Section 1
Verbal Reasoning

40 Questions	**Time: 20 Minutes**

This section is divided into two parts that contain two different types of questions. As soon as you have completed Part One, answer the questions in Part Two. You may write in your test booklet. For each answer you select, fill in the corresponding circle on your answer document.

Part One – Synonyms

Each question in Part One consists of a word in capital letters followed by four answer choices. Select the one word that is most nearly the same in meaning as the word in capital letters.

SAMPLE QUESTION: <u>Sample Answer</u>

    GENERIC: Ⓐ ● Ⓒ Ⓓ

    (A)   effortless
    (B)   general
    (C)   strong
    (D)   thoughtful

Go on to the next page. ➡

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Part Two – Sentence Completion

Each question in Part Two is made up of a sentence with one or two blanks. One blank indicates that a word is missing. Two blanks indicate that two words are missing. Each sentence is followed by four answer choices. Select the one word or pair of words that best completes the meaning of the sentence as a whole.

SAMPLE QUESTIONS:

Always ------, Edgar's late arrival surprised his friends.

(A)   entertaining
(B)   lazy
(C)   punctual
(D)   sincere

Sample Answer

Ⓐ Ⓑ ● Ⓓ

After training for months, the runner felt ------ that she would win the race, quite different from her ------ attitude initially.

(A)   confident . . . excited
(B)   indifferent . . . concern
(C)   secure . . . apprehensive
(D)   worried . . . excited

Sample Answer

Ⓐ Ⓑ ● Ⓓ

STOP. Do not go on until told to do so.   **STOP**

Part One – Synonyms

Directions: Select the word that is most nearly the same in meaning as the word in capital letters.

1. LIBERATE:

    (A) establish
    (B) free
    (C) manage
    (D) read

2. TANGIBLE:

    (A) concrete
    (B) endearing
    (C) orange
    (D) popular

3. INNATE:

    (A) dreary
    (B) native
    (C) ordinary
    (D) primitive

4. DELIBERATE:

    (A) affect
    (B) enjoy
    (C) reflect
    (D) tease

5. PIOUS:

    (A) distant
    (B) joyful
    (C) prejudiced
    (D) sacred

6. PLEA:

    (A) aggravate
    (B) corrupt
    (C) pretend
    (D) request

7. DISPERSE:

    (A) advertise
    (B) calm
    (C) expand
    (D) scatter

8. RENOWN:

    (A) application
    (B) fame
    (C) intellect
    (D) recollection

9. VENERATE:

    (A) baffle
    (B) establish
    (C) respect
    (D) ventilate

10. PLUNDER:

    (A) descend
    (B) frighten
    (C) roar
    (D) steal

11. VORACIOUS:

    (A) enlarged
    (B) frenzied
    (C) gluttonous
    (D) nasty

12. BELLIGERENT:

    (A) argumentative
    (B) frantic
    (C) illegible
    (D) lovely

Go on to the next page. ➡

13. OMINOUS:

   (A) fragrant
   (B) informed
   (C) pompous
   (D) worrisome

14. ZEALOUS:

   (A) envious
   (B) ordinary
   (C) passionate
   (D) treasonous

15. BENEDICTION:

   (A) blessing
   (B) greeting
   (C) insult
   (D) provision

16. DISPARATE:

   (A) amoral
   (B) imperfect
   (C) indifferent
   (D) unequal

17. AGGRANDIZE :

   (A) exaggerate
   (B) fabricate
   (C) generate
   (D) habituate

18. DISTINGUISH:

   (A) differentiate
   (B) elevate
   (C) personify
   (D) question

19. EQUIVOCAL:

   (A) ambiguous
   (B) dull
   (C) rapid
   (D) similar

20. MALCONTENT:

   (A) drifter
   (B) grouch
   (C) irritant
   (D) prisoner

Part Two – Sentence Completion

Directions: Select the word or word pair that best completes the sentence.

21. When Elise learned of the tragedy that had befallen her oldest and most beloved brother, she felt utter sorrow, even ------.

    (A) anguish
    (B) envy
    (C) fear
    (D) relief

22. Troy is ------ as a pianist thanks to years of lessons and practice, but he lacks the tremendous talent needed to join a major symphony orchestra.

    (A) adept
    (B) musical
    (C) joyous
    (D) openhanded

23. When I ------ that Carmen had left the fruit basket out on purpose, she did not realize that I was making an accusation.

    (A) complained
    (B) fabricated
    (C) insinuated
    (D) verified

24. Always ------, Barclay showered his friends with gifts and gave his time to mentoring children in need.

    (A) active
    (B) generous
    (C) lenient
    (D) suspicious

25. Roxie's enthusiasm for the project seemed unending, as no matter how many obstacles the team encountered, her positive attitude never ------.

    (A) argued
    (B) diminished
    (C) fathomed
    (D) lasted

26. In the ------ decision *Plessy v. Ferguson,* the Supreme Court established the false doctrine of "separate but equal," which legalized racial segregation for many decades until the Court finally corrected this grave injustice.

    (A) complicated
    (B) ignoble
    (C) isolated
    (D) opaque

27. If it is true that some people can be fooled all of the time, then Matthew must be one such person, as he is so naive that no matter how unlikely the ------, he will believe it is true.

    (A) bargain
    (B) enigma
    (C) quality
    (D) ruse

28. The two sides were optimistic that they would reach agreement, but their final issue could not be resolved, leaving the talks at an ------.

    (A) ambivalence
    (B) emergency
    (C) impasse
    (D) opinion

Go on to the next page. ➡

29. While Jennifer was moody nearly to the point of seeming perpetually miserable, Hamilton was always in high spirits, sometimes merely happy while other times outright ------.

   (A) elegant
   (B) jubilant
   (C) opulent
   (D) systemic

30. Different art forms appeal to different senses: while the auditory tones of an orchestra appeal to our ears, the ------ activities of dancers appeal to our eyes.

   (A) difficult
   (B) frugal
   (C) kinetic
   (D) soulful

31. Howard had none of his sister's ------: while she could speak powerfully and expressively in front of strangers, Howard was barely able to ------ even to friends.

   (A) charm . . . administer
   (B) curiosity . . . preach
   (C) eloquence . . . verbalize
   (D) practicality . . . pass

32. The best way to train a dog is not, as many people ------, to criticize unwanted behavior; rather, the owner who ------ welcome behavior will see faster results.

   (A) believe . . . separates
   (B) demand . . . punishes
   (C) manage . . . questions
   (D) suppose . . . extols

33. Esther's ------ effort to put the cabinet together only ------ her friends' belief that she was unable to do anything involving hand-eye coordination .

   (A) awkward . . . changed
   (B) hurried . . . continued
   (C) lengthy . . . factored
   (D) maladroit . . . perpetuated

34. Because Kurt's ------ interaction with animals was quite different from the nasty way he treated people, his parents reacted with ------ when he quit his job as a veterinarian in order to work in the customer service industry.

   (A) benign . . . chagrin
   (B) entertaining . . . apathy
   (C) kind . . . excitement
   (D) ingenuous . . . alarm

35. A person should write not only clearly but also ------, because a lack of brevity often has the effect of ------ the author's hope that people will read what the author has written.

   (A) basicly . . . encouraging
   (B) concisely . . . undermining
   (C) obviously . . . depressing
   (D) succinctly . . . elevating

36. Patrick insisted that his hurtful statement was unintended rather than ------, but his effort to ------ the situation ended in failure when he repeated his offensive statement.

   (A) considerate . . . mitigate
   (B) involuntary . . . assess
   (C) malicious . . . ameliorate
   (D) spiteful . . . aggravate

37. Because Rodrigo was a loyal friend, he worked ------ to ------ any belief that the rumors about Erica were true, ending these efforts only after he was sure he had accomplished his goal.

   (A) amiably . . . terminate
   (B) fleetingly . . . question
   (C) persistently . . . dispel
   (D) tirelessly . . . construct

Go on to the next page. ➡

38. Christopher was ------ to have Consuela as a ------, because it is rare for an artist to find someone who is willing and able to provide financial support.

    (A) amused . . . teacher
    (B) fortunate . . . benefactor
    (C) lucky . . . surrogate
    (D) required . . . patron

39. Steadman's ------ comments during class impressed his teacher, as few students can express the type of clever ------ that came so naturally to Steadman.

    (A) astute . . . insights
    (B) contrite . . . questions
    (C) laudatory . . . perceptions
    (D) shrewd . . . obstructions

40. As the ocean ------ between low and high tides, David contemplated the vast ----- that separates humans and the creatures that live on the coral reefs beneath the water's surface.

    (A) endures . . . gap
    (B) fluctuates . . . chasm
    (C) rests . . . concern
    (D) swings . . . peculiarity

STOP. If there is time, you may check your work in this section only.

STOP

NO TEST MATERIAL ON THIS PAGE

Section 2
Quantitative Reasoning

37 Questions	Time: 35 Minutes

This section is divided into two parts that contain two different types of questions. As soon as you have completed Part One, answer the questions in Part Two. You may write in your test booklet. For each answer you select, remember to fill in the corresponding circle on your answer document.

Any figures that accompany the questions in this section may be assumed to be drawn as accurately as possible EXCEPT when it is stated that a particular figure is not drawn to scale. Letters such as *x, y,* and *n* stand for real numbers.

Part One – Word Problems

Each question in Part One consists of a word problem followed by four answer choices. You may write in your test booklet; however, you may be able to solve many of these problems in your head. Next, look at the four answer choices given and select the best answer.

EXAMPLE 1:

What is the value of the expression

$5 + 3 \times (10 - 2) \div 4$?

(A) 5
(B) 9
(C) 11
(D) 16

Sample Answer

Ⓐ Ⓑ ● Ⓓ

The correct answer is 11, so circle C is darkened.

QR

Part Two – Quantitative Comparisons

All questions in Part Two are quantitative comparisons between the quantities shown in Column A and Column B. Using the information given in each question, compare the quantity in Column A to the quantity in Column B, and chose one of these four answer choices:

(A)   The quantity in Column A is greater.
(B)   The quantity in Column B is greater.
(C)   The two quantities are equal.
(D)   The relationship cannot be determined from the information given

EXAMPLE 2:	Column A	Column B	Sample Answer
	50% of 40	20% of 100	Ⓐ Ⓑ ● Ⓓ

The quantity in <u>Column A</u> (20) is the same as the quantity in <u>Column B</u> (20), so circle C is darkened.

EXAMPLE 3:

y is any real non-zero number

Column A	Column B	Sample Answer
y	$\dfrac{1}{y}$	Ⓐ Ⓑ Ⓒ ●

Since y can be any real number (including an integer or a fraction), there is not enough information given to determine the relationship, so circle D is darkened.

STOP. Do not go on until told to do so.

STOP

Part One – Word Problems

Directions: Choose the best answer from the four choices given.
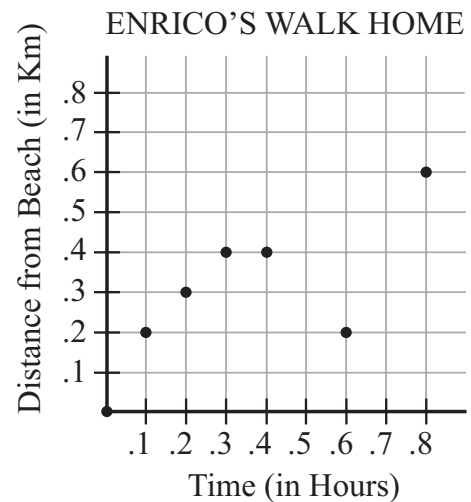
1. Nate is *n* years old. If Blair is 6 years younger than Nate, which of the following gives Blair's age, in years?

    (A) $6 - n$
    (B) $n - 6$
    (C) $6 + n$
    (D) $\dfrac{n}{6}$

2. During her bowling competition with Paul, Krissi scored a total of 320 points in 4 matches. During her fifth match, she scored 75 points. What was Krissi's average score for the five games?

    (A) 75.00
    (B) 77.50
    (C) 79.00
    (D) 80.00

3. The graph shows the distance Enrico was from the beach over a period of time during his walk home.
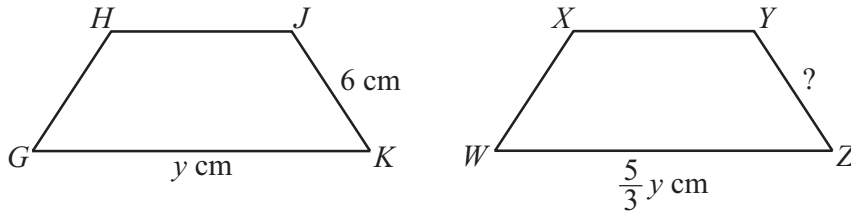

ENRICO'S WALK HOME

During the walk, Enrico worried that he had left his keys at the beach. He paused to look through his beach bag, did not find the keys, and started to walk back to the beach. Before he arrived at the beach, he realized that the keys were in his pocket, so he turned back around and went home. What was the total extra distance that Enrico walked because of his mistake?

    (A) 0.2 kilometers
    (B) 0.3 kilometers
    (C) 0.4 kilometers
    (D) 0.5 kilometers

Go on to the next page. ➜

4. Let $\ddagger x = 3x - 7$. What is the value of $\ddagger 6$?

   (A) 11
   (B) 17
   (C) 20
   (D) 25

5. If x is an even integer, then which of the following CANNOT be an integer?

   (A) $x - 2$

   (B) $2x + 3$

   (C) $\dfrac{x + 1}{2}$

   (D) $\dfrac{x}{2}$

6. If the length of the base of a parallelogram is decreased by 30% and the height is increased by 20%, what is the percent decrease in the area of the parallelogram?

   (A) 16%
   (B) 20%
   (C) 24%
   (D) 28%

7. If $(x + 6)^2 = x^2 + nx + 36$, what is the value of n?

   (A)   3
   (B)   6
   (C) 12
   (D) 36

8. If a and b each has a remainder of 4 when divided by 5, then which one of the following also has a remainder of 4 when divided by 5?

   (A) $a - b$
   (B) $2a - b$
   (C) $2a + b$
   (D) $a + 2b$

9. If the sum of the integers from 1 to 499, inclusive, is r, what is the sum of the integers from 1 to 497, inclusive, in terms of r ?

   (A) $r - 499$
   (B) $r + 499$
   (C) $r - 997$
   (D) $r + 997$

10. If y is a non-zero number, which one of the following can NEVER be true?

   (A) $\sqrt{169 - y^2} = 12$

   (B) $\sqrt{169 - y} = 12$

   (C) $\sqrt{169} - \sqrt{y^2} = 13 - y$

   (D) $\sqrt{169 - y^2} = 13 - y$

11. What is the value of $\dfrac{2(4^2 + 4^3)}{4(2 + 8)}$?

   (A)   1
   (B)   4
   (C)   8
   (D) 16

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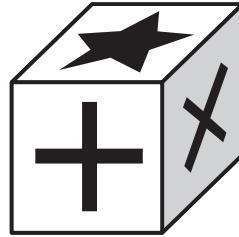12. Trapezoid *GHJK* is similar to trapezoid *WXYZ*.

Note: Figures not drawn to scale

What is the length of side *YZ*?

(A)   6 cm
(B)   6*y* cm
(C)   10 cm
(D)   10*y* cm

13. Stewie knows that *y* is an integer greater than 4 and less than 10, and Peter knows that *y* is an integer greater than 5 and less than 12. If they share their information about *y*, then they know that *y* must be

(A)   one of exactly 2 possible values
(B)   one of exactly 4 possible values
(C)   one of exactly 5 possible values
(D)   one of exactly 7 possible values

14. If $3x + 2y = 8$ and $2x + y = 12$, what is $5x + 3y$?

(A)   −20
(B)   −8
(C)   16
(D)   20

15. After grading her students' tests, Ms. Schuyler added a bonus of 5 points to each test. If the range of the test scores before the bonus was 82, what is the new range of the test scores?

(A)   82.00
(B)   84.50
(C)   85.50
(D)   87.00

16. If $x^2 + y^2 = 65$ and $xy = 28$, what is the value of $(x + y)^2$?
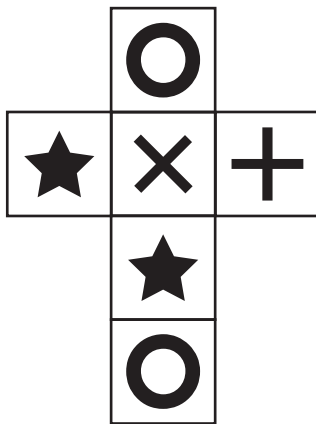
(A)   37
(B)   93
(C)   121
(D)   784

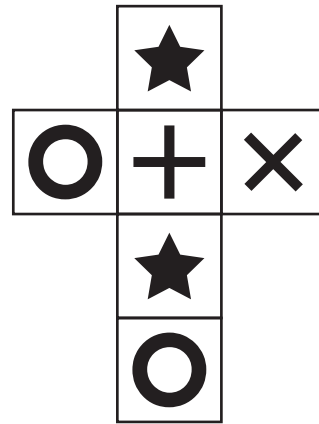*Go on to the next page.* ➡

17. A cube is shown.

Which one of the following nets could represent the cube?
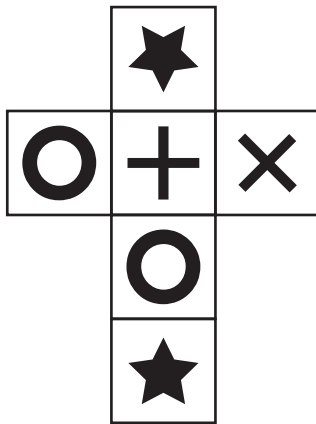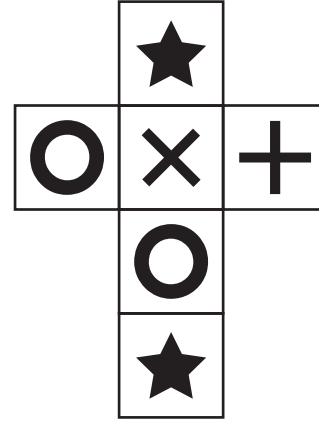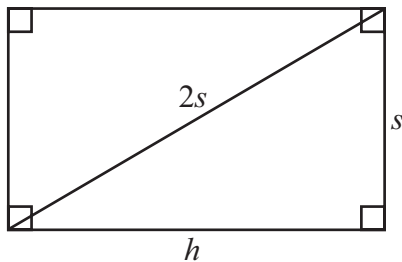
(A)

(C)

(B)

(D)

18. If x is a factor of c and y is a factor of d, which of the following statements must be true?

    (A) xy is a factor of cd
    (B) x is a factor of d
    (C) xy is a multiple of cd
    (D) y is a multiple of c

19. Use the diagram below to answer the question.

    Given the lengths of the base and diagonal of the rectangle above, what is the length of height h, in terms of s?

    (A) $s\sqrt{3}$
    (B) $s\sqrt{5}$
    (C) $3s$
    (D) $3s^2$

20. Use the chart below to answer the question.

MARBLES IN A BAG

Color	Number
White	20
Black	30
Beige	40

There are also purple marbles in the bag. Which of the following can NOT be the probability of randomly selecting a purple marble from the bag?

    (A) $\dfrac{1}{10}$

    (B) $\dfrac{1}{4}$

    (C) $\dfrac{2}{5}$

    (D) $\dfrac{7}{15}$

Go on to the next page. ➡

QR

Part Two – Quantitative Comparisons

Directions: Using all information given in each question, compare the quantity in Column A to the quantity in Column B. All questions in Part Two have these answer choices:

(A) The quantity in Column A is greater.
(B) The quantity in Column B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined from the information given.

Column A	Column B
21. $\dfrac{1}{1+3}$	$\dfrac{1}{1+\frac{1}{3}}$

Town A is 300 kilometers due north of Town B and Town C is 75 kilometers due west of Town B.

Column A	Column B
22. The shortest distance between Town C and Town A	375 miles

---

$$y < 5$$

Column A	Column B
23. $5y + 11$	$6y + 6$

Column A	Column B
24. $\left(\dfrac{1}{12}\right)^{-2}$	$\left(\dfrac{1}{12}\right)^{-\frac{1}{2}}$

A bag contains 3 green buttons, 5 black buttons, 6 purple buttons, and 9 red buttons. Two buttons are removed randomly from the bag without replacing the first button.

Column A	Column B
25. The probability that both buttons are green	The probability that at least one button is green

---

$$\dfrac{x}{y} = \dfrac{4}{7}$$

Column A	Column B
26. $\dfrac{x}{y}$	$\dfrac{x+4}{y+7}$

Go on to the next page. →

> **Answer choices for all questions on this page.**
>
> (A) The quantity in Column A is greater.
> (B) The quantity in Column B is greater.
> (C) The two quantities are equal.
> (D) The relationship cannot be determined from the information given.

The product of three consecutive whole numbers is 504.

	Column A	Column B
27.	The smallest of the three numbers	6

Carl's average score on 5 tests is 88 and the mode is 89.

	Column A	Column B
28.	The score Carl would need on a sixth test to raise his average to 89	The median score after the sixth test if Carl raises his average to 89

The formula for the volume of a pyramid is $\frac{1}{3}Bh$, where B represents the area of the base of the pyramid and h represents the height of the pyramid. The volume of Pyramid A is 3 times the volume of Pyramid B.

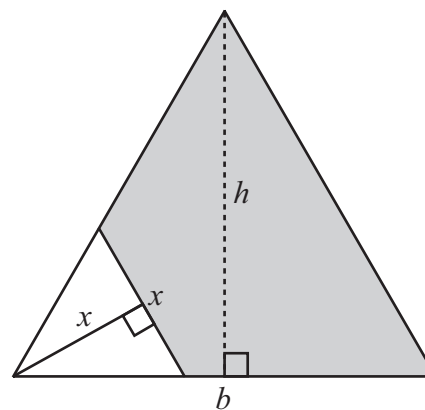|	Column A	Column B
29.	The area of the base of Pyramid A	The area of the base of Pyramid B

Square   **Rectangle**

Note: Figures not drawn to scale.

The perimeter of the square is 36. The perimeter of the rectangle is also 36.

	Column A	Column B
30.	The area of the square	The area of the rectangle

Note: Figure not drawn to scale.

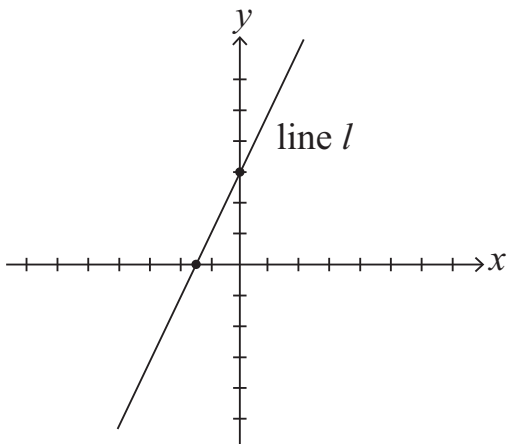|	Column A	Column B
31.	The area of the shaded region	$\frac{1}{2}(bh - x^2)$

Go on to the next page. ➡

QR

Answer choices for all questions on this page.

(A) The quantity in Column A is greater.
(B) The quantity in Column B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined from the information given.

	Column A	Column B
32.	27^4	3^{12}

Line l is the graph of $y = 2x + 3$.

	Column A	Column B
33.	The value of the y intercept when line l is reflected about the x axis	The value of the y intercept when line l is reflected about the y axis

Daven has planted vegetable seeds in his rectangular garden with an area of 144 square feet. In order to prevent people from walking on the garden, he will enclose the perimeter of the entire garden with rope.

	Column A	Column B
34.	The number of feet of rope he needs	44 feet

$$a < 0 < b < c$$

	Column A	Column B
35.	$a + c$	b

Go on to the next page. →

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The price of an item initially is $2.50. The price is then decreased by 20%, and the resulting price is then increased by 20%.

	Column A	Column B
36.	The final price of the item	$2.50

In a set of five numbers, the mode is 4, the median is 4, and the range is 4.

	Column A	Column B
37.	The average of the set of numbers	4

Section 3
Reading Comprehension

This section contains six short reading passages. Each passage is followed by six questions based on its content. Answer the questions following each passage on the basis of what is <u>stated</u> or <u>implied</u> in that passage. You may write in the test booklet.

Questions 1-6

1   I still remember my visits to my
2 grandmother in Texas when I was young. When
3 I arrived, I was greeted by her little dog Charlie,
4 whom I named. I loved Charlie, and we played
5 for hours, chasing each other from room to
6 room. Then, I would give Charlie a vanilla
7 wafer as a treat. Sometimes, when I spent time
8 with my grandmother in her room before bed,
9 Charlie licked my hand over and over. I wanted
10 Charlie to sleep in my bed, but even though my
11 room was right next to my grandmother's room,
12 he refused to leave her bed.
13   During the hot summers, my uncle took
14 my brother and me to our cousin's house to
15 swim in her pool. At least I think she was a
16 cousin; I know her husband's parents and my
17 grandmother's parents were related in some
18 way. The pool was a beautiful, sparkling blue
19 color, and I was content to spend an entire
20 afternoon in the water, swimming and playing
21 with the floating rafts. I tried to teach my
22 brother how to dive—he always jumped into

23 the pool or even walked down the steps at the
24 shallow end—but after a while I gave up.
25   Before arriving at the pool, my uncle,
26 brother, and I went to a local hamburger
27 restaurant to pick up lunch and bring it back
28 to the pool. The owner of the restaurant was a
29 callous man who yelled at the customers. I was
30 quite frightened of him, but the hamburger with
31 the special sauce was delicious, so I always
32 wanted to go there for lunch. Years later, I found
33 out that my grandmother and her cousin liked
34 going there for the hamburgers because they
35 thought the owner's rude behavior was funny!
36   When I wasn't swimming or playing with
37 Charlie, I spent time with my grandmother.
38 We watched TV, went shopping for toys,
39 visited her friends (who always had cookies
40 for me and my brother), and talked. Staying
41 with her was so much fun, and when it was
42 time to say goodbye to her and return home, I
43 always felt a bit sad.

Go on to the next page. ➡

1. This passage can best be characterized as

   (A) a young person's pleasant recollections of his visits with family.
   (B) a child's description of one particularly memorable summer.
   (C) a story from the narrator's youth and the lesson that he learned.
   (D) a fictional account of two brothers traveling across America.

2. According to the passage, the narrator went to the local hamburger restaurant even though he was

   (A) aware that he should not swim for 30 minutes after lunch.
   (B) concerned that eating too many hamburgers was unhealthy.
   (C) unable to find hamburgers with special sauce at home.
   (D) intimidated by the owner of the hamburger restaurant.

3. The use of the phrase "but after a while I gave up" in line 24 suggests that

   (A) the author bored easily and rarely completed a task.
   (B) the author did not succeed in teaching his brother to dive.
   (C) the author's brother was more interested in reading than swimming.
   (D) the author's brother resented the author's efforts to teach him to dive.

4. In line 29, the word "callous" most nearly means

   (A) entertaining.
   (B) insensitive.
   (C) lumpy.
   (D) terrified.

5. The author mentions his grandmother in line 33 in order to

   (A) emphasize the delight he took in spending time with her during his summer visits.
   (B) question the truthfulness of her stated motivation for going to the hamburger restaurant.
   (C) contrast the perceptions of the narrator as a boy with his understanding as an adult.
   (D) highlight the contrast between his fear and her enjoyment of the restaurant owner's discourtesy.

6. The narrator's attitude towards Charlie is one of

   (A) concern.
   (B) devotion.
   (C) indifference.
   (D) resentment.

Questions 7-12

1 Coral reefs are underwater structures
2 created by very small animals called corals.
3 Coral reefs are home to amazingly diverse
4 ecosystems: although together they would fill
5 less space than half of France, nearly a quarter
6 of all marine species live on these reefs. Of the
7 109,800 square miles of coral reefs, over 90%
8 are located in the Indo-Pacific region, which
9 includes Australia, Indonesia, Fiji, and many
10 other countries lying on the Indian and Pacific
11 oceans. Less than 8% of the world's coral reefs
12 are found in the Atlantic Ocean or Caribbean
13 Sea.
14 Some coral reefs are massive barrier
15 reefs extending along part or all of an entire
16 coastline. The largest is the Great Barrier Reef
17 of Australia, running 1,600 miles. Given the
18 scarcity of Atlantic and Caribbean reefs, it may
19 come as a surprise that the second and third
20 largest barrier reefs are the Belize Barrier Reef
21 in Central America (620 miles), and the Great
22 Florida Reef, a 4-mile wide, 145-mile long
23 reef system that follows the arc of the Florida
24 Keys. A barrier reef is actually made of many
25 individual reefs that run together; the Great
26 Florida Reef contains over 6,000 individual
27 reefs. Nearly 1,400 distinct species live on the
28 Great Florida Reef, including 500 species of
29 fish and 40 species of coral.
30 The Great Florida Reef consists of two
31 ridges on the eastern side of the Hawk Channel.
32 The White Bank, closer to the Florida Keys,
33 is mostly sand and sea grass with patches of
34 coral reefs; this area is also known as the patch
35 reef community. The Florida Straits are farther
36 out to sea; this ridge forms distinctive barrier
37 reef formations and is known as the bank reef
38 community. Even closer to the shore is an area
39 known as the hardbottom community. This
40 first community is populated mostly by algae,
41 sea fans, and stony coral. Lobsters and other
42 crustaceans are plentiful here, as are groupers
43 and barracuda, among other fish species.
44 The White Bank community, with dome-
45 shaped coral structures growing up in giant
46 mounds, hosts a broad range of stunning fish
47 species, from wondrously shaped parrotfish
48 and puffer fish to brightly colored angelfish and
49 damselfish. The relatively shallow part of the
50 Florida Straits (less than six feet deep) take on
51 spur and groove formations—rows and rows
52 of reefs separated by white sand. Farther out
53 to sea are giant reefs that plunge into the deep.
54 In addition to fish similar to those in the patch
55 reefs, the giant reefs are also frequented by
56 large "pelagic" fish such as sharks.
57 The most frequently visited part of the
58 Great Florida Reef lies off of Key Largo, in
59 and around the protected John Pennekamp
60 Coral Reef State Park. Each year hundreds of
61 thousands of divers come to witness this unique
62 and marvelous part of America.

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7. The passage is primarily concerned with

   (A) providing details about the annual number of visitors to John Pennekamp Coral Reef State Park.
   (B) describing the structure of barrier reefs and the types of fish species that inhabit these reefs.
   (C) analyzing the reasons for the relative scarcity of reefs in the Atlantic Ocean and Caribbean Sea.
   (D) giving information about coral reefs and more detailed information about a particular reef system.

8. In lines 18-19, the author indicates that "it may come as a surprise" that

   (A) two of the largest barrier reefs are located in areas not known to hold many of the world's reefs.
   (B) the Great Florida Reef is so much smaller than the Great Barrier Reef in Australia.
   (C) a relatively small reef is inhabited by such a large and diverse number of fish species.
   (D) a reef system containing 6,000 individual reefs is at the same time an important barrier reef.

9. In line 55, "frequented" most nearly means

   (A) attacked.
   (B) documented.
   (C) repeated.
   (D) visited.

10. The Florida Straits reefs are known for each of the following characteristics EXCEPT

    (A) giant, plunging reefs.
    (B) lobsters and crustaceans.
    (C) spur and groove formations.
    (D) sharks and other large fish.

11. In the last paragraph, the author mentions the John Pennekamp Coral Reef State Park in order to

    (A) demonstrate that an excessive number of divers visiting reefs have required efforts to protect those reefs.
    (B) explain that Key Largo, more than the other Keys, contains particularly beautiful parts of the Great Florida Reef.
    (C) change the discussion from a general description of the structure of a large reef system to a specific location within that system.
    (D) convince divers that other areas of the Great Florida Reef are also worthy of their attention.

12. The author's tone when discussing the fish species on the White Bank community (lines 44-49) is best described as

    (A) analytical.
    (B) concerned.
    (C) delighted.
    (D) irritated.

When former United States Supreme Court Justice Sandra Day O'Connor graduated from Stanford Law School, the prestigious California law firms of the day would not hire her as a lawyer. Despite the fact that she graduated third in her class, the only job offer she received was as a legal secretary. While women today are an integral and equal part of the legal community, Justice O'Connor's experience was far from unusual. Indeed, women struggled for centuries to be accepted in the legal community.

While there were some isolated exceptions, women were prohibited from practicing law during the seventeenth and eighteenth centuries. At first, women were not allowed admittance to law schools. Later, once women began to attend and graduate law schools, they were not permitted to join the state "Bar." A lawyer who is not admitted to the Bar may not give legal advice or represent a client in court.

In 1872, Myra Bradwell was denied admission to the Illinois Bar. She appealed to the United States Supreme Court, arguing that the decision violated her rights under the "privileges and immunities" clause as a citizen of the United States. The Supreme Court agreed that she was a citizen, but rejected her argument that the "privileges and immunities" clause offered her protection. In a separate opinion supporting the vote of his colleagues, Joseph Bradley expressed the typical male view of the time:

Man is, or should be, woman's protector and defender. The natural and proper timidity and delicacy which belongs to the female sex evidently unfits it for many of the occupations of civil life. The constitution of the family organization, which is founded in the divine ordinance, as well as in the nature of things, indicates the domestic sphere as that which properly belongs to the domain and functions of womanhood. The harmony, not to say identity, of interest and views which belong, or should belong, to the family institution is repugnant to the idea of a woman adopting a distinct and independent career from that of her husband.

Twenty years later, the Supreme Court similarly ruled against Belva Lockwood, who challenged Virginia's refusal to admit her to the state Bar, even though she had been admitted to practice before the Supreme Court.

Even so, the tide was changing. Belle Mansfield of Iowa became the first woman admitted to a state Bar in 1869. Likewise, in 1872, Charlotte Ray of Washington, D.C. became the first black woman to be admitted to the Bar—although it appears the admissions committee was unaware that "C. E. Ray" (as she wrote on the application) was a woman. By the 1890s, though, admission of women to state Bars became increasingly common—even if prestigious law firms would not be ready to hire the likes of Justice O'Connor for decades to come.

Go on to the next page. ➡

13. The primary purpose of the passage is to

   (A) compare the careers of Myra Bradwell and Belva Lockwood with the career of Belle Mansfield.
   (B) analyze the Supreme Court's opinion concerning Myra Bradwell's rejection by the state Bar.
   (C) provide a history of women's struggles for equal protection under the laws.
   (D) describe some of the struggles women lawyers have faced over the years.

14. It can be inferred from the third paragraph that Joseph Bradley was

   (A) married to Myra Bradwell.
   (B) Myra Bradwell's lawyer.
   (C) a Supreme Court Justice.
   (D) a well-regarded journalist.

15. Lines 1-7 imply that Sandra Day O'Connor did all of the following EXCEPT

   (A) succeeded as a student in law school.
   (B) worked as a secretary for a law firm.
   (C) applied to prestigious law firms for employment.
   (D) served on the U.S. Supreme Court.

16. The author quotes Joseph Bradley in order to show that

   (A) the "privileges and immunities" clause had no bearing on whether women should be admitted to practice law.
   (B) some men of the time often believed that the role of women was incompatible with a woman's pursuit of a career.
   (C) Belva Lockwood was foolish to ask the Supreme Court to force the State of Virginia to admit her to the Bar.
   (D) Myra Bradwell deserves praise for her courage and perseverance in trying to establish new legal rights for women.

17. Why does the author mention in lines 52-53 that Belva Lockwood was admitted to practice before the Supreme Court?

   (A) to emphasize the extent of the Supreme Court's unwillingness to override State laws concerning women's right to practice law
   (B) to praise the Supreme Court for its willingness to hear arguments from women at a time when most State courts would not
   (C) to express admiration that the Supreme Court admitted women to that Court before many State courts admitted women to practice law
   (D) to place women's struggle for the right to practice law in the larger context of the pursuit of equal rights for women

18. According to the last paragraph, the increased frequency with which women were admitted to state Bars in the late nineteenth century

   (A) was inevitable following Belle Mansfield's admission to the Iowa Bar.
   (B) came as a relief to Myra Bradwell, who finally realized her dream.
   (C) did not necessarily mean that women would be hired by law firms.
   (D) paved the way for the admission of black men to state Bars.

Questions 19-24

1   Liu Xiaobo was in a Chinese jail when he
2 was awarded the Nobel Peace Prize in 2010.
3 The President of the Independent Chinese
4 Center and the magazine *Democratic China,* he
5 was charged with, and convicted of, "inciting
6 subversion of state power" and sentenced to
7 a prison term of 11 years in 2009. His crime:
8 advocating political reforms in China, such as
9 ending the Communist Party's complete control
10 of the political system and media. The Nobel
11 committee acknowledged his "struggle for
12 fundamental human rights in China."
13   In his early years as an academic, his
14 future role as dissident was not apparent. He
15 spent many years studying literature, earning
16 a Master's Degree in 1984, when he was
17 29. He became a teacher at Beijing National
18 University, married, and had a son. In 1986,
19 however, during his work towards a Ph.D., he
20 began publishing what were radical opinions in
21 China. His 1987 book *Criticism of the Choice:*
22 *Dialogues with Li Zehou,* for example, offered
23 a pointed critique of the Chinese tradition of
24 Confucianism, and his doctoral thesis was
25 entitled "Aesthetic and Human Freedom." In an
26 interview, Liu explained his view that:
27   Modernization means whole-sale
28   westernization. Choosing a human life
29   is choosing the Western way of life. The
30   difference between Western and Chinese
31   governing system is humane versus
32   in-humane; there is no middle ground.
33   Westernization is not a choice of a nation,
34   but a choice for the human race.

35 In addition, he has demanded free markets,
36 multi-party elections, and separation of powers.
37 These are radical concepts in politically
38 repressed China.
39   Liu has also been a staunch supporter of
40 military action by the United States intended to
41 expand human rights: "The free world led by
42 the US fought almost all regimes that trampled
43 on human rights … The major wars that the US
44 became involved in are all ethically defensible."
45 He has also supported the United States' support
46 of Israel and the war in Iraq that led to Saddam
47 Hussein's downfall. He predicted that "a free,
48 democratic and peaceful Iraq will emerge."
49   But his efforts as a human rights activist
50 in China have earned him notoriety in the eyes
51 of the government and four arrests relating to
52 his writings. Ignoring the threat of prison and
53 more than one earlier prison term, he continued
54 to publish critiques of China anytime he was
55 free. His works were banned in China, and by
56 the late 1990s, the government was said to be
57 reading everything he wrote on the Internet and
58 listening to all of his phone calls. His works
59 have long been banned in China and when he
60 was working on a human rights report on China
61 in 2004, his computer and all of his documents
62 were confiscated by the government.

19. The primary purpose of the passage is to

    (A) disapprove of the Chinese government for its lack of political freedoms and its retaliation against those who criticize it.
    (B) celebrate the awarding of the Nobel Peace Prize to Liu Xiaobo for his willingness to stand up for freedom and human rights.
    (C) provide information about the political views of a person and the consequences he has faced for expressing those view.
    (D) compare Liu Xiaobo's opinions about policies of China with his opinions about policies of the United States.

20. In line 50, the word "notoriety" most nearly means

    (A) admiration.
    (B) awards.
    (C) riches.
    (D) villainy.

21. The purpose of the third paragraph (lines 39-48) is to

    (A) briefly digress from the author's main focus.
    (B) provide evidence to support an earlier opinion.
    (C) point out an exception to a person's political views.
    (D) disagree with some of a person's political views.

22. The crimes that Liu Xiaobo has been accused of can best be described as

    (A) financial.
    (B) political.
    (C) vehicular.
    (D) violent.

23. According to the passage, Liu Xiaobo's view on American involvement in wars such as the United States' war in Iraq is one of

    (A) opposition, because he understood that no weapons of mass destruction would be found and he believed that America was interested only in Iraq's oil.
    (B) uncertainty, because he was in jail when American troops entered Iraq and he therefore lacked sufficient information to form an opinion.
    (C) indifference, because he is concerned with efforts to change China to a politically free country, not with the problems of other countries.
    (D) support, because he believes that one of America's roles is to bring freedom to people who suffer under tyrannical governments.

24. The passage suggests that during the early 1980s, Liu Xiaobo

    (A) engaged in frequent protests against the Chinese government.
    (B) supported the Chinese government until he was first arrested.
    (C) was not yet engaged in writing about politics and human rights.
    (D) was not yet interested in the problems of ordinary Chinese citizens.

Questions 25-30

1   More familiarly known as the Black Plague,
2   the Black Death was one of the most deadly
3   outbreaks of disease in history. Beginning
4   in China sometime in the 1340s, it followed
5   China's trade routes all the way to Europe.
6   During the course of the Black Death, which
7   saw its worst years in Europe between 1348 and
8   1350, as much as 60% of Europe's population
9   succumbed to the disease. It would take 150
10 years for the population to recover.
11   The Black Death was the second of three
12 major recorded plagues. The first was the
13 Plague of Justinian in the 500s and 600s. Killing
14 about 40% of Constantinople's population
15 and nearly half of Europe's, the plague did not
16 disappear until the mid 700s. The third, called
17 the Third Pandemic, arrived in the 1800s; this
18 plague, unlike the two that preceded it, was
19 limited to China and India. But it is the Black
20 Plague that continues to fascinate historians of
21 disease, perhaps because after its first wave in
22 the 1300s, it reappeared from time to time all
23 the way through the 1700s. While a virulent
24 plague will die out quickly as a population is
25 decimated, it can recur because the bacteria
26 continue to live in fleas.
27   The bacteria species that is believed to
28 have caused the Black Death, *Yersinia pestis,*
29 spread with ease, as it was carried by fleas that

30 infested rodents. Medicine was not advanced
31 during the Black Plague. In France, the King
32 was informed that the plague was caused
33 by astrological events such as the aligning
34 of three planets. Moreover, during the Black
35 Plague, personal hygiene was not considered
36 important, and this surely helped the spread
37 of the disease—ticks and fleas hopped from
38 animals to people in the dirty streets. In addition
39 to turning to astrology for answers, people of
40 the time blamed earthquakes and, unfortunately,
41 the Jewish people, whose communities in some
42 towns were massacred not by the plague, but by
43 other people.
44   The Plague had many names, including
45 the Great Pestilence and Great Mortality. It
46 was not until the sixteenth century that the
47 color black attached to the name. Conventional
48 wisdom holds that "black" referred to the
49 grisly symptoms that appeared as the disease
50 progressed, such as blackened skin. However,
51 it is just as likely that the term was being used
52 in the sense of "terrible." Ultimately, this
53 question, along with what caused the plague
54 and how many people died, will never be
55 answered conclusively. The records from
56 the time are simply not detailed enough to
57 allow for confident answers. Hypotheses and
58 extrapolations will have to do.

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25. The primary purpose of the passage as a whole is to

    (A) question the reliability of information about the Black Death.
    (B) criticize fourteenth-century people for their reaction to the Black Death.
    (C) provide an overview of current beliefs about the Black Death.
    (D) argue that the Black Death is more harmful than current diseases.

26. According to the passage, some people in the fourteenth century attributed the Black Death to

    (A) planetary phenomena.
    (B) fleas and rodents.
    (C) *Yersinia pestis.*
    (D) lack of cleanliness.

27. One possible reason the Black Plague is particularly interesting to those who study diseases is that

    (A) its limitation to China and India allows for greater scientific understanding of its causes.
    (B) the name Black Death evokes both the color of the symptoms and the horror of the disease.
    (C) its repeated recurrence for several hundred years makes it a particularly devastating plague.
    (D) the bacteria that caused it and the mode of transmission remain present today in many areas.

28. In line 25, "decimated" most nearly means

    (A) armed.
    (B) destroyed.
    (C) infected.
    (D) treated.

29. The sentence "Hypotheses and extrapolations will have to do" (lines 57-58) refers to

    (A) the incomplete nature of present-day knowledge about the Black Plague.
    (B) the scientific method, which relies on the experimental testing of hypotheses.
    (C) the particular symptoms that many victims of the Black Plague suffered.
    (D) whether the bacteria *Yersinia pestis* continues to exist today.

30. The author mentions Jewish people in line 41 in order to show that

    (A) no group of people was immune to the devastating effects of the Black Plague.
    (B) not all groups of people looked to the stars to explain the reasons for the Black Plague.
    (C) some people's lack of understanding of the cause of the Black Plague led them to violent acts.
    (D) their belief that earthquakes caused the Black Plague had disastrous consequences for them.

Questions 31-36

The Inuit appear to have been the first people to build an igloo. The Inuit are indigenous people living in the arctic regions of Alaska and Canada. In the Inuit language, the word igloo means house, even though many people suppose it has a more precise definition: snow house. Quite the contrary, anything from a tent to a building can be called an igloo by the Inuit. To other indigenous peoples, however, igloo does refer only to a snow house, and we shall proceed using this more narrow and conventional definition.

Making a house out of snow in the freezing arctic may seem strange, but the air pockets trapped within the snow work to trap heat inside the igloo. The igloo's inhabitants' body heat is enough to warm the space inside an igloo to as much as 60 degrees under some circumstances, all the while the outside temperature could be as low as –50 degrees. Not any snow will do, however. The snow must be quite heavy. Wind-blown snow is particularly well-suited to igloo construction, because the ice crystals in the snow become more compact and interlocked. The compacted snow is used to create the familiar igloo dome. Even without a supporting structure, a well-built igloo can support the weight of a man standing on it.

There are a number of types of igloos, each built for a specific purpose. Small igloos are used for temporary housing, perhaps for two or three days. Such igloos are built during hunting trips or other short journeys. Larger igloos form permanent homes. While just a single room, these igloos are large enough to accommodate one or even two families. A group of such igloos in a small area forms a village. The largest igloos have more than one room and can house as many as 20 people. Some of the large igloos are several small igloos connected together, while others are actually single structures.

In addition to body heat, stone lamps and small stoves are used to warm an igloo. While the stone lamp may cause the interior to melt a bit, the water refreezes, which serves to strengthen the igloo. For additional light, a hole is cut in the igloo, and a block of ice is inserted in the hole. Animal skins are used in place of a front door to keep warm air in, while caribou fur is used as a warm blanket on a bed made of snow. The bed is placed in a raised area, because warmer air rises.

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31. Which sentence best expresses the main idea of the passage?

   (A) The term igloo refers more to a broader category of home than merely to homes made of snow.
   (B) Igloos come in a variety of sizes, and all are able to keep people inside them warm.
   (C) Igloos made of snow by the Inuit are known to be particularly well constructed.
   (D) Outside of the arctic regions of Alaska and Canada, igloos are no longer built.

32. According to the passage, which is true about igloos?

   (A) Igloos cannot maintain warmth without a stone lamp or stove.
   (B) A bed in an igloo is often placed higher than the entrance of the igloo.
   (C) A larger igloo is better suited to maintaining a warm environment.
   (D) Only the Inuit still make igloos from snow today.

33. The author of the passage appears to be most interested in

   (A) the number of igloos contained in a typical village.
   (B) how many people can live in igloos of various sizes.
   (C) the most effective way to maintain warmth in an igloo.
   (D) how igloos are designed and used by indigenous arctic people.

34. According to the passage, a stone lamp can have the effect of

   (A) ensuring that only a limited number of animal skins and furs are required to keep the igloo's inhabitants warm.
   (B) further strengthening the igloo through a process of partially melting and re-freezing the snow from which the igloo is constructed.
   (C) allowing the parents of Inuit children to have sufficient light by which to read the historical accounts of their ancestors.
   (D) providing an alternative to the use of small stoves to ensure that igloos are brought to a comfortable temperature for sleep.

35. Which of the following describes the organization of lines 31-44?

   (A) A statement is made and supporting examples are provided.
   (B) An opinion is offered and then contradicted with facts.
   (C) Types of igloos built today are compared with igloos from the past.
   (D) Reasons are given for the way igloos of different sizes are constructed.

36. The author implies that some igloos

   (A) can be constructed with materials other than snow.
   (B) can be moved from one location to another during a hunting trip.
   (C) cannot be built to a size sufficient to accommodate more than one family.
   (D) cannot be brought to temperatures of 60 degrees without an external heat source.

STOP. If there is time, you may check your work in this section only.

STOP

NO TEST MATERIAL ON THIS PAGE

Section 4
Mathematics Achievement

47 Questions	**Time: 40 Minutes**

Each question is followed by four suggested answers. Read each question and then decide which one of the four suggested answers is best.

Find the row of spaces on your answer document that has the same number as the question. In this row, mark the space having the same letter as the answer you have chosen. You may write in your test booklet.

SAMPLE QUESTION: Sample Answer

Ⓐ ● Ⓒ Ⓓ

What is the perimeter of an isosceles triangle
with two sides of 4 cm and one side of 6 cm?

(A)   10 cm
(B)   14 cm
(C)   16 cm
(D)   24 cm

The correct answer is 14 cm, so circle B is darkened.

**STOP. Do not go on
until told to do so.** STOP

1. Which of the following is not equal to $\frac{1}{3}$?

   (A) $\dfrac{1.5}{4.5}$

   (B) $\dfrac{0.5}{1.5}$

   (C) $0.\overline{33}$

   (D) 0.333334

2. If the circumference of a circle is 12π, what is the area of the circle?

   (A) 144π
   (B) 36π
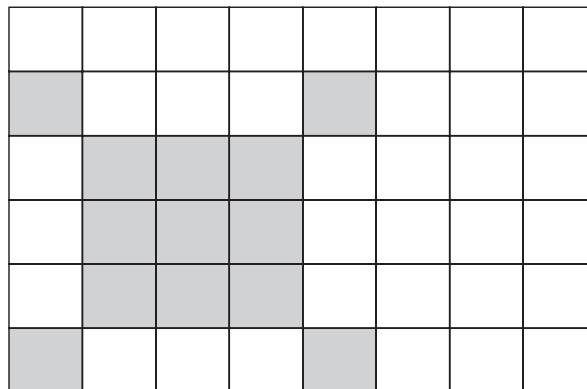   (C) 12π
   (D) 6π

3. For which value(s) of x is it true that
   $$\frac{x^2 - 36}{(x + 3)(x - 4)} = 0 ?$$

   (A) $x = 2$ and $x = 3$
   (B) $x = 6$ only
   (C) $x = -6$ and $x = 6$
   (D) $x = 2$, $x = 3$, and $x = 6$

4. What is the value of $\dfrac{4.2 \times 10^7}{6.0 \times 10^{-3}}$?

   (A) 7.0×10^3
   (B) 7.0×10^4
   (C) 7.0×10^9
   (D) 7.0×10^{10}

5. The area of each grid square in the rectangle shown below is 4 in².

   What is the area of the shaded region?

   (A) 26 in²
   (B) 46 in²
   (C) 52 in²
   (D) 62 in²

6. If p and q are prime numbers, what is the greatest common factor of $4p^8q$ and $10p^5q^4$?

   (A) $2p^8q$
   (B) $2p^5q^4$
   (C) $2p^5q$
   (D) $20p^8q^4$

7. The chart shows the inputs and outputs at a factory.

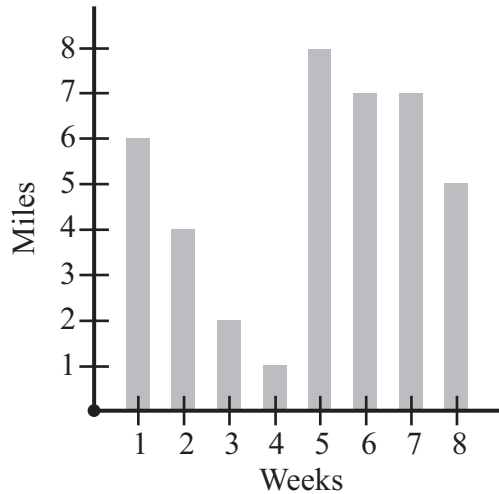| Inputs	Outputs
1	0
2	2
3	4
4	6
5	8
•	•
•	•
•	•
x	y

If the pattern shown is continued, then what is the value of y?

(A) $2(x - 1)$
(B) $2x - 1$
(C) $2x + 1$
(D) $2(x + 1)$

8. What is the slope of a line with coordinate points (2, 5) and (7, 3)?

(A) $-\dfrac{5}{2}$

(B) $-\dfrac{2}{5}$

(C) $\dfrac{2}{5}$

(D) $\dfrac{5}{2}$

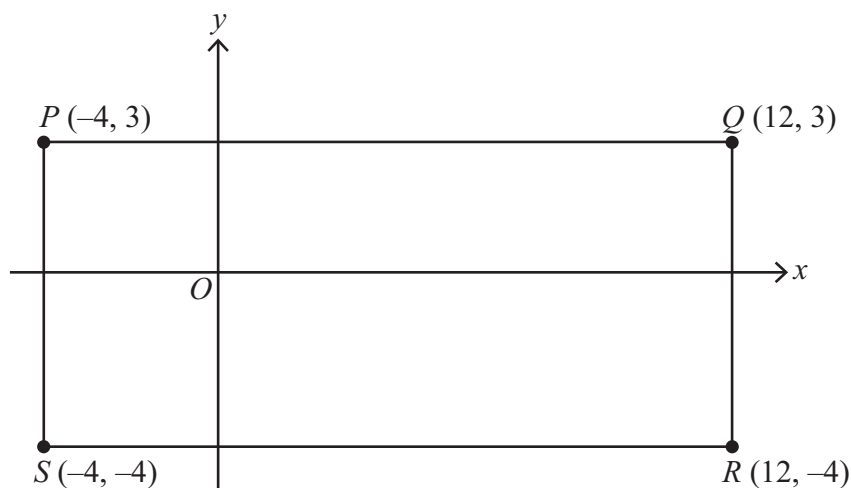9. The bar graph shown represents the number of miles Eleanor ran each week during an eight-week period.

What is the median number miles run?

(A) 3.0
(B) 4.5
(C) 5.5
(D) 7.0

10. If $x = (3.15 + 1.85)x$, what is the value of x?

(A) 0

(B) $\dfrac{1}{5}$

(C) $\dfrac{1}{2}$

(D) 5

11. Use the rectangle to answer the question.

Which of the following distances is closest to 13?

(A) *PO*
(B) *QO*
(C) *RO*
(D) *SO*

12. What is the minimum value of y if $y = 3x^2 - 4$ for $-3 \leq x \leq 2$?

(A) -7
(B) -4
(C) 8
(D) 23

13. If point $(-1, 10)$ lies on a circle with center $(-6, -2)$, what is the radius of the circle?

(A) 7 grid units
(B) 8 grid units
(C) 12 grid units
(D) 13 grid units

14. What is the best unit to use when measuring the width of a television screen?

(A) inches
(B) kilometers
(C) pounds
(D) tons

15. What is the solution set to the inequality $-4 \leq 3x - 1 \leq 8$?

(A) $-1 \leq x, x > 3$
(B) $1 \leq x, x \geq 3$
(C) $-1 \leq x \leq 3$
(D) $1 \leq x \leq 3$

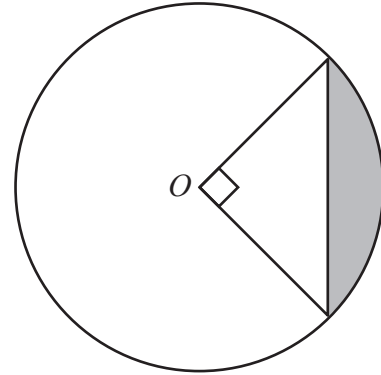16. Mr. Lear recorded the number of inches of rain on each day during the month of February in the table below.

RAINFALL

Inches of Rain	Number of Days
0	3
1	5
2	12
3	3
4	5

What is the mode of the data?

(A)   2
(B)   3
(C)   5
(D)   12

17. From a club of 7 members, 3 will be chosen for President, Vice President, and Treasurer. How many different arrangements of members are possible for the 3 positions?

(A)   18
(B)   35
(C)   210
(D)   343

18. Use the diagram to answer the question.

If the radius of Circle O is 6, what is the area of the shaded region?

(A) $9\pi - 18$
(B) $9\pi - 36$
(C) $12\pi - 18$
(D) $36\pi - 36$

19. If the number of students in a classroom is increased from 20 to 25, what is the percent increase in the number of students?

(A)   20%
(B)   25%
(C)   55%
(D)   80%

20. If x is the square root of a number that is not a perfect square, y is the square root of a different number that is not a perfect square, and neither x nor y is a factor of the other, which one of the following could be a rational number?

(A) $\dfrac{x}{y}$

(B) $\dfrac{\sqrt{x}}{y}$

(C) $\left(\dfrac{x}{y}\right)^2$
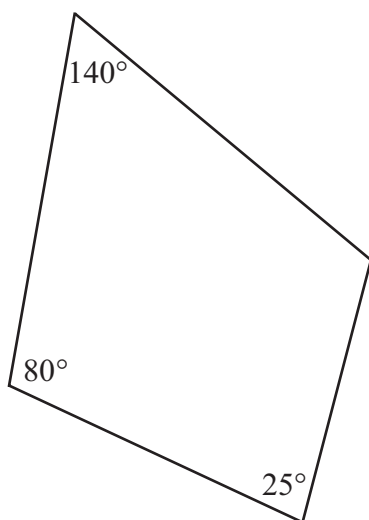
(D) $\dfrac{x}{\sqrt{y}}$

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21. Triangle ABC is similar to triangle PQR. The length of $\overline{AC}$ is 7 cm, and the length of $\overline{PR}$ is 4 cm. If the length of $\overline{PQ}$ is 16 cm, what is the length of $\overline{AB}$?

   (A) 28
   (B) 21
   (C) 14
   (D)   4

22. What is the value of $(x + 4)(x - 5)$?

   (A) $x^2 - 1$
   (B) $x^2 - 20$
   (C) $x^2 - x - 20$
   (D) $x^2 + x - 20$

23. The measures of three of the angles of a quadrilateral are shown in the diagram.

   What is the measure of the fourth angle?

   (A) 105
   (B) 115
   (C) 205
   (D) 215

24. The equation $x = \dfrac{-4}{4 + x}$ is true for what value(s) of x?

   (A) –2
   (B) 0
   (C) all real numbers
   (D) There are no values for x that would make the equation true.
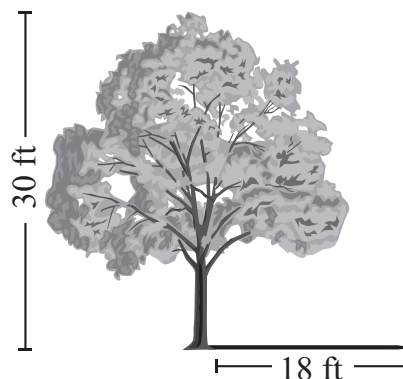
25. What expression is equivalent to $3a^3b^5 + 2a^2b^4 - (7a^2b^4 - 4a^3b^5)$?

   (A) $-4a^3b^5 + 6a^2b^4$
   (B) $5a^3b^5 - 3a^2b^4$
   (C) $-5a^3b^5 + a^2b^4$
   (D) $7a^3b^5 - 5a^2b^4$

26. If x is an odd number, which one of the following expressions is an even number?

   (A) $x(x + 8)$
   (B) $(x + 2)(x - 4)$
   (C) $x^2 - 2$
   (D) $x^2 - x$

27. The height of a tree is 30 feet, and it casts a shadow of 18 feet, as shown in the diagram.

   If Carmella is 5 feet tall, what is the length of her shadow at the same time of day?

   (A) 2 feet
   (B) 3 feet
   (C) 4 feet
   (D) 6 feet

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28. What is the value of $\sqrt{64x^{36}}$?

    (A) $8x^6$
    (B) $8x^{18}$
    (C) $32x^6$
    (D) $32x^{18}$

29. The table below shows the results of a survey of 90 people at a movie theater. Each person was asked to name his or her favorite type of movie, by category.

FAVORITE MOVIE BY TYPE

Movie Type	Number of People
Comedy	60
Romance	11
Science Fiction	15
Other	4

If this data is used to make a circle graph, what is the central angle of the portion of the graph representing Comedy?

    (A)   15°
    (B)   60°
    (C)   150°
    (D)   240°

30. There are 2 purple beads, 5 black beads, and 9 yellow beads in a bag. If 2 beads are selected at random without replacing the first bead, what is the probability of picking a yellow bead and then a purple bead?

    (A) $\dfrac{7}{16}$

    (B) $\dfrac{11}{16}$

    (C) $\dfrac{9}{16} \times \dfrac{2}{15}$

    (D) $\dfrac{9}{16} \times \dfrac{2}{16}$

31. Which one of the following expressions does NOT represent an integer?

    (A) $\sqrt{36 \times 9}$

    (B) $\sqrt{36} \div \sqrt{9}$

    (C) $\sqrt{36 + 9}$

    (D) $\sqrt{36} - \sqrt{9}$

32. Line l has a slope of $\dfrac{2}{3}$. If line m is perpendicular to line l, what is the slope of line m?
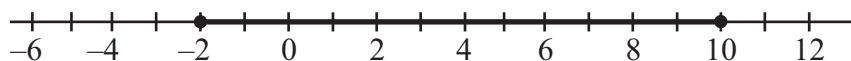
    (A) $-\dfrac{3}{2}$

    (B) $-\dfrac{2}{3}$

    (C) $\dfrac{2}{3}$

    (D) $\dfrac{3}{2}$

33. During an 80-minute musical, $\dfrac{1}{5}$ of the time was devoted to changes of scenery. If the average time it took to change the scenery was 40 seconds, how many times was the scenery changed?

    (A)   12
    (B)   16
    (C)   24
    (D)   96

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34. A solution set is shown on the number line.

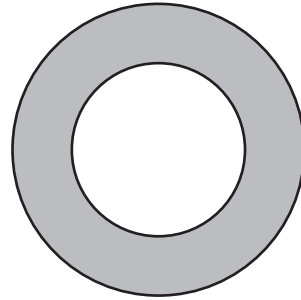Which expression represents the solution set?

(A) $|x + 4| \leq 6$
(B) $|x + 4| \leq -6$
(C) $|x - 4| \leq 6$
(D) $|x - 4| \leq -6$

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35. Sylvester is placing square tiles on his bathroom floor. If the measurement of the floor is 15 feet wide by 21 feet long, and the area of each tile is 1 yd², how many tiles will Sylvester need?

(A)   18
(B)   35
(C)   105
(D)   315

36. If $b^2 + 25 = 0$, which represents all possible values of b?

(A)   5
(B)   ±5
(C) $5i$
(D) $\pm 5i$

37. Which of the following is the result of the expression $\begin{bmatrix} 1 & 4 \\ 2 & 1 \end{bmatrix} + \begin{bmatrix} 2 & 5 \\ 6 & 1 \end{bmatrix}$?

(A) $\begin{bmatrix} 3 & 5 \\ 6 & 1 \end{bmatrix}$

(B) $\begin{bmatrix} 3 & 9 \\ 8 & 2 \end{bmatrix}$

(C) $\begin{bmatrix} 3 & 9 \\ 6 & 1 \end{bmatrix}$

(D) $\begin{bmatrix} 3 & 5 \\ 8 & 2 \end{bmatrix}$

38. If $ab + 3 = xb - a$, then $b =$

(A) $\dfrac{a + 3}{x - a}$

(B) $\dfrac{a - 3}{x - a}$

(C) $\dfrac{a + 3}{a - x}$

(D) $\dfrac{x - a}{a - x}$

39. Use the stem-and-leaf plot to answer the question.

Stem	Leaf
0	1 1 2 2
1	1 4
2	2 5 6
3	7
4	1 8 9
5	5
6	2 3 6 7

Which of the following can be determined based on the data above?

(A) mean only
(B) mean and median only
(C) mean, median, and mode only
(D) mean, median, mode, and range

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40. If a sausage 26 inches long were cut into 2 pieces so that one piece was 8 inches longer than the other piece, what would the length be, in inches, of the shorter piece?

   (A)   5 in
   (B)   9 in
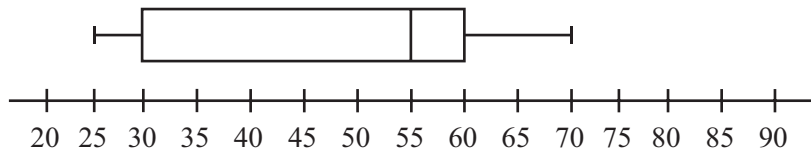   (C)   17 in
   (D)   21 in

41. Use the diagram below to answer the question.

   If the radius of the smaller circle is 6 cm and the radius of the larger circle is 10 cm, what is the area of the shaded region?

   (A) 16π cm^2
   (B) 36π cm^2
   (C) 64π cm^2
   (D) 100π cm^2

42. The box-and-whisker plot below shows the number of days without sunlight in a remote village in northern Alaska during winter last year.

   What is the range of the data?

   (A)   30
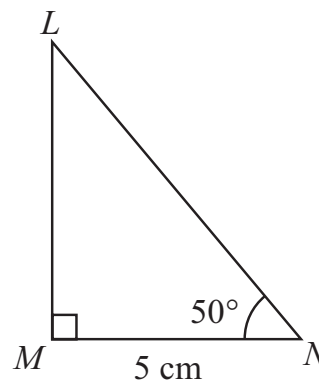   (B)   45
   (C)   55
   (D)   70

43. If there are 5,280 feet in a mile, and a dog runs 14 miles per hour, which of the following expressions shows the dog's speed in feet per minute?

(A) $\dfrac{14 \times 60}{5{,}280}$

(B) $\dfrac{5{,}280}{14 \times 60}$

(C) $\dfrac{60}{14 \times 5{,}280}$

(D) $\dfrac{14 \times 5{,}280}{60}$

44. There are 7 orange jelly beans, 5 pink jelly beans, 3 green jelly beans, and 4 brown jelly beans in a bag. Graciela randomly removes two jelly beans from the bag without replacing the first jelly bean. If the first jelly bean Graciela removed was brown, what is the probability that the second jelly bean she removed was pink?

(A) $\dfrac{4}{19} \times \dfrac{5}{19}$

(B) $\dfrac{4}{19} \times \dfrac{5}{18}$

(C) $\dfrac{5}{19}$

(D) $\dfrac{5}{18}$

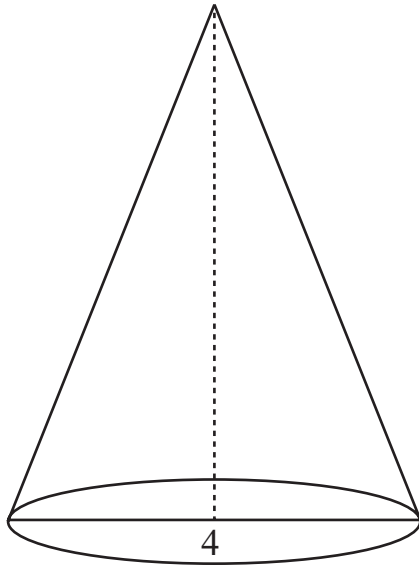45. Triangle *LNM* is shown. The measure of angle *LNM* is 50°, and the length of *MN* is 5 cm.

Side length $\overline{LM}$ is equal to which one of the following expressions?

(A) 5 tan 50°
(B) 5 sin 40°

(C) $\dfrac{5}{\tan 50°}$

(D) $\dfrac{5}{\sin 40°}$

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46. The height of the cone shown is 3 times its radius. The formula used to find the volume of a cone is $V = \frac{1}{3}r^2h\pi$, where r is the radius of the cone and h is the height of the cone.

If the diameter of the cone is 4 cm, what is the volume of the cone in centimeters^2?

(A) 8π
(B) 24π
(C) 32π
(D) 48π

47. The normal number of days of rain per year in City A is 20, and this year's number of days of rain was within 5 days of the normal number. If this year's number of days of rain was R, which one of the following best describes this scenario?

(A) $|R - 5| \leq 20$
(B) $|R - 5| \geq 20$
(C) $|R - 20| \leq 5$
(D) $|R - 20| \geq 5$

STOP. If there is time, you may check your work in this section only.

STOP

NO TEST MATERIAL ON THIS PAGE

Essay

You will have 30 minutes to plan and write an essay on the topic printed on the other side of this page. **Do not write on another topic. An essay on another topic is not acceptable.**

The essay is designed to give you an opportunity to show how well you can write. You should try to express your thoughts clearly. How well you write is much more important than how much you write, but you need to say enough for a reader to understand what you mean.

You will probably want to write more than a short paragraph. You should also be aware that a copy of your essay will be sent to each school that will be receiving your test results. You are to write only in the appropriate section of the answer sheet. Please write or print so that your writing may be read by someone who is not familiar with your handwriting.

You may make notes and plan your essay on the reverse side of this page. Allow enough time to copy the final form on to your answer sheet. You must copy the essay topic onto your answer sheet, on page 3, in the box provided.

Please remember to write only the final draft of the essay on pages 3 and 4 of your answer sheet and to write it in blue or black pen. Again, you may use cursive writing or you may print. Only pages 3 and 4 will be sent to the schools.

Directions continue on the next page.

REMINDER: Please write this essay topic on the first few lines of page 3 of your answer sheet.

Essay Topic

Name a living person you would like to meet and describe what you would like to discuss with that person.

- Only write on this essay question
- Only pages 3 and 4 will be sent to the schools
- Only write in blue or black pen

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