SECTION 8

Time — 20 minutes

16 Questions

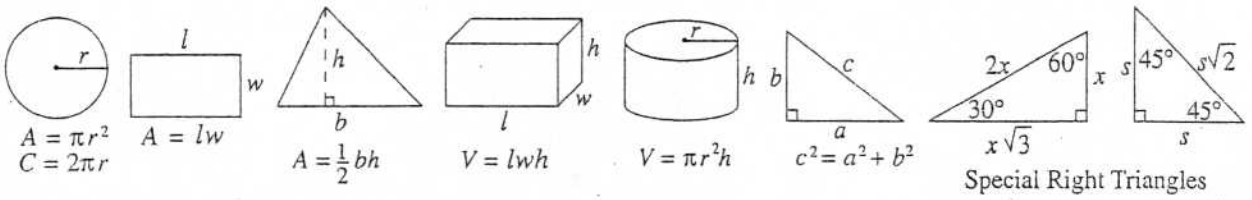
Turn to Section 8 of your answer sheet to answer the questions in this section.

Directions: For this section, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratchwork.

Notes

1. The use of a calculator is permitted.
2. All numbers used are real numbers.
3. Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
4. Unless otherwise specified, the domain of any function f is assumed to be the set of all real numbers x for which $f(x)$ is a real number.

Reference Information



$A = \pi r^2$ $C = 2\pi r$ $A = lw$ $A = \frac{1}{2}bh$ $V = lwh$ $V = \pi r^2 h$ $c^2 = a^2 + b^2$

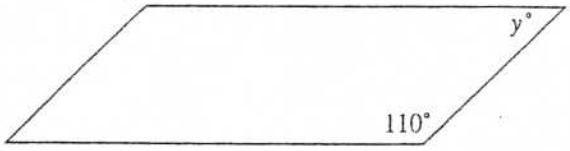
Special Right Triangles

The number of degrees of arc in a circle is 360.

The sum of the measures in degrees of the angles of a triangle is 180.

1. If $10 + a + a - a = -a + a + a + a + a + 6$, what is the value of a ?

(A) 0
(B) 1
(C) 2
(D) 3
(E) 8



2. The figure above is a parallelogram. What is the value of y ?

(A) 50
(B) 55
(C) 60
(D) 65
(E) 70

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3. If $0 < a$ and $b < 0$, which of the following must be true?

(A) $a + b = 0$

(B) $\frac{a}{b} < 0$

(C) $a + b < 0$

(D) $a + b > 0$

(E) $ab > 0$

4. If 20 percent of x is q and 70 percent of x is t, then, in terms of x, what is the value of $t - q$?

(A) $0.2x$
(B) $0.3x$
(C) $0.4x$
(D) $0.5x$
(E) $0.6x$

$$\begin{array}{r} 6P \\ -\,2P \\ \hline 4R \end{array}$$

5. Assume that the above subtraction problem with digits P and R is without error. If P and R are not equal to each other, how many distinct digits from 0 to 9 could R symbolize?

(A) One
(B) Four
(C) Five
(D) Nine
(E) Ten

$f(x)$	x
0	10
9	d
d	c

6. According to the figure above, if $f(x) = \frac{1}{2}x - 5$, what is the value of c ?

(A) 6
(B) 24
(C) 66
(D) 70
(E) 94

7. The number of cells in a certain lab experiment triples every hour. If there are 5 cells in the culture initially, then what is the number of cells in the culture after 4 hours?

(A) 15
(B) 20
(C) 135
(D) 405
(E) 1,875

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SAT

SECTION 8 (Answers)

1. **C** The given equation can be simplified as $10 + a = 3a + 6$. Subtract a from both sides and subtract 6 from both sides to get $4 = 2a$. So, $a = 2$. You also could substitute the numbers in the answer choices to see which one makes the equation true.

2. **E** When two parallel lines are intersected by a third line, the result is that only two kinds of angles are created, big ones and small ones. The big angle plus the small angle will equal 180°. In a parallelogram, that rule applies. The big angle is 110°, and y is a small angle, so it equals 70° because $110 + 70 = 180$.

3. **B** Test out some of your own numbers for a and b, and eliminate answer choices that are not always true. Try different sets of numbers until only one answer remains. If you try $a = 2$ and $b = -2$, you will be able to eliminate (C), (D), and (E). If you try $a = 3$ and $b = -4$, you will be able to eliminate (A). Basically the information given tells you that a is positive and b is negative. (B) is correct, because a $\frac{positive}{negative}$ is always negative.

4. **D** Make up your own numbers for x. Try 100 for x. Then q will equal 20 and t will equal 70. So, $t - q = 70 - 20 = 50$. Find the answer that results in 50 when you set $x = 100$. Only (D) works.

   Algebraically:
   $0.2x = q$
   $0.7x = t$
   $t - q = 0.7x - 0.2x = 0.5x$

5. **A** Plug in digits for P. Remember, when the variables are capitalized like this, and the question specifically says *digits of* P *and* R, they are not telling you to multiply $6 \times P$, for instance. Rather, P is a digit, so $6P$ stands for "sixty-something."

   Try all possible digits, starting with 0, to replace P. You will notice that for every number you insert for P, the resulting R is 0. So, the only possible value for R is 0.

6. **C** Put 9 into the formula in order to find d: so, $9 = \frac{1}{2}d - 5$. Add 5 to both sides and multiply both sides by 2. So, $d = 28$. Now, find c given that $d = 28$. Put that number into the formula: $28 = \frac{1}{2}c - 5$. Solve again and find that $c = 66$.

7. **D** If there are 5 cells initially, and the number of cells triples every hour, then after 1 hour, there will be $5 \times 3 = 15$ cells. After 2 hours, there will be $15 \times 3 = 45$ cells. After 4 hours there will be $45 \times 3 \times 3 = 405$ cells. You can also use the formula:
   Final Amount = Original Amount × (Growth Multiplier) $^{\text{Number of Changes}}$. In this case, Final Amount = $5 \times (3)^4 = 405$.