunscreen for protection. Both show environmental conditions and items that protect against them.

32. E: thirsty is to drink - **Relationship: Physical need to action that addresses it.** Being hungry prompts you to eat, just as being thirsty prompts you to drink. Both show bodily needs and their natural responses.

33. B: brush is to paint - **Relationship: Tool to action it performs.** Scissors are used to cut, just as a brush is used to paint. Both show implements paired with their primary functions.

34. A: tired is to yawn - **Relationship: State/feeling to physical response.** Being curious prompts questioning, just as being tired prompts yawning. Both show conditions that trigger specific behaviors.

35. D: museum is to artifacts - **Relationship: Institution to items it houses.** A library houses books, just as a museum houses artifacts. Both show places and the collections they contain.

36. C: seed is to sprout - **Relationship: Initial form to early growth stage.** A caterpillar becomes a chrysalis during development, just as a seed becomes a sprout during growth. Both show developmental transitions.

37. E: barometer is to pressure - **Relationship: Measuring instrument to what it measures.** A thermometer measures temperature, just as a barometer measures pressure. Both show devices paired with the quantities they measure.

38. B: famine is to food - **Relationship: Crisis defined by shortage to what is lacking.** A drought is a severe shortage of water, just as a famine is a severe shortage of food. Both show crisis conditions defined by scarcity.

39. A: hopeful is to hopeless - Relationship: Opposite attitudes/outlooks. Optimistic and pessimistic are opposite outlooks, just as hopeful and hopeless are opposite attitudes. Both pairs show contrasting mindsets.

40. D: brick is to wall - Relationship: Component to structure it forms. A page is a component of a book, just as a brick is a component of a wall. Both show building blocks and what they construct.

41. C: pit is to peach - Relationship: Inner seed/core to fruit containing it. A kernel is the seed inside corn, just as a pit is the seed inside a peach. Both show central seeds within their fruits.

42. E: keyboard is to writer - Relationship: Tool to creative professional who uses it. A palette is a painter's tool, just as a keyboard is a writer's tool. Both show artists and their characteristic instruments.

43. B: perspire is to hot - Relationship: Physical response to temperature condition. Shivering is the body's response to cold, just as perspiring is the body's response to heat. Both show involuntary reactions to temperature.

44. A: magnifying glass is to small - Relationship: Viewing instrument to size characteristic of what it views. A telescope is used to view far objects, just as a magnifying glass is used to view small objects. Both show instruments paired with size characteristics.

45. D: practice is to game - Relationship: Preparation activity to main event. A rehearsal prepares for a performance, just as practice prepares for a game. Both show preparatory activities before the actual event.

46. C: opaque is to wood - Relationship: Light transmission property to material possessing it. Glass is characterized by being transparent, just as wood is characterized by being opaque. Both show materials and their light-related properties.

47. E: cowboy is to cattle - Relationship: Herder to animals herded. A shepherd tends sheep, just as a cowboy tends cattle. Both show people and the animals they manage.

48. B: melt is to solid - Relationship: Phase change process to initial state. Evaporate describes liquid turning to gas, just as melt describes solid turning to liquid. Both show phase transitions and starting states.

49. A: insult is to criticize - Relationship: Negative statement to negative action. A compliment is to praise (both positive), just as an insult is to criticize (both negative). Both show parallel relationships of opposite valence.

50. D: halftime is to game - Relationship: Break period to event it divides. An intermission is a break during a play, just as halftime is a break during a game. Both show pauses that divide events.

51. C: cardiologist is to heart - Relationship: Medical specialist to body part they treat. A dentist specializes in teeth, just as a cardiologist specializes in the heart. Both show doctors and their areas of specialization.

52. E: brake is to bicycle - Relationship: Stopping mechanism to vehicle. An anchor stops a ship, just as a brake stops a bicycle. Both show devices that halt or slow vehicles.

53. B: introduction is to conclusion - Relationship: Opening element to closing element. A prologue opens a work and an epilogue closes it, just as an introduction opens and a conclusion closes. Both show beginning and ending elements.

54. A: cage is to animal - Relationship: Containment to what is contained. Quarantine contains disease spread, just as a cage contains an animal. Both show containers and what they confine.

55. D: hermit is to isolate - Relationship: Person type to characteristic action. A nomad wanders by definition, just as a hermit isolates by definition. Both show types of people and their defining behaviors.

56. C: figurative is to actual - Relationship: Non-literal to literal. A metaphor is figurative (not literal), contrasting with literal meaning, just as figurative contrasts with actual. Both show symbolic versus real meanings.

57. E: carpenter is to saw - Relationship: Craftsperson to primary hand tool. A sculptor's primary tool is a chisel, just as a carpenter's primary tool is a saw. Both show craftspeople with their characteristic tools.

58. B: blink is to eye - Relationship: Rhythmic action to body part performing it. Pulse is the rhythmic beating detectable from the heart, just as blinking is rhythmic movement of the eye. Both show regular biological rhythms.

59. A: magnify is to enlarge - Relationship: Synonymous actions. To eclipse is to obscure, just as to magnify is to enlarge. Both pairs show synonymous actions.

60. D: constellation is to stars - Relationship: Collection name to individual elements. An archipelago is a group of islands, just as a constellation is a group of stars. Both show collective terms for groups of individual elements.

Quantitative

1. B: 14 - Divide 420 by 30: $420 \div 30 = 14$. This is a division fact from the 30 times table. Check: $30 \times 14 = 420$ ✓ Knowing multiplication facts helps solve division problems quickly.

2. E: 88 - Solve $r + 67 = 155$ by subtracting 67 from both sides: $r = 155 - 67 = 88$. Check: $88 + 67 = 155$ ✓ To undo addition, use subtraction.

3. A: 99 - The sequence adds 19 each time. 1st: 23. 2nd: $23 + 19 = 42$. 3rd: $42 + 19 = 61$. 4th: $61 + 19 = 80$. 5th: $80 + 19 = 99$. This is an arithmetic sequence with common difference 19.

4. C: 594 - Area of a rectangle = length × width = 33 × 18 = 594 square units. Don't confuse with perimeter, which would be 2(33 + 18) = 102. Area measures the space inside.

5. D: 13 - Solve 28x = 364 by dividing both sides by 28: x = 364 ÷ 28 = 13. Check: 28 × 13 = 364 ✓ Division is the inverse of multiplication.

6. B: 104 - To find 2/3 of 156 students, multiply: (2/3) × 156. Divide 156 by 3 first: 156 ÷ 3 = 52. Then multiply by 2: 52 × 2 = 104 students in afterschool programs.

7. E: 11 - Follow order of operations (PEMDAS). Multiply first: 16 × 7 = 112. Then work left to right: 115 − 112 = 3, then 3 + 8 = 11. Multiplication must be done before addition and subtraction.

8. A: 6/25 - Total chips: 6 red + 8 blue + 11 yellow = 25 chips. Probability of red = red chips/total chips = 6/25. This fraction is already in simplest form. Count favorable outcomes over total possible outcomes.

9. C: 17/20 - Convert 0.85 to a fraction: 0.85 = 85/100. Simplify by dividing both numerator and denominator by 5: 85 ÷ 5 = 17 and 100 ÷ 5 = 20, giving 17/20. Check: 17 ÷ 20 = 0.85 ✓

10. D: 58 - The diameter of a circle is twice the radius. If radius = 29, then diameter = 2 × 29 = 58. Remember: diameter goes all the way across through the center, radius goes from center to edge.

11. B: 7 - Solve 19y + 35 = 168 in two steps. Subtract 35 from both sides: 19y = 133. Divide both sides by 19: y = 7. Check: 19(7) + 35 = 133 + 35 = 168 ✓

12. E: $448 - Calculate 30% off of $640. Method 1: Find discount: 0.30 × $640 = $192, then subtract: $640 − $192 = $448. Method 2: If 30% off, you pay 70%: 0.70 × $640 = $448.

13. A: 189 - Calculate each exponent first, then subtract. $33^2 = 33 \times 33 = 1089$. Then $30^2 = 30 \times 30 = 900$. Finally subtract: 1089 − 900 = 189. Exponents must be calculated before subtraction.

14. C: 190 - The compound inequality t > 185 and t < 190 means t must be greater than 185 AND less than 190. This is a "could NOT" question. 190 does NOT satisfy t < 190 (190 is not less than 190; it's equal). All other choices fall between 185 and 190.

15. D: 32 - Set up a proportion: 20 tbsp/30 muffins = x tbsp/48 muffins. Cross-multiply: 20 × 48 = 30 × x, so 960 = 30x. Divide: x = 32 tablespoons. Or find tbsp per muffin: 20/30 = 2/3 tbsp per muffin, so 48 × (2/3) = 32 tbsp.

16. B: 8/35 - When subtracting fractions with the same denominator, keep the denominator and subtract numerators: 27/35 − 19/35 = (27 − 19)/35 = 8/35. The denominator stays 35; only subtract the numerators.

17. E: 21,500 - When rounding to the nearest hundred, look at the tens digit. In 21,548, the tens digit is 4. Since 4 < 5, round down: keep the hundreds digit as 5, making 21,500.

18. A: 54 - The LCM is the smallest number both numbers divide into evenly. List multiples: 18: 18, 36, 54, 72... and 27: 27, 54, 81... The first common multiple is 54. Verify: 54 ÷ 18 = 3 ✓ and 54 ÷ 27 = 2 ✓

19. C: 1215 - Examine the pattern: 15 to 45 is ×3, 45 to 135 is ×3, 135 to 405 is ×3. Each number triples. This is a geometric sequence with ratio 3. Next number: 405 × 3 = 1215.

20. D: 620 - Area of a triangle = (base × height) ÷ 2 = (40 × 31) ÷ 2 = 1240 ÷ 2 = 620 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. B: 220 - To find 88% of 250, multiply: 0.88 × 250 = 220. Mental math: 10% of 250 is 25, so 80% is 200, and 8% is 20, giving 200 + 20 = 220.

22. E: 13 - Solve 31 × q = 403 by dividing both sides by 31: q = 403 ÷ 31 = 13. Check: 31 × 13 = 403 ✓ Think "31 times what equals 403?"

23. C: 8 - Work backwards or set up an equation. Let n be the number: (n × 15) − 27 = 93. So 15n − 27 = 93. Add 27: 15n = 120. Divide by 15: n = 8. Check: 8 × 15 = 120, then 120 − 27 = 93 ✓

24. A: 24 - The ratio 7:3 means for every 7 soccer balls, there are 3 volleyballs. If there are 56 soccer balls, find how many groups of 7: 56 ÷ 7 = 8 groups. Each group has 3 volleyballs, so total volleyballs = 8 × 3 = 24. Or proportion: 7/3 = 56/x, cross multiply: 7x = 168, so x = 24.

25. D: 183 - Follow order of operations. Calculate the exponent first: $12^2 = 144$. Then work left to right: 60 + 144 = 204, then 204 − 21 = 183. Exponents are calculated before addition and subtraction.