

SECTION 2

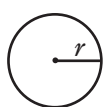
Time: 25 Minutes—Turn to Section 2 (page 565) of your answer sheet to answer the questions in this section.
20 Questions

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:

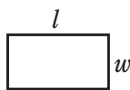
- The use of a calculator is permitted.
- All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possible EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
- 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

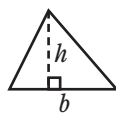


$$A = \pi r^2$$

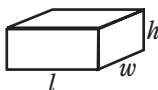
$$C = 2\pi r$$



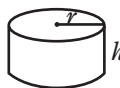
$$A = lw$$



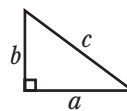
$$A = \frac{1}{2}bh$$



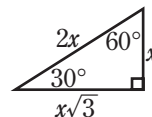
$$V = lwh$$



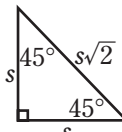
$$V = \pi r^2 h$$



$$c^2 = a^2 + b^2$$



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.

- If a and b are positive integers and $ab = 64$, what is the smallest possible value of $a + b$?
 (A) 65
 (B) 34
 (C) 20
 (D) 16
 (E) 8
- Find the value of $x + x^3 + x^5 + x^6$ if $x = -1$.
 (A) -4
 (B) -2
 (C) 1
 (D) 2
 (E) 4

GO ON TO THE NEXT PAGE

3.
$$\begin{array}{r} AB \\ + BA \\ \hline 66 \end{array}$$

If $0 < A < 6$ and $0 < B < 6$ in the addition problem above, how many different integer values of A are possible? (AB and BA both represent two-digit integers.)

- (A) Two
- (B) Three
- (C) Four
- (D) Five
- (E) Six

4. At 8:00 A.M. the outside temperature was -15°F . At 11:00 A.M. the temperature was 0°F . If the temperature continues to rise at the same uniform rate, what will the temperature be at 5:00 P.M. on the same day?
- (A) -15°F
 - (B) -5°F
 - (C) 0°F
 - (D) 15°F
 - (E) 30°F

Question 5 refers to the following chart.

Number of Shirts	Total Price
1	\$12.00
Box of 3	\$22.50
Box of 6	\$43.40

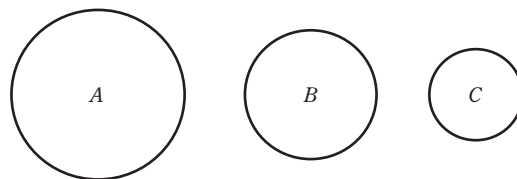
5. Which of the following is the closest approximation of the lowest cost per shirt, when a box of shirts is purchased?
- (A) \$7.10
 - (B) \$7.20
 - (C) \$7.30
 - (D) \$7.40
 - (E) \$7.50

6. If $5x^2 - 15x = 0$ and $x \neq 0$, find the value of x .
- (A) -10
 - (B) -3
 - (C) 10
 - (D) 5
 - (E) 3

GO ON TO THE NEXT PAGE 

7. The chickens on a certain farm consumed 600 pounds of feed in half a year. During that time the total number of eggs laid was 5,000. If the feed cost \$1.25 per pound, then the feed cost per egg was

(A) \$0.0750
 (B) \$0.1250
 (C) \$0.15
 (D) \$0.25
 (E) \$0.3333

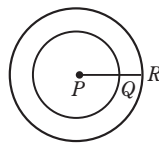


9. In the figure above, there are three circles, A , B , and C . The area of A is three times that of B , and the area of B is three times that of C . If the area of B is 1, find the sum of the areas of A , B , and C .

(A) 3
 (B) $3\frac{1}{3}$
 (C) $4\frac{1}{3}$
 (D) 5
 (E) $6\frac{1}{3}$

8. If X is the set of negative numbers and Y is the set of positive numbers, then the union of X and Y and 0 is the set of

(A) all real numbers
 (B) all integers
 (C) all rational numbers
 (D) all irrational numbers
 (E) all odd integers

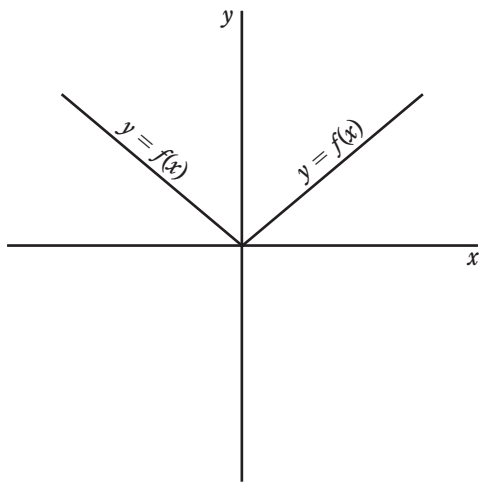


Note: Figure not drawn to scale.

10. In the figure above, two concentric circles with center P are shown. PQR , a radius of the larger circle, equals 9. PQ , a radius of the smaller circle, equals 4. If a circle L (not shown) is drawn with center at R and Q on its circumference, find the radius of circle L .

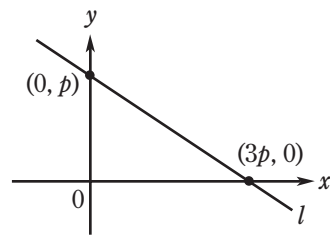
(A) 13
 (B) 5
 (C) 4
 (D) 2
 (E) It cannot be determined from the information given.

GO ON TO THE NEXT PAGE



11. The above graph could represent the equation

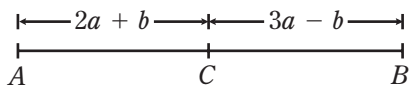
- (A) $y = x$
- (B) $y = |x|$
- (C) $y = x^2$
- (D) $y = x, x > 0$
 $y = 0, x = 0$
 $y = -|x|, x < 0$
- (E) $y = -x$



Note: Figure not drawn to scale.

13. What is the slope of line l in the above figure?

- (A) -3
- (B) $-\frac{1}{3}$
- (C) 0
- (D) $\frac{1}{3}$
- (E) 3

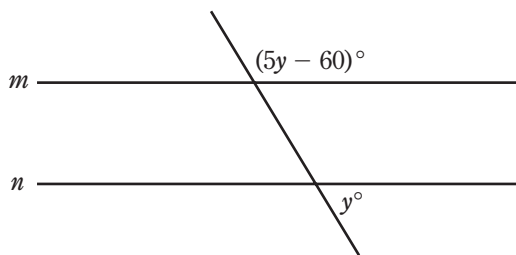


12. Given ACB is a straight line segment, and C is the midpoint of AB , if the two segments have the lengths shown above, then

- (A) $a = -2b$
- (B) $a = -\frac{2}{5}b$
- (C) $a = \frac{2}{5}b$
- (D) $a = b$
- (E) $a = 2b$

14. Bus A averages 40 kilometers per gallon of fuel. Bus B averages 50 kilometers per gallon of fuel. If the price of fuel is \$3 per gallon, how much less would an 800-kilometer trip cost for Bus B than for Bus A?

- (A) \$18
- (B) \$16
- (C) \$14
- (D) \$12
- (E) \$10



15. $m \parallel n$ in the figure above. Find y .

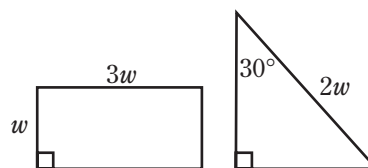
- (A) 10
- (B) 20
- (C) 40
- (D) 65
- (E) 175

17. If an ant runs randomly through an enclosed circular field of radius 2 feet with an inner circle of radius 1 foot, what is the probability that the ant will be in the inner circle at any one time?

- (A) $\frac{1}{8}$
- (B) $\frac{1}{6}$
- (C) $\frac{1}{4}$
- (D) $\frac{1}{2}$
- (E) 1

16. Given 4 percent of $(2a + b)$ is 18 and a is a positive integer, what is the *greatest* possible value of b ?

- (A) 450
- (B) 449
- (C) 448
- (D) 43
- (E) 8



18. The length and width of a rectangle are $3w$ and w , respectively. The length of the hypotenuse of a right triangle, one of whose acute angles is 30° , is $2w$. What is the ratio of the area of the rectangle to that of the triangle?

- (A) $2\sqrt{3} : 1$
- (B) $\sqrt{3} : 1$
- (C) $1 : \sqrt{3}$
- (D) $1 : 2\sqrt{3}$
- (E) $1 : 6$

GO ON TO THE NEXT PAGE

19. At a certain college, the number of freshmen is three times the number of seniors. If $\frac{1}{4}$ of the freshmen and $\frac{1}{3}$ of the seniors attend a football game, what fraction of the total number of freshmen and seniors attends the game?
- (A) $\frac{5}{24}$
(B) $\frac{13}{48}$
(C) $\frac{17}{48}$
(D) $\frac{11}{24}$
(E) $\frac{23}{48}$
20. At Jones College, there are a total of 100 students. If 30 of the students have cars on campus, and 50 have bicycles, and 20 have both cars and bicycles, then how many students have neither a car nor a bicycle on campus?
- (A) 80
(B) 60
(C) 40
(D) 20
(E) 0

STOP

If you finish before time is called, you may check your work on this section only.
Do not turn to any other section in the test.

Take a 5 minute break
before starting section 3