SAT Test 4-3
Math Test- No Calculator | 25 Minutes, 20 Questions

CADDELL PREP™

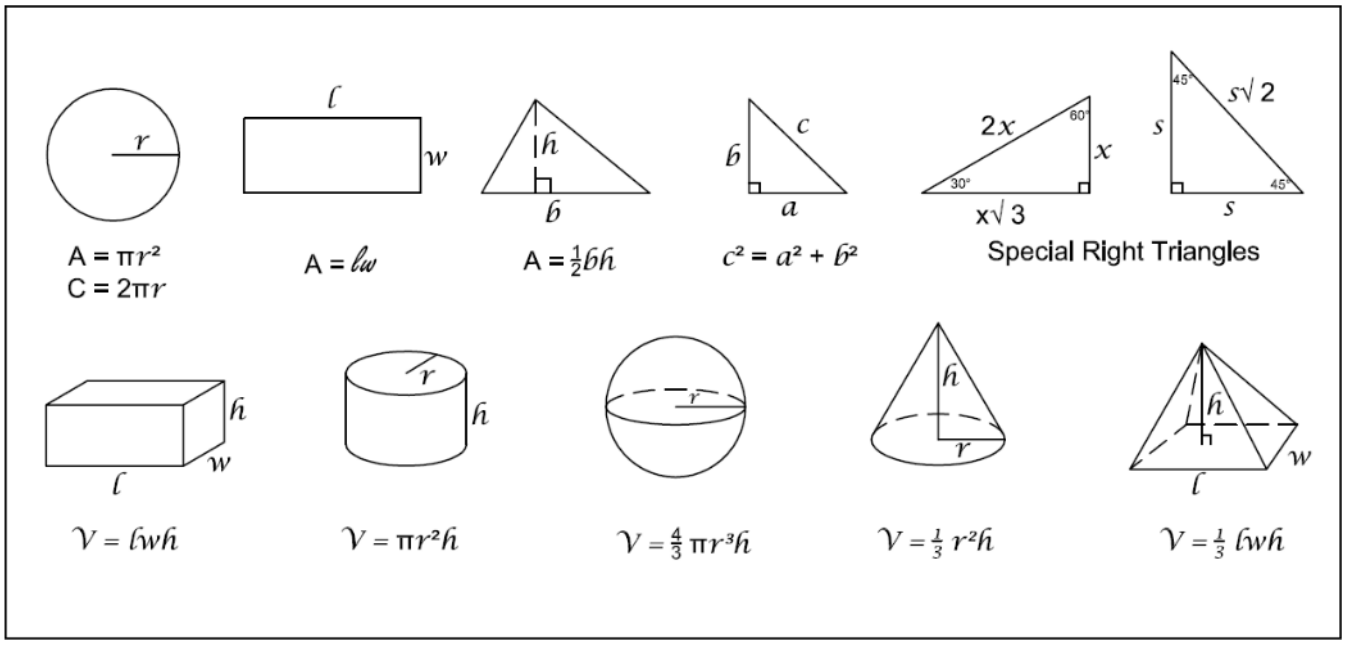
Directions

For questions 1-15, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet.
For questions 16-20, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 16 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

Notes

1. The use of a calculator **is not permitted**.
2. All variables and expressions used represent real numbers unless otherwise indicated.
3. Figures provided in this test are drawn to scale unless otherwise indicated.
4. All figures lie in a plane unless otherwise indicated.
5. Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

Reference



The number of degrees of arc in a circle is 360.
The number of radians of arc in a circle is 2π.
The sum of the measures in degrees of the angles of a triangle is 180.

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1. If $6x - 2 = 12$, what is the value of $3x + 9$?
A) 10
B) 12
C) 14
D) 16

2. $x + y = 3$
$5x - 2y = 29$
What is the solution to the system of equations above?
A) (5, -2)
B) (-5, 2)
C) (5, 2)
D) (-5, 8)

3. A catering business estimates the price of its services using the expression 100 + 13*ct,* where c is the number of caterers and t is the total number of hours the caterers work. Which of the following is the best interpretation of the number 13 in the expression.
A) The price increases by 13 every hour
B) The catering business charges $13 per hour for each caterer
C) Each caterer works 13 hours
D) At least 13 caterers will be working

4. $49a^4 + 56a^2b + 16b^2$
Which of the following is equivalent to the expression shown above?
A) $(7a + 4b)^4$
B) $(7a^2 + 4b^2)^2$
C) $(7a + 4b^2)^2$
D) $(7a^2 + 4b)^2$

5. $\sqrt{4t^2 + 44} - n = 0$
If $t > 0$ and $n = 12$ in the equation above, what is the value of t?
A) 5
B) 6
C) 7
D) 8

6. Line *a* intersects line b at (0, 2). (1, 5) is a point on line *a* and (*x*, 3) is a point on line b. If line *a* is perpendicular to line *b*, what is the value of x?
A) -1
B) -2
C) -3
D) -4

7. If $\frac{x^y}{x^z} = x^8,\ x > 1\ and\ y - z = z$, what is the value of y?
A) 3
B) 4
C) 5
D) 16

8. $400 = IR$
In an electric circuit, the measure *I* (in amperes) of the current is related to the measure *R* (in ohms) of the resistance by the formula above. If the measure of the resistance is greater than 75 Ohms, which of the following is closest to the greatest possible value of I?
A) 3
B) 4
C) 5
D) 6

9. The graph of a line in the xy-plane has a slope of 3 and contains the point (2, 7). The graph of a second line passes through the points (-1, 2) and (1, 4). If the two lines intersect at the point (c, *d*), what is the value of $c - d$?
A) -3
B) -2
C) -1
D) 0

10. Which of the following has a graph in the xy-plane for which y can be less than 0?
A) $y = (x - 3)^2$
B) $y = x^2 - 1$
C) $y = |x - 5|$
D) $y = x^4 + 5$

11. Which of the following complex numbers is equivalent to $\frac{2+6i}{10-6i}$?
A) $\frac{1}{5} + i$
B) $\frac{1}{5} - i$
C) $\frac{9i}{17} - \frac{2}{17}$
D) $\frac{18i}{39} + \frac{-4}{39}$

12. $R = \frac{U}{E+U} \times 100$
The formula above is used to calculate the rate of unemployment, R, in any country, based on the number of unemployed, U, and the number of employed, E. Which of the following expresses the number of unemployed in terms of the other variables?

A) $U = \frac{RE}{R+100}$
B) $U = \frac{R}{E+R} \times 100$
C) $U = \frac{RE}{R} \times 100$
D) $U = \frac{RE}{100-R}$

13. What is the sum of all values of x that satisfy $2x^2 - 8x - 16 = 0$?

A) -4
B) $-2\sqrt{3}$
C) $2\sqrt{3}$
D) 4

14. After a law is passed to protect an endangered population of deer, the population increases at an annual rate of 10 percent. If the initial size of the population was 50 deer, which of the following functions f, models the size of the population, t years later?

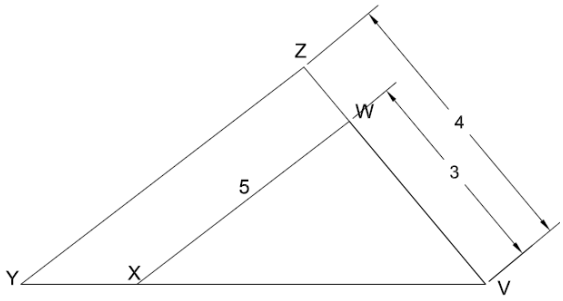
A) $f(t) = 50(0.1)^t$
B) $f(t) = 50(1.1)^t$
C) $f(t) = 1.1(50)^t$
D) $f(t) = 0.1(50)^t$

15. The expression $\frac{6x-3}{x+2}$ is equivalent to which of the following?

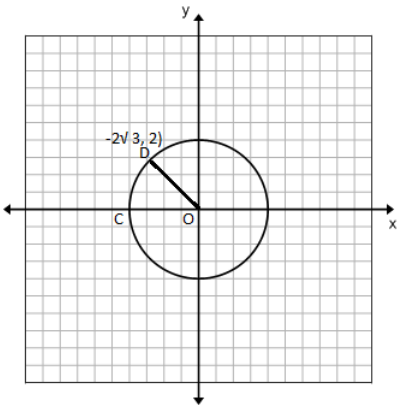
A) $6 - \frac{15}{x+2}$
B) $6 - \frac{3}{x+2}$
C) $6 - \frac{3}{2}$
D) $\frac{6-3}{2}$

16. A television store sold \$12,000 worth of televisions in 3 hours. The store only sells televisions with 30 inch screens and 60 inch screens during this period. The televisions with 30 inch screens were \$1200, and the televisions with 60 inch screens were \$2400. If at least one television with a 30 inch screen and one television with a 60 inch screen were sold, what is one possible number of televisions with a 30 inch screen sold?

17. $5x(x+3) + 10(x+5) = ax^2 + bx + c$
In the equation above, a, b, and c are constants. If the equation is true for all values of x, what is the value of b?



18. In the figure above, ∠ZYX is equal to ∠WXV. What is the sum of line segment $\overline{WX}$ and line segment $\overline{ZY}$?



19.
In the xy-plane above, O is the center of the circle, and the measure of ∠DOC is $\frac{\pi}{a}$ radians. What is the value of a?

20. $ax + by = 4$
$2x + 4y = 32$
In the system of equations above, a and b are constants. If the system has infinite solutions, what is the value of $\frac{a}{b}$?