

1. A store that makes customized suits will make x suits with the same size using a particular type of material. The store's fee can be calculated by the expression $xTn + z$, where x is the number of suits, T is a constant with units of dollars per square inch of material, n is the amount of material used in square inches, and z is an additional fee for shipping. If the customer asks the store to use a more expensive material, which of the factors in the expression would change?

- A) x
- B) T
- C) n
- D) z

2. If $4x = 24$, what is the value of $5x + 1$?

- A) 6
- B) 26
- C) 31
- D) 35

3. Which of the following is equal to $a^{\frac{4}{5}}$, for all values of a ?

- A) $\sqrt[5]{a}$
- B) $\sqrt[5]{a^4}$
- C) $\sqrt[4]{a^5}$
- D) $\sqrt{a^4}$

4. The number of girls in the sixth grade is $\frac{2}{3}$ the number of boys in the sixth grade. If there are 20 girls in the sixth grade and x boys in the sixth grade, which of the following is true?

- A) $20x = \frac{2}{3}$
- B) $\frac{2}{3}x = 20$
- C) $\frac{3x}{2} = 20$
- D) $\frac{2}{3} + x = 20$

5. If $\frac{10}{x} = \frac{30}{x+10}$, what is the value of $\frac{x}{10}$?

- A) $\frac{1}{2}$
- B) 2
- C) 10
- D) 20

6. $5x - 2y = 20$

$$6x - 3y = 15$$

If (x,y) is a solution to the system of equations above, what is the value of $x-y$?

- A) -10
- B) -5
- C) 5
- D) 10

7.

x	$f(x)$
0	-12
3	-15
5	-7
6	0

The function f is defined by a polynomial. Some values of x and $f(x)$ are shown in the table above. Which of the following must be a factor of $f(x)$?

- A) $x + 12$
- B) $x - 12$
- C) $x + 6$
- D) $x - 6$

8. The line $7 + y = kx + 15$, where k is a constant, is graphed in the xy -plane. If the line contains the point (a,b) , where $a \neq 0$ and $b \neq 0$, what is the slope of the line in terms of a and b ?

- A) $\frac{8+b}{a}$
- B) $\frac{b-a}{8}$
- C) $\frac{8}{b-8}$
- D) $\frac{a-8}{b}$

9. $mx - 5y = 3$

$$10x - 2y = 8$$

In the system of equations above m is a constant and x and y are variables. For what value of m will the system of equations have no solution?

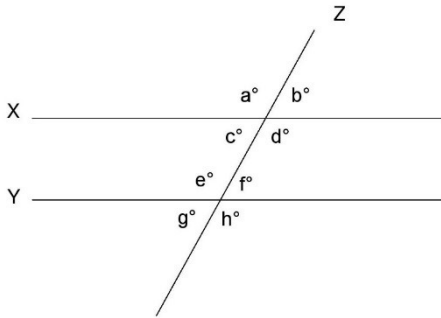
- A) $\frac{1}{2}$
- B) 10
- C) 25
- D) 30

10. In the xy -plane, the parabola with equation $y = (x - 15)^2$ intersects the line with equation $y = 16$ at two points, A and B . What is the length of \overline{AB} ?

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

SAT Test 1-3

Math Test- No Calculator | 25 Minutes, 20 Questions



11. In the figure above, lines X and Y are parallel and line Z intersects both lines X and Y . Which of the following must be true?

- I. $a^\circ + g^\circ = d^\circ + f^\circ$
- II. $d^\circ + a^\circ = f^\circ + g^\circ$
- III. $a^\circ + b^\circ = e^\circ + g^\circ$

- A) I and II only
- B) I and III only
- C) II and III only
- D) I, II, and III

12. $y = a(x - 4)(x + 8)$

In the quadratic equation above, a is a non-zero constant.

The graph of the equation in the xy -plane is a parabola with vertex (t, u) . Which of the following is equal to u ?

- A) $-39a$
- B) $-36a$
- C) $-30a$
- D) $-27a$

13. The equation $\frac{30x^2 - 3x + 1}{ax - 3} = 5x + 2 + \frac{21}{ax - 3}$ is true for all values of x , such that $x \neq \frac{3}{a}$, where a is a constant.

What is the value of a ?

- A) -12
- B) -6
- C) 6
- D) 12

14. What are the solutions to $5x^2 + 20 - 10 = 0$?

- A) $x = -2 \pm \sqrt{6}$
- B) $x = -2 \pm \frac{\sqrt{60}}{10}$
- C) $x = 10 \pm \sqrt{6}$
- D) $x = -10 \pm \sqrt{6}$

15. $^\circ\text{F} = \frac{9}{5}^\circ\text{C} + 32$

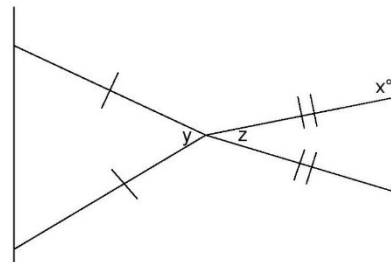
The equation above shows how to convert degrees Celsius to degrees Fahrenheit. Based on the equation, which of the following must be true?

- A) A temperature increase of 1°C is equal to a temperature increase of $\frac{9}{5}^\circ\text{F}$
- B) A temperature increase of 1°F is equal to a temperature increase of 1.8°C
- C) A temperature increase of $\frac{9}{5}^\circ\text{C}$ is equal to a temperature increase of 1°F
- D) A temperature increase of 2°F is equal to a temperature increase of 1.3°F

16. $x^3(x^2 - 10) = -9x$

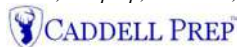
If $x > 0$, what is one possible solution to the equation above?

17. If $\frac{5}{14}x - \frac{3}{14}x = \frac{1}{7} + \frac{6}{21}$, what is the value of x ?



*Not drawn to scale

18. Two isosceles triangles are shown above. If $280 + 2y - z = 6y + 10$ & $y = 55$, what is the value of x ?



SAT Test 1-3

Math Test- No Calculator | 25 Minutes, 20 Questions



19. In a store, each dress costs \$25 more than each shirt. If a woman buys 3 dresses and 7 shirts and her total is 1305, what is the cost of one dress?

20. In triangle ABC , the measure of $\angle B = 90^\circ$, $\overline{BC} = 20$ and $\overline{AC} = 25$. Triangle DEF is similar to triangle ABC where vertices D , E , and F correspond to vertices A , B , and C respectively, and each side of triangle DEF is $\frac{1}{4}$ the length of the corresponding side of triangle ABC . What is the value of $\sin F$?