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:

Sample Answer

Ⓐ Ⓑ ● Ⓓ

What is the value of the expression $3 + 7 \times (6 - 4)^2 - 8 \div 2$?

(A) 14

(B) 16

(C) 27

(D) 32

The correct answer is 27, so circle C is darkened.

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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 choose 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
5	$\sqrt{25}$	Ⓐ Ⓑ ● Ⓓ

The quantity in Column A (5) is the same as the quantity in Column B (5), so circle C is darkened.

EXAMPLE 3: $x = 6^2 - 3 \times 4$

Column A	Column B	Sample Answer
x	22	● Ⓑ Ⓒ Ⓓ

The quantity in Column A (24) is greater than the quantity in Column B (22), so circle A is darkened.

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PART ONE – WORD PROBLEMS

Directions: Choose the best answer from the four choices given.

1. $\frac{1}{4}, \frac{2}{8}, \frac{3}{12}, \frac{4}{\blacksquare}$

   In the number pattern above, ■ =

   (A) 10
   (B) 12
   (C) 16
   (D) 20

2. The cost of go-karting is S dollars for the first ten laps around the track and T dollars for each additional lap. What is the cost, in dollars, of go-karting for 17 laps?

   (A) $T + (S \times 7)$
   (B) $S + (T \times 7)$
   (C) $(S \times 10) + T$
   (D) $17 + S + T$

3. If 5 out of 20 students in a class wear glasses, what percentage of the students wears glasses?

   (A) 5%
   (B) 15%
   (C) 20%
   (D) 25%

4. Aaron received x tickets to a concert and divided them equally among himself and four friends. Which of the following expressions shows the number of tickets that each person received?

   (A) $x/4$
   (B) $x - 4$
   (C) $x - 5$
   (D) $x/5$

5. Nathan reads four books in the fall and two books in the winter. In the summer, he reads twice the number of books he reads in the fall. In the spring, he reads half the number of books he reads in the fall. If he continues to read at the same rate, how many books will he read in two full years?

   (A) 16
   (B) 18
   (C) 24
   (D) 32

6. In Figure 1, the radius of the circle is 4. If a line segment is drawn inside the circle so it does not extend beyond the circle's outer edge, the line segment could have any of the following lengths EXCEPT:

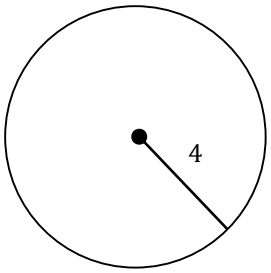

Figure 1

   (A) 10
   (B) 8
   (C) 6
   (D) 4

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Questions 7-8 are based on the graph in Figure 2.

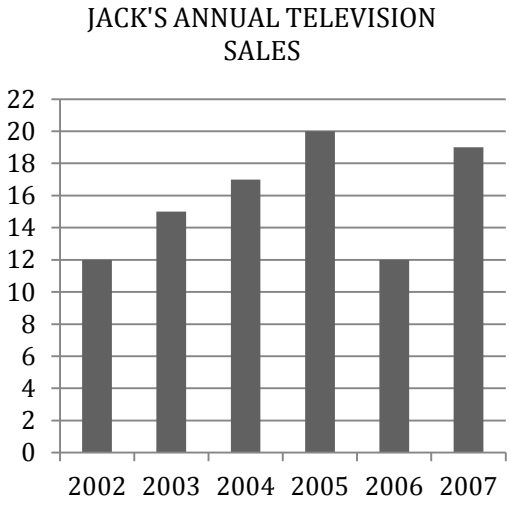

Figure 2

7. Which of the following statements is correct?

   (A) The number of televisions sold in 2004 was exactly double the number of televisions sold in 2002.

   (B) The same number of televisions was sold in 2005 as in 2007.

   (C) The number of televisions sold in 2007 was more than twice the number of televisions sold in 2003.

   (D) None of the above statements are correct.

8. In 2006, the employee of the year sold 36 televisions. In 2006, Jack's television sales were what fraction of the employee of the year's sales?

   (A) $^1/_2$

   (B) $^1/_3$

   (C) $^2/_3$

   (D) $^3/_5$

9. In Figure 3, *LMNO* is a square. If the length of *KL* is 8 and the length of *LO* is 3, what is the area of the rectangle *JKMN*?

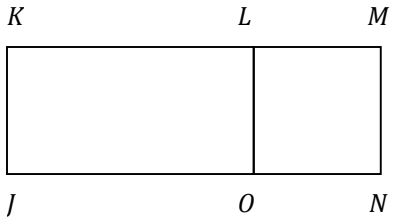

Figure 3

   (A) 24

   (B) 28

   (C) 33

   (D) 36

10. Which number is closest to the square root of 180?

    (A) 10

    (B) 13

    (C) 18

    (D) 20

11. How many fifths are there in $5\frac{2}{5}$?

    (A) 2

    (B) 5

    (C) 25

    (D) 27

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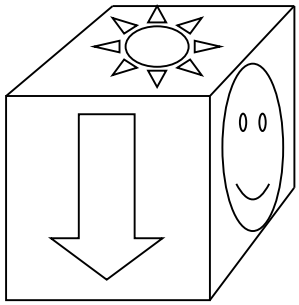
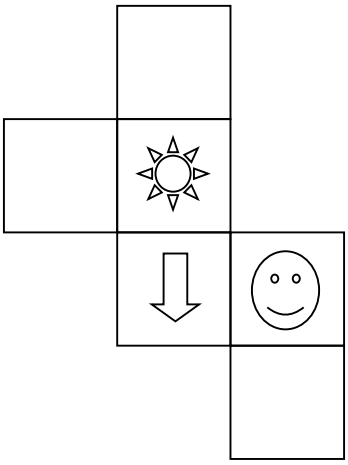
12. Which is a possible net for this cube?



(A)



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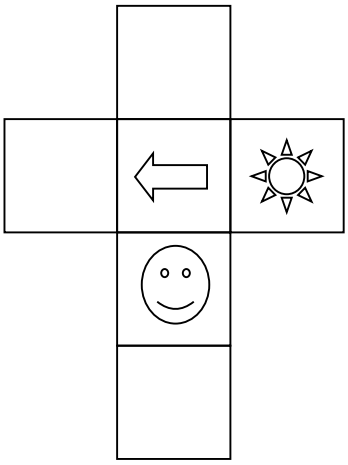

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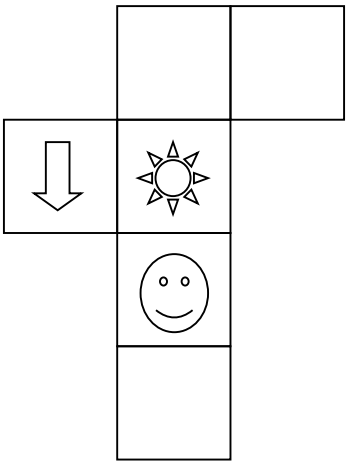
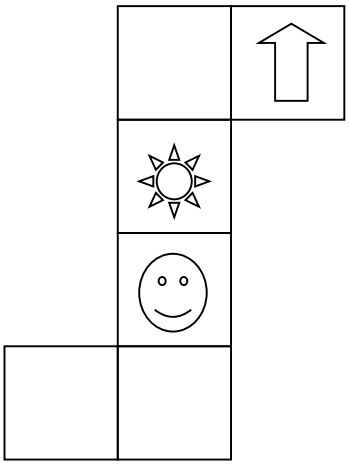


(D)



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13. In Figure 4, an empty wine glass is shown placed upside down. Which of the following shows all of the points where the glass touches the table?

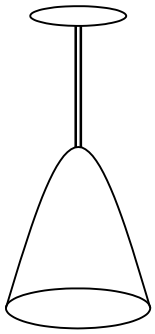
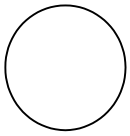
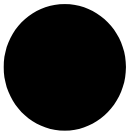
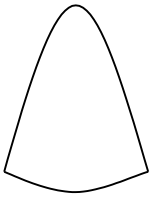


Figure 4

(A) 

(B) 

(C) 

(D) 

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14. $258 \times 72 =$

    (A) 18,576
    (B) 18,060
    (C) 17,294
    (D) 17,292

15. The perimeter of a triangle is 23 cm. All the side lengths are integers. If one side measures 5 cm, what is the length of the largest possible side?

    (A) 9 cm
    (B) 11 cm
    (C) 12 cm
    (D) 15 cm

16. Which of the expressions below has the greatest value?

    (A) 30% of 600
    (B) $^1/_3$ of 600
    (C) 0.33 of 600
    (D) $^1/_4$ of 600

17. Paige has 5 more toys than Jordan and 8 more toys than Bill. Altogether, the three friends have 20 toys. How many toys does Jordan have?

    (A) 6
    (B) 8
    (C) 11
    (D) 16

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18. Which of the following equations best represents the relationship described by the table?

Day (*D*)	Number of apples on the ground (*A*)
1	7
2	13
3	19
4	25
5	31

(A) $A = 6D$
(B) $A = 7D$
(C) $A = 6D + 1$
(D) $4A = 25D$

19. Alicia's math quizzes are graded on a scale from 0 to 10. Her average on three quizzes is a 6. Her final math quiz will be counted twice towards her average. What does she need to score on her final quiz in order to raise her average score to a 7?

(A) 7
(B) 7.5
(C) 8
(D) 8.5

20. $^1/_4$ of which expression is greatest?

(A) $A - 1$
(B) A
(C) $A + 3$
(D) $\frac{A}{3} + 1$

21. A small cube has side lengths of 2 cm. A large cubic box can fit 8 of these small cubes inside of it with no extra space. How many cubes with side lengths of 1 cm could fit inside the large cubic box, leaving no extra space?

(A) 8
(B) 16
(C) 32
(D) 64

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PART TWO – QUANTITATIVE COMPARISONS

Directions: Using the 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
22.	$3 + 4 \times 5 + 6$	$4 + 3 \times 5 + 11$

$$x \blacksquare y = \frac{x + y}{x}$$

	Column A	Column B
23.	$3 \blacksquare 8$	$8 \blacksquare 3$

	Column A	Column B
24.	$\sqrt{100 - 36}$	$\sqrt{100} - \sqrt{36}$

The sum of 3 consecutive integers is 30.

	Column A	Column B
25.	The largest of these integers	10

Michael drives at 30 miles per hour for two hours. He then drives at 40 miles per hour for one hour.

	Column A	Column B
26.	Michael's average speed for all three hours	35 miles per hour

$$y = 5x - 12$$

	Column A	Column B
27.	The slope of the line	The value of y when $x = 3$.

Tina is stacking cubes to make a tower. Each cube has a side length of either 3 cm, 4 cm, or 5 cm.

	Column A	Column B
28.	The smallest number of cubes required for a tower that is 27 cm tall	6

A bag contains 3 yellow marbles, 5 blue marbles, and 7 red marbles.

	Column A	Column B
29.	The probability of choosing a yellow marble followed by a red marble	The probability of choosing a red marble followed by a yellow marble

A, B, C, and D lie on a line in that order. $AC = 10$ and $BD = 8$.

	Column A	Column B
30.	BC	4

Ryan makes $\frac{4}{5}$ of his basketball shots.

	Column A	Column B
31.	The number of shots he makes after 15 tries	The number of shots he misses after 80 tries

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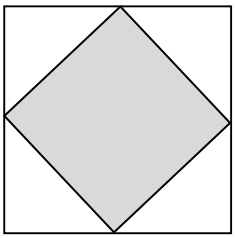
A fair coin has an equal probability of landing on heads or tails when it is flipped. A fair die has an equal probability of landing on a 1, 2, 3, 4, 5, or 6 when it is rolled.

	Column A	Column B
32.	The probability of flipping tails with a fair coin and then rolling a 3 with a fair die	The probability of rolling an even number and then rolling an odd number with a fair die



Each corner of the small square divides a side length of the large square into two equal pieces.

	Column A	Column B
33.	The area of the shaded region	The area of the unshaded region

	Column A	Column B
34.	The price of a \$50 sweater sold at x% off	The price of a \$40 sweater sold at y% off

	Column A	Column B
35.	The slope of the line $5x + 10y = 12$	The slope of the line that goes through $(3, 4)$ and $(6, 1)$

An apple orchard charges either \$24 for a bag that can hold up to 50 apples, or \$0.50 per individual apple. James needs to purchase 50 apples to make apple cider for his family.

	Column A	Column B
36.	The price of buying a bag to fill with 50 apples.	The price of buying 50 apples individually.

	Column A	Column B
37.	2^2	$\sqrt{16}$

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