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Online Homework

Focused Exercises for Math SAT

Skill Set 14: Algebra - One Variable

Many of the problems in this exercise set came from The College Board, writers of the SAT exam.

1. If $2x + 3 = 9$, what is the value of $4x - 3$?
- (A) 5
 - (B) 9
 - (C) 15
 - (D) 18
 - (E) 21
2. If $x + \frac{2}{x} = 5 + \frac{2}{5}$, then x can equal which of the following?
- (A) $\frac{1}{5}$
 - (B) $\frac{4}{5}$
 - (C) 1
 - (D) $\frac{5}{2}$
 - (E) 5
3. If $3x + 9 = 5x + 1$, what is the value of x ?
- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4
 - (E) 8
4. If $8 + \sqrt{k} = 15$, then $k =$
- (A) 7
 - (B) 49
 - (C) 529
 - (D) $\sqrt{7}$
 - (E) $\sqrt{23}$
5. If $t^3 = 351$, what is the value of $4t^3$?

6. How much greater than $r - 2$ is $r + 5$?

- (A) 2
- (B) 3
- (C) 5
- (D) 6
- (E) 7

7. If $3(n - 4) = 18$, what is the value of n ?

- (A) $\frac{14}{3}$
- (B) $\frac{22}{3}$
- (C) 6
- (D) 10
- (E) 22

8. If $(2x - 2)(2 - x) = 0$, what are all the possible values of x ?

- (A) 0 only
- (B) 1 only
- (C) 2 only
- (D) 1 and 2 only
- (E) 0, 1, and 2

9. $\sqrt{x+9} = x - 3$

For all values of x greater than 3, the equation above is equivalent to which of the following?

- (A) $x = x^2$
- (B) $x = x^2 + 18$
- (C) $x = x^2 - 6x$
- (D) $x = x^2 - 6x + 9$
- (E) $x = x^2 - 6x + 18$

10. If $6,565 = 65(x + 1)$, then $x =$
- (A) 10
 - (B) 11
 - (C) 100
 - (D) 101
 - (E) 1,001
11. If $2x - 10 = 20$, then $x - 5 =$
- (A) 5
 - (B) 10
 - (C) 15
 - (D) 20
 - (E) 30
12. If $6,700 = 100(6k + 7)$, then $k =$
- (A) $\frac{1}{10}$
 - (B) 1
 - (C) 10
 - (D) 100
 - (E) 1,000
13. If $2(x - 3) = 7$, what is the value of x ?
14. If $k^2 + 5 = 22$, then $k^2 - 5 =$
- (A) 12
 - (B) 17
 - (C) 39
 - (D) 144
 - (E) 284

15. If $s \neq 0$, then $\frac{1}{\frac{6}{2s}} =$

(A) $\frac{1}{3s}$

(B) $\frac{3}{s}$

(C) $\frac{s}{3}$

(D) $\frac{3s}{2}$

(E) $3s$

16. If $(x + 3)(x + 5) - (x - 4)(x - 2) = 0$, then $x =$

(A) -2

(B) $-\frac{1}{2}$

(C) 0

(D) $\frac{1}{2}$

(E) 2

17. If $0.92x = 9.2$, what is the value of $\frac{1}{x}$?

18. If $(3x^2 + 4x + 5)(3x + 6) = ax^3 + bx^2 + cx + d$, for all values of x , what is the value of c ?

19. $(x + 3)^2 = (x - 1)^2$

The statement above is true for which of the following values of x ?

- (A) - 1 only
- (B) - 1 and 3
- (C) - 3 and 1
- (D) - 3 and 3
- (E) $-2\sqrt{2}$ and $2\sqrt{2}$ (approximately - 2.83 and 2.83)

20. If $3(x - 30) = 2(x - 30)$, what is the value of x ?

- (A) 1
- (B) 2
- (C) 10
- (D) 15
- (E) 30

21. If a and b are positive, then the solution to the equation $\frac{bx}{a - x} = 1$ is $x =$

- (A) $\frac{a}{b + 1}$
- (B) $\frac{a + 1}{b + 1}$
- (C) $\frac{b - 1}{a}$
- (D) $\frac{b}{a + 1}$
- (E) $\frac{b + 1}{a}$

22. If $(3 \times 10^3) + (2 \times 10^2) = a \times 10^3$, what is the value of a ?

23. For how many different positive integer values of k does $(kx - 6)^2 = 0$ have integer solutions ?
- (A) None
(B) One
(C) Two
(D) Four
(E) Six
24. If $3x - x = 2x + x + 20$, then $x =$
- (A) -20
(B) -10
(C) -5
(D) 10
(E) 20
25. If $90\left(x^3 + \frac{1}{10}x^2 + \frac{1}{30}x + \frac{1}{90}\right) = ax^3 + bx^2 + cx + d$ for all values of x , where a , b , c , and d are constants, what is the value of $a + b + c + d$?
26. If $x + \frac{1}{x} = 2$, what is the value of $x^2 + \frac{1}{x^2}$?