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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 $\dfrac{1}{\dfrac{6}{2s}} =$

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

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

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

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

(E) $3s$

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

(A) - 2

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

(C) 0

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

(E) 2

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

18. If $\left(3x^2 + 4x + 5\right)(3x + 6) = ax^3 + bx^2 + cx + d$, 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 $\left(3 \times 10^3\right) + \left(2 \times 10^2\right) = a \times 10^3$, 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 $x^2 + \frac{1}{x^2}$?