MIDDLE LEVEL SSAT PRACTICE TEST 10

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 belonged to someone who lived in your house 100 years ago. As you read the entries, you realize the journal writer is describing problems remarkably similar to ones you're facing today. Write a story about what you discover and how it affects you.

Topic B: Describe a time when you had to be brave even though you were afraid. What made the situation scary? How did you find the courage to act? What did this experience teach you about yourself?

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 504 ÷ 36?

A. 13

B. 15

C. 14

D. 16

E. 12

2. If n − 79 = 118, then n =

A. 39

B. 79

C. 118

D. 158

E. 197

3. A sequence follows the rule: subtract 15 from the previous number. If the first number is 117, what is the 8th number?

A. 27

B. 12

C. 42

D. 57

E. 72

4. What is the area of a rectangle with length 39 and width 23?

A. 62

B. 124

C. 890

D. 897

E. 900

5. If $34x = 442$, then $x =$

A. 13

B. 12

C. 476

D. 408

E. 34

6. A concert hall has 192 seats. If 5/8 of them are occupied, how many seats are occupied?

A. 64

B. 96

C. 120

D. 144

E. 160

7. What is $149 - 19 \times 6 + 12$?

A. 960

B. 954

C. 942

D. 35

E. 47

8. A spinner has 35 equal sections numbered 1 through 35. What is the probability of landing on a multiple of 7?

A. 7/35

B. 1/7

C. 5/35

D. 6/35

E. 1/5

9. Which of the following is equivalent to 0.75?

A. 75/10

B. 7/5

C. 1/75

D. 3/4

E. 75/1000

10. A circle has a diameter of 86. What is its radius?

A. 43

B. 172

C. 86

D. 21.5

E. 129

11. If $25y + 47 = 222$, then $y =$

A. 47

B. 269

C. 7

D. 25

E. 8

12. A camera originally costs $960. It's now on sale for 40% off. What is the sale price?

A. $920

B. $384

C. $720

D. $640

E. $576

13. What is $39^2 - 36^2$?

A. 3

B. 225

C. 1296

D. 1521

E. 9

14. If $p > 220$ and $p < 225$, which could NOT be the value of p?

A. 221

B. 222.5

C. 223

D. 225

E. 224

15. A recipe requires 26 cups of water to make 39 servings. How many cups are needed for 63 servings?

A. 42

B. 39

C. 52

D. 48

E. 36

16. What is 33/43 − 25/43?

A. 58/43

B. 25/43

C. 8/43

D. 8/86

E. 33/86

17. Round 27,894 to the nearest hundred.

A. 27,800

B. 27,890

C. 28,000

D. 27,850

E. 27,900

18. What is the least common multiple (LCM) of 28 and 42?

A. 14

B. 84

C. 1176

D. 56

E. 70

19. If the pattern continues: 20, 60, 180, 540, ___, what is the next number?

A. 1080

B. 900

C. 720

D. 1620

E. 2160

20. A triangle has a base of 46 and a height of 37. What is its area?

A. 851

B. 83

C. 1702

D. 166

E. 680

21. What is 94% of 325?

A. 94

B. 300

C. 305.5

D. 320

E. 325

22. If $37 \times t = 481$, then $t =$

A. 12

B. 14

C. 37

D. 444

E. 13

23. A number is divided by 13, then 18 is added. The result is 27. What is the number?

A. 351

B. 117

C. 130

D. 99

E. 234

24. The ratio of basketballs to baseballs in a gym is 5:3. If there are 80 basketballs, how many baseballs are there?

A. 40

B. 60

C. 50

D. 48

E. 36

25. What is $75 + 15^2 - 28$?

A. 272

B. 225

C. 303

D. 75

E. 47

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 honey bee's waggle dance is one of the most sophisticated forms of communication in the animal kingdom. When a forager bee discovers a good source of nectar or pollen, she returns to the hive and performs this dance to tell other bees exactly where to find it.

The dance contains precise information encoded in movement. The bee waggles her body in a figure-eight pattern. The angle of the straight part of the figure-eight, relative to vertical, indicates the direction of the food source relative to the sun. If she waggles straight up, the food is in the direction of the sun. If she waggles at a 45-degree angle to the right, the food is 45 degrees to the right of the sun's position.

Distance is communicated through the duration and vigor of the waggle. The longer and more enthusiastically the bee waggles, the farther away the food source. A food source 100 meters away results in a quick dance, while one a kilometer away produces a much longer, more energetic performance. Other bees gather around the dancing bee, touching her with their antennae to pick up additional chemical cues about the type of flowers to look for.

This communication system is remarkably accurate. Bees that observe the dance can fly directly to food sources they've never visited before, sometimes kilometers away. The waggle dance represents one of the few examples of symbolic language in non-human animals—the dance movements represent something distant in both space and time.

Scientists have learned about the waggle dance through careful observation and ingenious experiments. By placing food sources at known distances and directions, then filming the bees' dances and tracking where observer bees flew, researchers decoded this complex language. Understanding bee communication has practical applications too—it helps beekeepers manage hives more effectively and aids in studying how environmental changes affect bee foraging behavior.

1. The angle of the waggle dance indicates

A. the type of flowers

B. the time of day

C. the amount of nectar

D. the direction of food relative to the sun

E. the size of the hive

2. If a bee waggles straight upward, the food is

A. in the direction of the sun

B. below the hive

C. very close

D. very far away

E. to the left

3. Distance to the food source is communicated by

A. the number of bees dancing

B. duration and vigor of the waggle

C. the angle only

D. the time of day

E. chemical signals only

4. Other bees gather around the dancer to

A. rest

B. eat

C. sleep

D. copy the movements

E. touch her with antennae and pick up chemical cues

5. The waggle dance is considered symbolic language because

A. it's performed daily

B. all bees do it

C. movements represent something distant

D. it's very old

E. it's easy to learn

Passage 2

I never meant to steal Ms. Chen's test answers. That sounds like a lie, but it's true.

It happened during seventh period. I stayed after class to ask about the homework, and while Ms. Chen stepped into the hallway to talk to another teacher, I saw it—the answer key for Friday's big exam, just sitting there on her desk. Face up. Clear as day.

My hand moved before my brain could stop it. I took a picture with my phone.

Walking home, my stomach churned. I had a 79 average in chemistry. One bad test grade and I'd drop to a C, maybe worse. My parents had been clear: B's or better, or no summer basketball camp. Camp was everything—my chance to improve enough to make varsity next year.

That night, I stared at the photo on my phone. I could ace this test. No one would know.

Except I'd know.

At 2 AM, I was still awake. I kept thinking about Ms. Chen—how she stayed after school to help anyone who asked, how she believed in us even when we didn't believe in ourselves. She trusted us. And I was about to betray that trust for a basketball camp?

Friday morning, I got to school early. Ms. Chen was in her classroom, grading papers.

"I need to tell you something," I said. My voice shook. "I took a picture of the test answers. I'm sorry. It was wrong, and I want to delete it in front of you."

She was quiet for a long moment. Then she said, "That took courage. More courage than keeping the secret would have taken. Delete it."

I did.

"Now," she said, "tell me what you're struggling with in chemistry. Let's work on it together before the test."

I failed the test anyway—got a 68. My parents weren't happy. I didn't go to basketball camp.

But something weird happened. That test score didn't matter nearly as much as I thought it would. What mattered was that I could look Ms. Chen in the eye. What mattered was that when I eventually brought my grade up to a B- through actual studying, I knew I'd earned it.

Sometimes doing the right thing costs you something you really want. But the person you get to be afterward? That's worth more than any basketball camp.

6. The narrator took a picture of

A. homework

B. a basketball schedule

C. classroom notes

D. test answers

E. a syllabus

7. The narrator's chemistry average was

A. 79

B. 68

C. 85

D. 90

E. 75

8. The narrator needed a B or better to

A. graduate

B. attend basketball camp

C. join a club

D. get a scholarship

E. make honor roll

9. The narrator confessed

A. during class

B. at home

C. after the test

D. never

E. Friday morning before school

10. By the end, the narrator

A. regretted confessing

B. went to camp anyway

C. values having earned their grade honestly

D. blamed Ms. Chen

E. quit chemistry

Passage 3

Forensic science—the application of scientific methods to legal questions—has revolutionized criminal investigation. While popular television shows make forensic work seem instantaneous and infallible, the reality is more complex, though no less fascinating.

DNA analysis is perhaps forensic science's most powerful tool. Every person (except identical twins) has unique DNA. When biological evidence like blood, hair, or skin cells is found at a crime scene, forensic scientists can extract DNA and compare it to samples from suspects or databases. A match doesn't prove guilt—someone might have innocent reasons for their DNA's presence—but it can strongly link a person to a location or event. DNA evidence has both convicted guilty parties and exonerated innocent people wrongly imprisoned for years.

Fingerprint analysis predates DNA technology but remains valuable. No two people share identical fingerprint patterns. However, fingerprint analysis isn't as foolproof as once believed. It relies on human experts comparing partial, sometimes smudged prints from crime scenes to clear reference prints. Studies show that different experts sometimes reach different conclusions about the same prints, raising questions about reliability.

Other forensic techniques include analyzing blood spatter patterns to reconstruct violent events, examining tool marks to link implements to crimes, studying handwriting to verify or question document authenticity, and analyzing trace evidence like fibers or soil. Each technique has strengths and limitations. Some, like blood spatter analysis, depend heavily on expert interpretation and have faced scrutiny about their scientific basis.

The most important lesson from modern forensic science is that no single piece of evidence should be considered absolute proof. Strong cases combine multiple types of evidence with witness testimony and circumstantial information. Understanding forensic science's capabilities and limitations helps ensure justice—both punishing the guilty and protecting the innocent from wrongful conviction based on flawed or misinterpreted evidence.

11. According to the passage, identical twins

A. have unique DNA

B. have different fingerprints

C. cannot be identified

D. have the same DNA

E. have the same blood type

12. DNA evidence can

A. both convict and exonerate

B. only convict

C. only exonerate

D. prove innocence absolutely

E. never be wrong

13. Fingerprint analysis

A. never makes mistakes

B. relies on human expert interpretation

C. is always accurate

D. proves guilt completely

E. is no longer used

14. Blood spatter analysis

A. proves guilt absolutely

B. is never questioned

C. requires no training

D. is simple to interpret

E. depends on expert interpretation

15. Strong criminal cases should combine

A. only DNA evidence

B. only fingerprints

C. multiple types of evidence

D. one perfect piece of evidence

E. no physical evidence

Passage 4

The Industrial Revolution, beginning in Britain around 1760, transformed human society more dramatically than any event since the development of agriculture. This period saw the shift from hand

production to machine manufacturing, from human and animal power to steam and eventually electricity, and from rural agricultural life to urban industrial existence.

The textile industry drove early industrialization. New inventions like the spinning jenny, power loom, and cotton gin dramatically increased textile production while reducing labor needs. One worker with a power loom could produce as much cloth as dozens of hand weavers. This pattern repeated across industries—machines doing work that once required many hands.

The steam engine, perfected by James Watt in the 1760s-1780s, was revolutionary. It provided reliable power that didn't depend on water flow or wind. Factories could be built anywhere, not just near rivers. Steam-powered trains and ships transformed transportation, moving goods and people faster and cheaper than ever before. What once took weeks could be accomplished in days.

However, industrialization created enormous social upheaval. Skilled craftsmen lost livelihoods as machines replaced their expertise. Workers flooded into cities, living in crowded, unsanitary conditions. Factory work was dangerous, with long hours, low pay, and no safety regulations. Children as young as five worked in factories and mines. The gap between wealthy factory owners and poor workers widened dramatically.

These problems eventually led to reforms. Labor unions formed to demand better conditions. Laws gradually restricted child labor, limited work hours, and improved safety. The benefits of industrialization—cheaper goods, improved transportation, technological advancement—came at a high human cost, but society eventually recognized that prosperity should be shared more equitably.

The Industrial Revolution's legacy endures. We still grapple with its core question: how do we enjoy technological progress's benefits while protecting workers and communities? Understanding this history helps us navigate current technological transformations, from automation to artificial intelligence.

16. The Industrial Revolution began around

A. 1660

B. 1860

C. 1960

D. 1760

E. 1560

17. The steam engine perfected by James Watt

A. provided reliable power independent of water or wind

B. required wind to operate

C. only worked near rivers

D. was immediately banned

E. was too expensive

18. Early in industrialization, skilled craftsmen

A. became wealthier

B. lost livelihoods to machines

C. gained more customers

D. trained more apprentices

E. started using machines willingly

19. Child labor in early factories

A. didn't exist

B. was well-regulated

C. paid well

D. was safe

E. began as young as age five

20. Labor unions formed to

A. support factory owners

B. eliminate all factories

C. demand better working conditions

D. prevent all machinery

E. raise prices

Passage 5

The text message came through during dinner: "Can you cover my shift tomorrow? Emergency."

It was from Jasmine, who worked the register next to mine at the bookstore. Tomorrow was Saturday—the day I'd been planning for weeks. Maya's birthday party. The whole friend group would be there. Maya had been my best friend since third grade.

"Please?" Another text. "My mom's in the hospital. I wouldn't ask if it wasn't serious."

My thumb hovered over the keyboard. The easy answer was "Sorry, can't." Someone else could cover. I had plans. Important plans.

But I knew the truth: we were short-staffed, and Saturday was our busiest day. If I said no, Jasmine would have to choose between visiting her sick mother and keeping her job. Our manager, Mr. Peterson, wasn't understanding about "excuses."

I thought about Jasmine covering for me last month when I had the flu. She'd worked a double shift without complaining.

I texted Maya: "I'm so sorry. I have to work tomorrow. Emergency. Can I take you to lunch Sunday instead? My treat?"

Three dots appeared, then disappeared. Then appeared again.

Finally: "That's fine. See you Sunday."

But her next text didn't come for another hour. When it did, I wished it hadn't.

"Actually, it's not fine. This is my ONE birthday party. One day. And you're choosing work over me. I thought we were best friends."

My chest tightened. She was right—it was one day. But then, Jasmine's mom was in the hospital. That wasn't nothing.

I tried calling. No answer.

At work the next day, Jasmine arrived during my lunch break, puffy-eyed from crying. "Thank you," she said, hugging me. "Mom's stable now, but last night was scary. I couldn't have handled worrying about work too."

That evening, I went to Maya's house with her favorite cupcakes and a card. She opened the door, still in her party outfit.

"I'm sorry I missed it," I said. "But Jasmine's mom was in the hospital, and—"

"I know. Jasmine texted me." Maya's expression softened. "I was being selfish. I'm sorry too. Come in. There's leftover pizza."

We spent the evening talking, really talking—about choices, about loyalty, about how doing the right thing sometimes means disappointing people you love. It was better than any party.

Sometimes friendships are tested not by big dramatic moments but by ordinary choices where both options matter. The strongest friendships survive those tests.

21. The narrator worked at a

A. restaurant

B. hospital

C. school

D. bookstore

E. grocery store

22. Jasmine needed her shift covered because

A. her mother was in the hospital

B. she wanted a vacation

C. she had another job

D. she was moving

E. she was sick

23. Maya's birthday party was on

A. Friday

B. Saturday

C. Sunday

D. Monday

E. Tuesday

24. The narrator chose to

A. quit their job

B. go to the party

C. ignore both

D. ask someone else first

E. cover Jasmine's shift

25. Maya's initial reaction was

A. happy

B. understanding immediately

C. hurt and angry

D. indifferent

E. confused

Passage 6

Permafrost—permanently frozen ground found in polar regions—is experiencing unprecedented thawing due to climate change. This presents multiple concerning consequences that extend far beyond the Arctic Circle, affecting global climate patterns, infrastructure, and ecosystems.

Permafrost forms in regions where ground temperature stays below freezing year-round for at least two consecutive years. It can be hundreds of meters deep and covers about 15% of land in the Northern Hemisphere, including much of Alaska, Canada, and Russia. For thousands of years, this frozen ground has remained stable. Now, rising temperatures are causing it to thaw at alarming rates.

The most significant concern is methane release. Permafrost contains vast amounts of organic matter—dead plants and animals that froze before they could decompose. When permafrost thaws, this organic material begins decomposing, releasing carbon dioxide and methane into the atmosphere. Methane is particularly concerning because it's about 25 times more effective than carbon dioxide at trapping heat. Scientists estimate permafrost contains twice as much carbon as currently exists in Earth's atmosphere. Even partial release could accelerate global warming dramatically, creating a feedback loop where warming causes thawing, which causes more warming.

Thawing permafrost also damages infrastructure. Buildings, roads, pipelines, and airports built on permafrost assumed stable ground. As permafrost thaws, the ground becomes unstable, causing structures to sink, tilt, or collapse. Entire communities in Alaska and Russia face potential displacement. Repairs and relocations cost billions of dollars.

Ecosystems face disruption too. Thawing permafrost changes drainage patterns, creating new lakes in some areas while draining existing ones elsewhere. These changes affect wildlife habitat and migration patterns. Coastlines erode more rapidly as frozen ground that once held shorelines stable thaws and washes away.

Addressing permafrost thaw requires reducing global greenhouse gas emissions to slow Arctic warming. However, some thawing may now be inevitable, requiring adaptation strategies—relocating vulnerable communities, redesigning infrastructure for unstable ground, and monitoring methane release to improve climate models. Permafrost thaw reminds us that climate change's impacts extend beyond obvious effects like sea-level rise, affecting Earth's systems in complex, interconnected ways.

26. Permafrost is defined as ground that

A. occasionally freezes

B. freezes only in winter

C. is wet year-round

D. stays frozen year-round for at least two years

E. never contains organic matter

27. Permafrost covers approximately what percentage of Northern Hemisphere land?

A. 15%

B. 50%

C. 5%

D. 75%

E. 100%

28. Methane is concerning because it

A. is common

B. traps heat more effectively than carbon dioxide

C. is harmless

D. cannot be measured

E. exists only underground

29. Thawing permafrost damages infrastructure by

A. flooding it

B. burning it

C. freezing it more

D. leaving it untouched

E. making ground unstable

30. Permafrost contains how much carbon compared to Earth's current atmosphere?

A. half as much

B. the same amount

C. twice as much

D. ten times as much

E. none

Passage 7

The envelope was thick. That was the first good sign.

I turned it over in my hands, reading the return address again: "Carnegie Hall Young Musicians Competition." Three months ago, I'd sent a recording of my violin performance—Mendelssohn's Violin Concerto in E minor. It had taken fourteen takes to get one I was even willing to submit.

"Open it!" Mom urged, practically bouncing.

My hands shook as I tore the envelope. A letter fell out. Then another paper. A check?

"Dear Ms. Rodriguez," I read aloud. "Congratulations. Your performance has been selected for the semifinals. You will perform live in New York City on December 12th."

Mom screamed. Actually screamed.

But I couldn't move. Semifinals meant I was good enough. It also meant I wasn't good enough yet. Twenty semifinalists. Only five would make finals. One would win.

The second page outlined expectations: "Perform a complete concerto movement of your choosing. Performance time: 15-20 minutes."

Fifteen minutes. Nine hundred seconds to prove I belonged there.

"This is amazing!" Mom was already on her phone, probably telling every relative in her contacts. "We need to book flights. You need a new dress. We should tell Mrs. Kim!"

Mrs. Kim. My violin teacher for eight years. The one who'd believed in me even when I didn't. The one whose lessons Mom could barely afford. The one who never mentioned the checks that came back with "insufficient funds" and just kept teaching me anyway.

That night, I couldn't sleep. I kept thinking about the other nineteen violinists. They'd probably all started younger. Had better instruments. Could afford intensive summer programs I'd only dreamed about.

But then I thought about something Mrs. Kim told me once: "Music isn't about being better than others. It's about being true to yourself. When you play, I don't want to hear Mendelssohn. I want to hear Mendelssohn as only you can play it."

The next morning, I called Mrs. Kim. "I need your help," I said. "I need to not just play this concerto. I need to mean it."

"Then that's what we'll do," she said simply.

We spent the next two months diving deeper into that piece than I'd ever gone before. Not just notes and technique. We talked about what each phrase meant. What story I was telling. What I wanted people to feel.

December 12th arrived. Backstage at Carnegie Hall, I watched other violinists warm up. They were incredible. Every single one.

Then I was on stage. Lights. Audience. Judges. My hands sweated. My heart raced.

I lifted the violin. Took a breath.

And I forgot about winning. I forgot about being good enough. I just played—every note a piece of my story, every phrase filled with the joy and fear and determination that had brought me here.

When I finished, there was silence. Then applause.

I didn't win. Didn't even make finals. Fifth runner-up.

But walking off that stage, I felt like I'd won something bigger than a trophy. I'd found my voice. And nobody could take that away.

31. The narrator plays the

A. piano

B. flute

C. guitar

D. violin

E. drums

32. The competition semifinals were held in

A. New York City

B. Chicago

C. Los Angeles

D. Boston

E. Miami

33. Mrs. Kim is the narrator's

A. mother

B. violin teacher

C. friend

D. competitor

E. accompanist

34. The semifinals required a performance lasting

A. 5-10 minutes

B. 20-30 minutes

C. 30-40 minutes

D. 1 hour

E. 15-20 minutes

35. In the competition, the narrator

A. won first place

B. won second place

C. was fifth runner-up

D. didn't perform

E. withdrew

Passage 8

The placebo effect—improvement in patients who receive inactive treatments—is one of medicine's most fascinating phenomena. For decades, scientists dismissed it as mere imagination or wishful thinking. Recent research reveals the placebo effect involves real biological changes in the brain and body, with profound implications for understanding health and healing.

In clinical trials testing new medications, researchers give some patients the actual drug while others receive a placebo—an inactive substance like a sugar pill. Neither patients nor doctors know who receives which treatment. Often, placebo recipients show significant improvement. In depression studies, up to 40% of patients improve with placebos alone. Pain studies show similar results—placebos can reduce pain as effectively as some actual painkillers.

Brain imaging reveals that placebos trigger real neurological changes. When patients believe they're receiving pain medication, their brains release natural pain-relieving chemicals called endorphins. These endorphins activate the same brain regions that pain medications affect. The expectation of relief produces actual relief. Similarly, placebo antidepressants can increase activity in brain regions associated with mood regulation.

The placebo effect demonstrates the power of expectation and belief. Factors that strengthen the effect include the treatment's perceived expense (more expensive placebos work better), the doctor's confidence in the treatment, the patient's previous positive experiences with similar treatments, and even the placebo's appearance—large pills seem more effective than small ones, and injections seem stronger than pills, even when all contain only inactive substances.

However, the placebo effect has ethical complexities. Doctors once routinely prescribed placebos without telling patients, raising questions about informed consent and honesty. Modern medical ethics require transparency. Yet pure placebos lose effectiveness when patients know they're receiving them. Some doctors now prescribe "open-label" placebos, explaining they're inactive but that evidence shows they still help some people. Surprisingly, this approach sometimes works—apparently, knowing about the placebo effect doesn't entirely eliminate it.

Understanding placebos doesn't diminish their importance. Rather, it highlights how healing involves complex interactions between mind and body. The challenge is harnessing this knowledge ethically to enhance healing while maintaining honest doctor-patient relationships and rigorous scientific standards for evaluating treatments.

36. In depression studies, what percentage of placebo recipients show improvement?

A. 10%

B. 20%

C. 30%

D. up to 40%

E. 60%

37. Brain imaging shows placebos trigger

A. real neurological changes

B. no changes

C. harmful effects

D. permanent damage

E. nothing measurable

38. When expecting pain relief, brains release

A. insulin

B. endorphins

C. adrenaline

D. sugar

E. antibodies

39. According to the passage, the placebo effect is strengthened by

A. patient ignorance

B. cheap pills

C. doctor uncertainty

D. complicated instructions

E. perceived treatment expense

40. "Open-label" placebos are

A. hidden from patients

B. illegal

C. explained to patients as inactive

D. only for children

E. proven ineffective

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. AMPLE:

A. small

B. tiny

C. limited

D. scarce

E. plentiful

2. TEDIOUS:

A. exciting

B. interesting

C. boring

D. thrilling

E. engaging

3. MEAGER:

A. scanty

B. abundant

C. generous

D. plentiful

E. ample

4. JOVIAL:

A. sad

B. somber

C. gloomy

D. cheerful

E. depressed

5. PONDER:

A. ignore

B. consider

C. forget

D. dismiss

E. neglect

6. ABRUPT:

A. gradual

B. smooth

C. gentle

D. slow

E. sudden

7. TRANQUIL:

A. chaotic

B. disturbed

C. peaceful

D. loud

E. turbulent

8. ELABORATE:

A. detailed

B. simple

C. plain

D. basic

E. brief

9. FRIGID:

A. hot

B. warm

C. mild

D. cold

E. tepid

10. CONSENT:

A. refuse

B. agree

C. deny

D. reject

E. oppose

11. VAIN:

A. humble

B. modest

C. meek

D. shy

E. conceited

12. PROMPT:

A. late

B. slow

C. immediate

D. delayed

E. tardy

13. DESOLATE:

A. barren

B. lush

C. fertile

D. abundant

E. green

14. WITHER:

A. bloom

B. grow

C. flourish

D. shrivel

E. thrive

15. SCARCITY:

A. abundance

B. shortage

C. plenty

D. surplus

E. excess

16. TAUT:

A. loose

B. slack

C. relaxed

D. limp

E. tight

17. MENACE:

A. help

B. protect

C. threat

D. safety

E. security

18. COMPEL:

A. force

B. allow

C. permit

D. let

E. free

19. SERENE:

A. agitated

B. disturbed

C. frantic

D. calm

E. anxious

20. MODEST:

A. arrogant

B. humble

C. proud

D. boastful

E. vain

21. VITAL:

A. unimportant

B. trivial

C. minor

D. insignificant

E. essential

22. IMPARTIAL:

A. biased

B. prejudiced

C. neutral

D. unfair

E. partial

23. DISMAL:

A. gloomy

B. bright

C. cheerful

D. happy

E. sunny

24. IRATE:

A. calm

B. peaceful

C. happy

D. angry

E. content

25. SECLUDE:

A. expose

B. isolate

C. reveal

D. show

E. display

26. IMMENSE:

A. tiny

B. small

C. little

D. minute

E. huge

27. PRUDENT:

A. foolish

B. reckless

C. wise

D. careless

E. rash

28. OPAQUE:

A. unclear

B. transparent

C. clear

D. visible

E. see-through

29. ADEPT:

A. clumsy

B. awkward

C. inept

D. skillful

E. incompetent

30. ALLEVIATE:

A. worsen

B. ease

C. aggravate

D. intensify

E. increase

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. Bark is to tree as

A. feather is to bird

B. fur is to cat

C. skin is to human

D. shell is to turtle

E. scale is to fish

32. Microscope is to small as

A. telescope is to distant

B. binoculars is to close

C. magnifying glass is to large

D. mirror is to reflection

E. lens is to clear

33. Author is to novel as

A. painter is to museum

B. actor is to theater

C. teacher is to student

D. singer is to audience

E. composer is to symphony

34. Drought is to rain as

A. flood is to water

B. insomnia is to sleep

C. hunger is to food

D. cold is to warmth

E. darkness is to light

35. Flour is to bread as

A. butter is to toast

B. milk is to cheese

C. egg is to omelet

D. wood is to furniture

E. metal is to car

36. Elated is to sad as

A. happy is to joyful

B. angry is to furious

C. ecstatic is to miserable

D. excited is to thrilled

E. pleased is to satisfied

37. Compass is to direction as

A. odometer is to distance

B. thermometer is to temperature

C. clock is to time

D. ruler is to length

E. scale is to weight

38. Intermission is to play as

A. prologue is to book

B. chapter is to novel

C. verse is to poem

D. scene is to act

E. halftime is to game

39. Dormant is to volcano as

A. extinct is to species

B. hibernating is to bear

C. sleeping is to person

D. resting is to athlete

E. paused is to video

40. Spinach is to vegetable as

A. fruit is to apple

B. meat is to beef

C. dairy is to milk

D. salmon is to fish

E. bread is to grain

41. Drought is to arid as

A. rain is to dry

B. snow is to warm

C. flood is to wet

D. wind is to still

E. fog is to clear

42. Demolish is to build as

A. destroy is to create

B. repair is to break

C. mend is to fix

D. construct is to design

E. plan is to execute

43. Cocoon is to butterfly as

A. nest is to bird

B. shell is to egg

C. den is to bear

D. hive is to bee

E. egg is to chicken

44. Scissors is to fabric as

A. hammer is to nail

B. saw is to wood

C. needle is to thread

D. paintbrush is to canvas

E. pencil is to paper

45. Conductor is to train as

A. teacher is to classroom

B. passenger is to car

C. student is to school

D. pilot is to airplane

E. sailor is to ocean

46. Ignite is to extinguish as

A. start is to begin

B. light is to brighten

C. kindle is to quench

D. burn is to flame

E. spark is to fire

47. Talon is to eagle as

A. claw is to lion

B. hoof is to horse

C. wing is to bird

D. fin is to fish

E. horn is to bull

48. Prolific is to scarce as

A. common is to rare

B. frequent is to often

C. many is to numerous

D. plentiful is to abundant

E. abundant is to plentiful

49. Canvas is to painter as

A. stage is to audience

B. clay is to sculptor

C. piano is to musician

D. pen is to writer

E. camera is to photographer

50. Archipelago is to islands as

A. forest is to tree

B. ocean is to water

C. mountain is to peak

D. galaxy is to stars

E. desert is to sand

51. Dehydrate is to water as

A. suffocate is to air

B. starve is to exercise

C. deprive is to oxygen

D. drain is to liquid

E. empty is to container

52. Stethoscope is to doctor as

A. gavel is to judge

B. brush is to painter

C. pen is to writer

D. wrench is to mechanic

E. microscope is to scientist

53. Transparent is to glass as

A. flexible is to rubber

B. hard is to diamond

C. soft is to pillow

D. smooth is to sandpaper

E. opaque is to wood

54. Novice is to expert as

A. professional is to amateur

B. beginner is to master

C. student is to teacher

D. child is to adult

E. apprentice is to mentor

55. Censure is to praise as

A. compliment is to flatter

B. criticize is to admire

C. blame is to accuse

D. condemn is to approve

E. scold is to reprimand

56. Kindle is to fire as

A. water is to plant

B. feed is to hunger

C. provoke is to anger

D. calm is to storm

E. soothe is to pain

57. Scales is to fish as

A. feathers is to bird

B. fur is to mammal

C. skin is to human

D. shell is to snail

E. wool is to sheep

58. Equator is to latitude as

A. pole is to axis

B. meridian is to longitude

C. tropics is to zone

D. hemisphere is to globe

E. prime meridian is to longitude

59. Architect is to blueprint as

A. teacher is to lesson

B. chef is to recipe

C. doctor is to patient

D. writer is to book

E. artist is to painting

60. Evaporate is to liquid as

A. freeze is to solid

B. melt is to ice

C. condense is to gas

D. sublime is to solid

E. boil is to water

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 532 ÷ 38?

A. 13

B. 14

C. 15

D. 16

E. 12

2. If m + 81 = 193, then m =

A. 274

B. 81

C. 193

D. 112

E. 106

3. A sequence follows the rule: add 23 to the previous number. If the first number is 31, what is the 7th number?

A. 169

B. 146

C. 77

D. 54

E. 192

4. What is the area of a rectangle with length 41 and width 25?

A. 66

B. 132

C. 1025

D. 1020

E. 1050

5. If $36x = 468$, then $x =$

A. 432

B. 504

C. 36

D. 12

E. 13

6. A theater has 216 seats. If 3/4 of them are filled, how many seats are filled?

A. 72

B. 162

C. 144

D. 180

E. 108

7. What is $161 - 21 \times 7 + 13$?

A. 1001

B. 980

C. 14

D. 27

E. 40

8. A bag contains 8 blue balls, 10 red balls, and 14 green balls. What is the probability of selecting a blue ball?

A. 1/4

B. 8/32

C. 10/32

D. 14/32

E. 1/8

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 39. What is its diameter?

A. 19.5

B. 39

C. 117

D. 156

E. 78

11. If $27y + 53 = 242$, then $y =$

A. 53

B. 7

C. 295

D. 27

E. 8

12. A laptop originally costs $1080. It's now on sale for 45% off. What is the sale price?

A. $1035

B. $486

C. $810

D. $594

E. $540

13. What is $41^2 - 38^2$?

A. 237

B. 3

C. 1444

D. 1681

E. 9

14. If $r > 235$ and $r < 240$, which could NOT be the value of r?

A. 236

B. 237.5

C. 240

D. 238

E. 239

15. A recipe requires 28 tablespoons of sugar to make 42 cookies. How many tablespoons are needed for 69 cookies?

A. 42

B. 56

C. 52

D. 60

E. 46

16. What is 35/47 − 27/47?

A. 62/47

B. 8/47

C. 27/47

D. 8/94

E. 35/94

17. Round 29,768 to the nearest hundred.

A. 29,700

B. 29,770

C. 30,000

D. 29,800

E. 29,750

18. What is the least common multiple (LCM) of 32 and 48?

A. 96

B. 1536

C. 64

D. 80

E. 72

19. If the pattern continues: 22, 66, 198, 594, ___, what is the next number?

A. 1188

B. 1386

C. 1782

D. 990

E. 2376

20. A triangle has a base of 48 and a height of 39. What is its area?

A. 87

B. 1872

C. 174

D. 748

E. 936

21. What is 88% of 350?

A. 88

B. 308

C. 320

D. 300

E. 350

22. If $39 \times h = 507$, then $h =$

A. 12

B. 14

C. 39

D. 13

E. 468

23. A number is multiplied by 19, then 31 is subtracted. The result is 121. What is the number?

A. 8

B. 7

C. 6

D. 9

E. 10

24. The ratio of volleyballs to basketballs in a storage room is 7:4. If there are 84 volleyballs, how many basketballs are there?

A. 36

B. 56

C. 48

D. 63

E. 42

25. What is $80 + 16^2 - 29$?

A. 256

B. 336

C. 67

D. 80

E. 307

ANSWERS AND EXPLANATIONS

Quantitative

1. C: 14 - Divide 504 by 36: 504 ÷ 36 = 14. This is a division fact from the 36 times table. Check: 36 × 14 = 504 ✓ Knowing multiplication facts helps solve division problems quickly.

2. E: 197 - Solve n − 79 = 118 by adding 79 to both sides: n = 118 + 79 = 197. Check: 197 − 79 = 118 ✓ To undo subtraction, use addition.

3. B: 12 - The sequence subtracts 15 each time. 1st: 117. 2nd: 117 − 15 = 102. 3rd: 102 − 15 = 87. 4th: 87 − 15 = 72. 5th: 72 − 15 = 57. 6th: 57 − 15 = 42. 7th: 42 − 15 = 27. 8th: 27 − 15 = 12. This is an arithmetic sequence with common difference −15.

4. D: 897 - Area of a rectangle = length × width = 39 × 23 = 897 square units. Don't confuse with perimeter, which would be 2(39 + 23) = 124. Area measures the space inside.

5. A: 13 - Solve 34x = 442 by dividing both sides by 34: x = 442 ÷ 34 = 13. Check: 34 × 13 = 442 ✓ Division is the inverse of multiplication.

6. C: 120 - To find 5/8 of 192 seats, multiply: (5/8) × 192. Divide 192 by 8 first: 192 ÷ 8 = 24. Then multiply by 5: 24 × 5 = 120 occupied seats.

7. E: 47 - Follow order of operations (PEMDAS). Multiply first: 19 × 6 = 114. Then work left to right: 149 − 114 = 35, then 35 + 12 = 47. Multiplication must be done before addition and subtraction.

8. B: 1/7 - Multiples of 7 from 1 to 35 are: 7, 14, 21, 28, 35 (that's 5 numbers out of 35 possible outcomes). Probability = 5/35. Simplify by dividing both by 5: 5/35 = 1/7. Count favorable outcomes over total possible outcomes.

9. D: 3/4 - Convert 0.75 to a fraction: 0.75 = 75/100. Simplify by dividing both numerator and denominator by 25: 75 ÷ 25 = 3 and 100 ÷ 25 = 4, giving 3/4. Check: 3 ÷ 4 = 0.75 ✓

10. A: 43 - The radius of a circle is half the diameter. If diameter = 86, then radius = 86 ÷ 2 = 43. Remember: diameter goes all the way across, radius goes from center to edge.

11. C: 7 - Solve 25y + 47 = 222 in two steps. Subtract 47 from both sides: 25y = 175. Divide both sides by 25: y = 7. Check: 25(7) + 47 = 175 + 47 = 222 ✓

12. E: $576 - Calculate 40% off of $960. Method 1: Find discount: 0.40 × $960 = $384, then subtract: $960 − $384 = $576. Method 2: If 40% off, you pay 60%: 0.60 × $960 = $576.

13. B: 225 - Calculate each exponent first, then subtract. $39^2 = 39 \times 39 = 1521$. Then $36^2 = 36 \times 36 = 1296$. Finally subtract: 1521 − 1296 = 225. Exponents must be calculated before subtraction.

14. D: 225 - The compound inequality $p > 220$ and $p < 225$ means p must be greater than 220 AND less than 225. This is a "could NOT" question. 225 does NOT satisfy $p < 225$ (225 is not less than 225; it's equal). All other choices fall between 220 and 225.

15. A: 42 - Set up a proportion: 26 cups/39 servings = x cups/63 servings. Cross-multiply: $26 \times 63 = 39 \times x$, so $1638 = 39x$. Divide: $x = 42$ cups. Or find cups per serving: 26/39 = 2/3 cup per serving, so $63 \times (2/3) = 42$ cups.

16. C: 8/43 - When subtracting fractions with the same denominator, keep the denominator and subtract numerators: $33/43 - 25/43 = (33 - 25)/43 = 8/43$. The denominator stays 43; only subtract the numerators.

17. E: 27,900 - When rounding to the nearest hundred, look at the tens digit. In 27,894, the tens digit is 9. Since $9 \geq 5$, round up: increase the hundreds digit from 8 to 9, making 27,900.

18. B: 84 - The LCM is the smallest number both numbers divide into evenly. List multiples: 28: 28, 56, 84, 112... and 42: 42, 84, 126... The first common multiple is 84. Verify: $84 \div 28 = 3$ ✓ and $84 \div 42 = 2$ ✓

19. D: 1620 - Examine the pattern: 20 to 60 is ×3, 60 to 180 is ×3, 180 to 540 is ×3. Each number triples. This is a geometric sequence with ratio 3. Next number: $540 \times 3 = 1620$.

20. A: 851 - Area of a triangle = (base × height) ÷ 2 = $(46 \times 37) \div 2 = 1702 \div 2 = 851$ 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. C: 305.5 - To find 94% of 325, multiply: $0.94 \times 325 = 305.5$. Mental math: 100% of 325 is 325, so 94% is 325 − (6% of 325) = 325 − 19.5 = 305.5.

22. E: 13 - Solve $37 \times t = 481$ by dividing both sides by 37: $t = 481 \div 37 = 13$. Check: $37 \times 13 = 481$ ✓ Think "37 times what equals 481?"

23. B: 117 - Work backwards from the result. If the result is 27 after adding 18, then before adding the value was $27 - 18 = 9$. If dividing by 13 gave 9, the original number was $9 \times 13 = 117$. Check: $117 \div 13 = 9$, then $9 + 18 = 27$ ✓

24. D: 48 - The ratio 5:3 means for every 5 basketballs, there are 3 baseballs. If there are 80 basketballs, find how many groups of 5: $80 \div 5 = 16$ groups. Each group has 3 baseballs, so total baseballs = $16 \times 3 = 48$. Or proportion: $5/3 = 80/x$, cross multiply: $5x = 240$, so $x = 48$.

25. A: 272 - Follow order of operations. Calculate the exponent first: $15^2 = 225$. Then work left to right: $75 + 225 = 300$, then $300 - 28 = 272$. Exponents are calculated before addition and subtraction.

Reading

1. D: the direction of food relative to the sun - The passage explains: "The angle of the straight part of the figure-eight, relative to vertical, indicates the direction of the food source relative to the sun." The angle communicates directional information.

2. A: in the direction of the sun - The passage states: "If she waggles straight up, the food is in the direction of the sun." This direct relationship is explicitly described.

3. B: duration and vigor of the waggle - The passage notes: "Distance is communicated through the duration and vigor of the waggle. The longer and more enthusiastically the bee waggles, the farther away the food source." These two factors indicate distance.

4. E: touch her with antennae and pick up chemical cues - The passage describes: "Other bees gather around the dancing bee, touching her with their antennae to pick up additional chemical cues about the type of flowers to look for." This gathering serves a specific information-gathering purpose.

5. C: movements represent something distant - The passage explains: "The waggle dance represents one of the few examples of symbolic language in non-human animals—the dance movements represent something distant in both space and time." The symbolic representation makes it language-like.

6. D: test answers - The opening establishes: "I never meant to steal Ms. Chen's test answers...I saw it—the answer key for Friday's big exam...I took a picture with my phone." The test answers were what was photographed.

7. A: 79 - The narrator states: "I had a 79 average in chemistry. One bad test grade and I'd drop to a C, maybe worse." The average is explicitly given.

8. B: attend basketball camp - The passage notes: "My parents had been clear: B's or better, or no summer basketball camp." Basketball camp was contingent on grades.

9. E: Friday morning before school - The passage describes: "Friday morning, I got to school early. Ms. Chen was in her classroom, grading papers. 'I need to tell you something,' I said." The timing is specified.

10. C: values having earned their grade honestly - The passage concludes: "What mattered was that when I eventually brought my grade up to a B- through actual studying, I knew I'd earned it...Sometimes doing the right thing costs you something you really want. But the person you get to be afterward? That's worth more than any basketball camp." Earning the grade honestly became more valuable.

11. D: have the same DNA - The passage states: "Every person (except identical twins) has unique DNA." Identical twins are the exception, sharing DNA.

12. A: both convict and exonerate - The passage explains: "DNA evidence has both convicted guilty parties and exonerated innocent people wrongly imprisoned for years." Both applications are mentioned.

13. B: relies on human expert interpretation - The passage notes: "It relies on human experts comparing partial, sometimes smudged prints from crime scenes to clear reference prints." Human judgment is essential.

14. E: depends on expert interpretation - The passage describes blood spatter analysis as something that "depend[s] heavily on expert interpretation and [has] faced scrutiny about their scientific basis." Expert interpretation is crucial.

15. C: multiple types of evidence - The passage concludes: "Strong cases combine multiple types of evidence with witness testimony and circumstantial information." Multiple evidence types create stronger cases.

16. D: 1760 - The opening sentence states: "The Industrial Revolution, beginning in Britain around 1760, transformed human society." The date is clearly specified.

17. A: provided reliable power independent of water or wind - The passage explains: "It provided reliable power that didn't depend on water flow or wind. Factories could be built anywhere, not just near rivers." Independence from natural power sources was key.

18. B: lost livelihoods to machines - The passage notes: "Skilled craftsmen lost livelihoods as machines replaced their expertise." Craftsmen were displaced by machinery.

19. E: began as young as age five - The passage states: "Children as young as five worked in factories and mines." This shocking age is explicitly mentioned.

20. C: demand better working conditions - The passage explains: "Labor unions formed to demand better conditions. Laws gradually restricted child labor, limited work hours, and improved safety." Better conditions were the primary goal.

21. D: bookstore - The opening describes: "It was from Jasmine, who worked the register next to mine at the bookstore." The workplace is clearly identified.

22. A: her mother was in the hospital - The text message states: "'My mom's in the hospital. I wouldn't ask if it wasn't serious.'" This was the emergency requiring coverage.

23. B: Saturday - The narrator notes: "Tomorrow was Saturday—the day I'd been planning for weeks. Maya's birthday party." Saturday is specified.

24. E: cover Jasmine's shift - The narrator decides: "I texted Maya: 'I'm so sorry. I have to work tomorrow. Emergency.'" The narrator chose to work instead of attending the party.

25. C: hurt and angry - Maya's response was: "'Actually, it's not fine. This is my ONE birthday party. One day. And you're choosing work over me.'" She felt hurt and angry initially.

26. D: stays frozen year-round for at least two years - The passage defines: "Permafrost forms in regions where ground temperature stays below freezing year-round for at least two consecutive years." This is the technical definition.

27. A: 15% - The passage states: "It...covers about 15% of land in the Northern Hemisphere." This percentage is explicitly given.

28. B: traps heat more effectively than carbon dioxide - The passage explains: "Methane is particularly concerning because it's about 25 times more effective than carbon dioxide at trapping heat." Its greater effectiveness makes it concerning.

29. E: making ground unstable - The passage describes: "As permafrost thaws, the ground becomes unstable, causing structures to sink, tilt, or collapse." Ground instability is the problem.

30. C: twice as much - The passage notes: "Scientists estimate permafrost contains twice as much carbon as currently exists in Earth's atmosphere." This alarming ratio is specified.

31. D: violin - The opening mentions: "I'd sent a recording of my violin performance...Mrs. Kim. My violin teacher for eight years." The instrument is clearly the violin.

32. A: New York City - The acceptance letter states: "'You will perform live in New York City on December 12th.'" The location is specified.

33. B: violin teacher - The narrator identifies: "Mrs. Kim. My violin teacher for eight years." Her role is explicit.

34. E: 15-20 minutes - The requirements state: "'Performance time: 15-20 minutes.' Fifteen minutes. Nine hundred seconds to prove I belonged there." This duration is clearly given.

35. C: was fifth runner-up - The ending reveals: "I didn't win. Didn't even make finals. Fifth runner-up." The placement is stated.

36. D: up to 40% - The passage states: "In depression studies, up to 40% of patients improve with placebos alone." This percentage is explicitly given.

37. A: real neurological changes - The passage begins a paragraph: "Brain imaging reveals that placebos trigger real neurological changes." Real biological effects are documented.

38. B: endorphins - The passage explains: "When patients believe they're receiving pain medication, their brains release natural pain-relieving chemicals called endorphins." Endorphins are the specific chemicals released.

39. E: perceived treatment expense - The passage notes: "Factors that strengthen the effect include the treatment's perceived expense (more expensive placebos work better)." Perceived cost enhances effectiveness.

40. C: explained to patients as inactive - The passage describes: "Some doctors now prescribe 'open-label' placebos, explaining they're inactive but that evidence shows they still help some people." Patients are told the truth about the placebo.

Verbal

1. E: plentiful - Ample and plentiful both mean more than adequate in quantity, abundant. "Ample space" and "plentiful room" describe the same generous amount. Both indicate abundance.

2. C: boring - Tedious and boring both mean too long, slow, or dull, tiresome. "A tedious lecture" and "a boring presentation" cause the same weariness. Both indicate lack of interest.

3. A: scanty - Meager and scanty both mean lacking in quantity or quality, insufficient. "Meager rations" and "scanty supplies" describe the same inadequate amount. Both indicate insufficiency.

4. D: cheerful - Jovial and cheerful both mean full of good humor, jolly. "A jovial personality" and "a cheerful disposition" describe the same happy nature. Both indicate good spirits.

5. B: consider - Ponder and consider both mean to think about carefully, contemplate. "To ponder a question" and "to consider an issue" mean the same thoughtful reflection. Both indicate careful thought.

6. E: sudden - Abrupt and sudden both mean occurring without warning, unexpected. "An abrupt change" and "a sudden shift" describe the same quick transition. Both indicate unexpectedness.

7. C: peaceful - Tranquil and peaceful both mean free from disturbance, calm. "A tranquil lake" and "peaceful waters" describe the same undisturbed state. Both indicate calmness.

8. A: detailed - Elaborate and detailed both mean containing many parts or aspects, complex. "An elaborate plan" and "a detailed design" show the same thoroughness. Both indicate complexity.

9. D: cold - Frigid and cold both mean extremely cold, freezing. "Frigid temperatures" and "cold weather" describe the same low temperatures. Both indicate coldness.

10. B: agree - Consent and agree both mean to give permission or approval. "To consent to a proposal" and "to agree to a plan" mean accepting it. Both indicate approval.

11. E: conceited - Vain and conceited both mean having excessive pride in one's appearance or achievements. "A vain person" and "a conceited individual" describe the same self-centered attitude. Both indicate excessive self-regard.

12. C: immediate - Prompt and immediate both mean done without delay, quick. "A prompt response" and "an immediate reply" describe the same swift action. Both indicate quickness.

13. A: barren - Desolate and barren both mean empty, bleak, and lifeless. "A desolate landscape" and "barren land" describe the same lifeless terrain. Both indicate emptiness.

14. D: shrivel - Wither and shrivel both mean to become dry and shrunken, to waste away. "Plants wither" and "leaves shrivel" describe the same drying process. Both indicate drying and decay.

15. B: shortage - Scarcity and shortage both mean the state of being scarce or in short supply. "Scarcity of water" and "water shortage" describe the same insufficient supply. Both indicate insufficiency.

16. E: tight - Taut and tight both mean stretched or pulled so as to have no slack. "A taut rope" and "a tight cable" describe the same tension. Both indicate tightness.

17. C: threat - Menace and threat both mean a person or thing likely to cause harm or danger. "A menace to society" and "a public threat" describe the same danger. Both indicate danger.

18. A: force - Compel and force both mean to make someone do something, to oblige. "To compel obedience" and "to force compliance" mean the same requirement. Both indicate coercion.

19. D: calm - Serene and calm both mean peaceful and untroubled. "A serene atmosphere" and "calm surroundings" describe the same tranquility. Both indicate peacefulness.

20. B: humble - Modest and humble both mean having a low view of one's importance, unassuming. "A modest person" and "a humble individual" show the same lack of pride. Both indicate humility.

21. E: essential - Vital and essential both mean absolutely necessary or important. "Vital information" and "essential facts" describe the same critical importance. Both indicate necessity.

22. C: neutral - Impartial and neutral both mean treating all sides equally, unbiased. "An impartial judge" and "a neutral observer" show the same fairness. Both indicate lack of bias.

23. A: gloomy - Dismal and gloomy both mean causing sadness or depression, dreary. "Dismal weather" and "gloomy skies" describe the same depressing conditions. Both indicate dreariness.

24. D: angry - Irate and angry both mean feeling or showing extreme anger, furious. "An irate customer" and "an angry client" describe the same emotional state. Both indicate anger.

25. B: isolate - Seclude and isolate both mean to set apart from others, to separate. "To seclude oneself" and "to isolate yourself" mean the same withdrawal. Both indicate separation.

26. E: huge - Immense and huge both mean extremely large, vast. "An immense building" and "a huge structure" describe the same great size. Both indicate largeness.

27. C: wise - Prudent and wise both mean acting with care and thought for the future, sensible. "A prudent decision" and "a wise choice" show the same good judgment. Both indicate wisdom.

28. A: unclear - Opaque and unclear both mean not able to be seen through, not transparent. "Opaque glass" and "unclear windows" prevent seeing through. Both indicate lack of transparency.

29. D: skillful - Adept and skillful both mean very skilled or proficient, expert. "Adept at painting" and "skillful in art" describe the same expertise. Both indicate skill.

30. B: ease - Alleviate and ease both mean to make suffering or a problem less severe, relieve. "To alleviate pain" and "to ease discomfort" mean reducing it. Both indicate relief.

31. C: skin is to human - Relationship: Outer covering to organism. Bark is the outer covering of a tree, just as skin is the outer covering of a human. Both show protective outer layers.

32. A: telescope is to distant - Relationship: Viewing instrument to size/distance characteristic. A microscope is used to view small objects, just as a telescope is used to view distant objects. Both show instruments paired with viewing characteristics.

33. E: composer is to symphony - Relationship: Artist to major creative work. An author creates a novel, just as a composer creates a symphony. Both show creators and their significant works.

34. B: insomnia is to sleep - Relationship: Condition characterized by lack to what is lacking. Drought is a lack of rain, just as insomnia is a lack of sleep. Both show conditions defined by absence.

35. D: wood is to furniture - Relationship: Raw material to finished product. Flour is made into bread, just as wood is made into furniture. Both show materials transformed into products.

36. C: ecstatic is to miserable - Relationship: Extreme opposite emotions. Elated and sad are opposite emotions, just as ecstatic and miserable are opposite emotional extremes. Both pairs show emotional contrasts.

37. A: odometer is to distance - Relationship: Measuring instrument to what it measures. A compass measures direction, just as an odometer measures distance. Both show instruments and their measurements.

38. E: 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.

39. B: hibernating is to bear - Relationship: Inactive state to organism in that state. A dormant volcano is inactive, just as a hibernating bear is inactive. Both show states of inactivity.

40. D: salmon is to fish - Relationship: Specific example to category. Spinach is a type of vegetable, just as salmon is a type of fish. Both show specific items within broader categories.

41. C: flood is to wet - Relationship: Weather event to resulting moisture condition. A drought results in arid conditions, just as a flood results in wet conditions. Both show weather phenomena and their effects.

42. A: destroy is to create - Relationship: Opposite actions. To demolish is the opposite of to build, just as to destroy is the opposite of to create. Both pairs show opposing actions.

43. E: egg is to chicken - Relationship: Protected developmental stage to adult form. A cocoon protects the developing butterfly, just as an egg protects the developing chicken. Both show protective developmental structures.

44. B: saw is to wood - Relationship: Cutting tool to material it cuts. Scissors cut fabric, just as a saw cuts wood. Both show tools and the materials they're designed to cut.

45. D: pilot is to airplane - Relationship: Operator to vehicle they control. A conductor operates a train, just as a pilot operates an airplane. Both show people who control vehicles.

46. C: kindle is to quench - Relationship: Opposite actions regarding fire/flame. To ignite means to start burning while to extinguish means to put out, just as to kindle means to light while to quench means to put out. Both pairs show opposite fire-related actions.

47. A: claw is to lion - Relationship: Sharp grasping appendage to predator that has it. A talon is an eagle's sharp grasping claw, just as a claw is a lion's sharp grasping appendage. Both show predators' hunting tools.

48. A: abundant is to plentiful - Wait, my key says E but that would make prolific:scarce = abundant:plentiful, which are synonyms not opposites. Let me reconsider: prolific means producing abundantly, scarce means insufficient. So opposites. The answer should show opposites too. A: common is to rare - yes, opposites! That works better.

48. A: common is to rare - Relationship: Opposite quantities/frequencies. Prolific (abundantly productive) is opposite to scarce (insufficient), just as common (frequent) is opposite to rare (uncommon). Both pairs show opposite quantities. (Note: There was an error in the original - E would have been synonyms, but A correctly shows opposites.)

49. B: clay is to sculptor - Relationship: Primary material to artist who works with it. Canvas is a painter's primary surface, just as clay is a sculptor's primary material. Both show artists and their main materials.

50. D: galaxy is to stars - Relationship: Named grouping to individual elements that compose it. An archipelago is a group of islands, just as a galaxy is a group of stars. Both show collections of individual elements.

51. A: suffocate is to air - Relationship: Harmful condition caused by lack to essential substance lacking. Dehydration results from lack of water, just as suffocation results from lack of air. Both show conditions caused by deprivation of essential substances.

52. A: gavel is to judge - Relationship: Symbolic tool to professional who uses it. A stethoscope is a doctor's characteristic tool, just as a gavel is a judge's characteristic tool. Both show professionals and their symbolic instruments.

53. E: opaque is to wood - Relationship: Light-transmission property to material exemplifying it. Transparent describes glass (you can see through it), just as opaque describes wood (you cannot see through it). Both show materials and their light properties.

54. B: beginner is to master - Relationship: Least experienced to most experienced. A novice is someone new to an activity while an expert has mastered it, just as a beginner is starting while a master has achieved expertise. Both show experience levels.

55. D: condemn is to approve - Relationship: Opposite judgments/evaluations. To censure means to criticize harshly while to praise means to compliment, just as to condemn means to express disapproval while to approve means to accept favorably. Both pairs show opposite evaluations.

56. C: provoke is to anger - Relationship: Action that causes to emotion/state caused. To kindle is to start a fire, just as to provoke is to cause anger. Both show actions that trigger conditions or emotions.

57. A: feathers is to bird - Relationship: Characteristic outer covering to animal type. Scales cover fish, just as feathers cover birds. Both show animals and their distinctive outer coverings.

58. E: prime meridian is to longitude - Relationship: Reference line to coordinate system. The equator is the reference line for latitude (0°), just as the prime meridian is the reference line for longitude (0°). Both show zero-degree reference lines for coordinate systems.

59. B: chef is to recipe - Relationship: Professional to written plan for their work. An architect creates a blueprint as a plan for building, just as a chef creates a recipe as a plan for cooking. Both show professionals and their written plans.

60. D: sublime is to solid - Relationship: Phase change process to initial state. Evaporate describes liquid changing to gas, just as sublime describes solid changing directly to gas (skipping liquid phase). Both show phase transitions from stated initial states.

Quantitative

1. B: 14 - Divide 532 by 38: $532 \div 38 = 14$. This is a division fact from the 38 times table. Check: $38 \times 14 = 532$ ✓ Knowing multiplication facts helps solve division problems quickly.

2. D: 112 - Solve $m + 81 = 193$ by subtracting 81 from both sides: $m = 193 - 81 = 112$. Check: $112 + 81 = 193$ ✓ To undo addition, use subtraction.

3. A: 169 - The sequence adds 23 each time. 1st: 31. 2nd: $31 + 23 = 54$. 3rd: $54 + 23 = 77$. 4th: $77 + 23 = 100$. 5th: $100 + 23 = 123$. 6th: $123 + 23 = 146$. 7th: $146 + 23 = 169$. This is an arithmetic sequence with common difference 23.

4. C: 1025 - Area of a rectangle = length × width = $41 \times 25 = 1025$ square units. Don't confuse with perimeter, which would be $2(41 + 25) = 132$. Area measures the space inside.

5. E: 13 - Solve 36x = 468 by dividing both sides by 36: x = 468 ÷ 36 = 13. Check: 36 × 13 = 468 ✓ Division is the inverse of multiplication.

6. B: 162 - To find 3/4 of 216 seats, multiply: (3/4) × 216. Divide 216 by 4 first: 216 ÷ 4 = 54. Then multiply by 3: 54 × 3 = 162 filled seats.

7. D: 27 - Follow order of operations (PEMDAS). Multiply first: 21 × 7 = 147. Then work left to right: 161 − 147 = 14, then 14 + 13 = 27. Multiplication must be done before addition and subtraction.

8. A: 1/4 - Total balls: 8 blue + 10 red + 14 green = 32 balls. Probability of blue = blue balls/total balls = 8/32. Simplify by dividing both by 8: 8/32 = 1/4. 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. E: 78 - The diameter of a circle is twice the radius. If radius = 39, then diameter = 2 × 39 = 78. Remember: diameter goes all the way across through the center, radius goes from center to edge.

11. B: 7 - Solve 27y + 53 = 242 in two steps. Subtract 53 from both sides: 27y = 189. Divide both sides by 27: y = 7. Check: 27(7) + 53 = 189 + 53 = 242 ✓

12. D: $594 - Calculate 45% off of $1080. Method 1: Find discount: 0.45 × $1080 = $486, then subtract: $1080 − $486 = $594. Method 2: If 45% off, you pay 55%: 0.55 × $1080 = $594.

13. A: 237 - Calculate each exponent first, then subtract. $41^2 = 41 \times 41 = 1681$. Then $38^2 = 38 \times 38 = 1444$. Finally subtract: 1681 − 1444 = 237. Exponents must be calculated before subtraction.

14. C: 240 - The compound inequality r > 235 and r < 240 means r must be greater than 235 AND less than 240. This is a "could NOT" question. 240 does NOT satisfy r < 240 (240 is not less than 240; it's equal). All other choices fall between 235 and 240.

15. E: 46 - Set up a proportion: 28 tbsp/42 cookies = x tbsp/69 cookies. Cross-multiply: 28 × 69 = 42 × x, so 1932 = 42x. Divide: x = 46 tablespoons. Or find tbsp per cookie: 28/42 = 2/3 tbsp per cookie, so 69 × (2/3) = 46 tbsp.

16. B: 8/47 - When subtracting fractions with the same denominator, keep the denominator and subtract numerators: 35/47 − 27/47 = (35 − 27)/47 = 8/47. The denominator stays 47; only subtract the numerators.

17. D: 29,800 - When rounding to the nearest hundred, look at the tens digit. In 29,768, the tens digit is 6. Since 6 ≥ 5, round up: increase the hundreds digit from 7 to 8, making 29,800.

18. A: 96 - The LCM is the smallest number both numbers divide into evenly. List multiples: 32: 32, 64, 96, 128... and 48: 48, 96, 144... The first common multiple is 96. Verify: 96 ÷ 32 = 3 ✓ and 96 ÷ 48 = 2 ✓

19. C: 1782 - Examine the pattern: 22 to 66 is ×3, 66 to 198 is ×3, 198 to 594 is ×3. Each number triples. This is a geometric sequence with ratio 3. Next number: 594 × 3 = 1782.

20. E: 936 - Area of a triangle = (base × height) ÷ 2 = (48 × 39) ÷ 2 = 1872 ÷ 2 = 936 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: 308 - To find 88% of 350, multiply: 0.88 × 350 = 308. Mental math: 10% of 350 is 35, so 80% is 280, and 8% is 28, giving 280 + 28 = 308.

22. D: 13 - Solve 39 × h = 507 by dividing both sides by 39: h = 507 ÷ 39 = 13. Check: 39 × 13 = 507 ✓ Think "39 times what equals 507?"

23. A: 8 - Work backwards from the result. If the result is 121 after subtracting 31, then before subtracting the value was 121 + 31 = 152. If multiplying by 19 gave 152, the original number was 152 ÷ 19 = 8. Check: 8 × 19 = 152, then 152 − 31 = 121 ✓

24. C: 48 - The ratio 7:4 means for every 7 volleyballs, there are 4 basketballs. If there are 84 volleyballs, find how many groups of 7: 84 ÷ 7 = 12 groups. Each group has 4 basketballs, so total basketballs = 12 × 4 = 48. Or proportion: 7/4 = 84/x, cross multiply: 7x = 336, so x = 48.

25. E: 307 - Follow order of operations. Calculate the exponent first: $16^2 = 256$. Then work left to right: 80 + 256 = 336, then 336 − 29 = 307. Exponents are calculated before addition and subtraction.