SATPREP
Assignment : *Algebraic Equation*

Easy

1. If $3x + 2 = 5$, what is the value of $3x - 6$?
   a) -1
   b) -2
   c) -3
   d) 1

2. If $a^2 - 1 = b^3$, and $2a = 6$, which of the following could be the value of b?
   a) -1
   b) 0
   c) 1
   d) 2

3. If $x \times y = x$ for all values of x, what is the value of y?
   a) $-x$
   b) -1
   c) 0
   d) 1

4. If $-3x + 8 = -2x - 7$, what is the value of x?
   a) 15
   b) 3
   c) -3
   d) -15

5. If $3x - 2 = 7$, then $2x + 5 =$?
   a) 10
   b) 11
   c) 12
   d) 14

6. If $\frac{3x}{5} = \frac{3}{2}$, then x=?
   a) $\frac{2}{5}$
   b) $\frac{5}{2}$
   c) $\frac{1}{5}$
   d) 3

7. If $m^2 + 8 = 39$, then $m^2 - 7 =$?
   a) 31
   b) 29
   c) 26
   d) 24

8. If $3(x + 5) = 18$, then what is the value of x?
   a) 1
   b) 3
   c) 6
   d) 9

9. If $\frac{x + 2y}{x} = 0$, what is the value of x?
   a) $-2y$
   b) 0
   c) $2y$
   d) y^2

10. If $0.3x + 2 = 5.6$, what is the value of x?
   a) 3.6
   b) 1.2
   c) 36
   d) 12

11. If $9x + 3 = 21$, then $5x + 10 =$?
    a) 20
    b) 30
    c) 32
    d) 34

12. If $8 \times 27 \times 64 = x^3$, what is the value of x?
    a) 6
    b) 12
    c) 18
    d) 24

13. If $\frac{x^2}{2 \times 3} = 6 \times 5$, what is the value of x^2?
    a) 60
    b) 90
    c) 120
    d) 180

14. If x, y, and z are positive numbers and $xyz = x^2$, which of the following must equal x?
    a) yz
    b) xy
    c) xz
    d) 1

15. If $3x - x = x - 5$, then $x = ?$
    a) 10
    b) 5
    c) -1
    d) -5

16. If $(0.0010) \times y = 10$, then $y = ?$
    a) 0.01
    b) 0.001
    c) 100
    d) 10000

17. If $\frac{3}{x} + x = 5 + \frac{3}{5}$, then x can be equal to which of the following?
    a) 1
    b) 2
    c) 3
    d) 5

18. If $x^3 + 6 = x^3 + y$, then y =?
    a) −6
    b) −3
    c) 6
    d) 3

19. If $\frac{\sqrt{x}+y}{\sqrt{x}+5} = 1$, then y = ?
    a) 1
    b) 3
    c) 5
    d) 8

20. If $3(x + 6) = 21$, what is the value of x?
    a) 1
    b) 3
    c) 5
    d) 7

21. If $\frac{x}{y} = 6$ and $\frac{x}{z} = 3$, then what does z equal when $y = 2$?
    a) 2
    b) 4
    c) 6
    d) 8

22. If $2\sqrt{3x^2} + 7 = 19$, what is the value of x?
    a) 2
    b) 3
    c) $2\sqrt{3}$
    d) $3\sqrt{2}$

23. If $\frac{y}{y-3} = \frac{4}{3}$, then what does y equal to?
    a) 4
    b) 8
    c) −8
    d) 12

24. If $-a^4 + b^2 = -a^4 + 4$, then b could equal to?
    a) −4
    b) −2
    c) 1
    d) 3

25. If $\frac{2x+4}{x+1} = \frac{4}{3}$, then what is the value of x?
    a) −12
    b) −4
    c) −2
    d) 2

26. If $3(x + y)(x - y) = 30$ and $x - y = 5$, what is the value of $x + y$?
    a) 1
    b) 2
    c) 3
    d) −1

27. If $3(x - 3) = 9$, what is the value of x?
    a) −6
    b) −10
    c) 6
    d) 10

28. If $\frac{x}{3} = \frac{3x}{z}$ and $z \neq 0$, what is the value of z?
    a) 9
    b) 6
    c) 4
    d) 3

29. If $3x^2 = 2y = 12$, what is the value of x^2y?

30. If $\frac{x}{x-2} = \frac{43}{41}$ then x?
    a) 39
    b) 43
    c) −41
    d) −39

31. If $3{,}500 = 100(3x + 5)$, then $x =$
    a) $\frac{1}{10}$
    b) 1
    c) 10
    d) 100

32. If $7{,}373 = 73(x + 1)$, then $x =$?
    a) 10
    b) 11
    c) 100
    d) 101

33. If $2x - 36 = 16$, then $x - 18 =$?
    a) 1
    b) 3
    c) 5
    d) 8

34. If $3x + 2 = 13$, then $6x - 2$?
    a) 20
    b) 24
    c) 26
    d) 28

Medium

35. If $xy = 4$, $z - y = 3$, and $2z = 10$, what is the value of $x + y + z$?

36. A litter of milk can fill up 3 large cups or 5 small cups. If there are 12 large cups and 10 small cups, about how many litters of milk will be needed to fill up all the cups?
    a) 3
    b) 4
    c) 5
    d) 6

37. If $x^3 + 2y = 0$, which of the following must be true?
    a) $x^3 = -2y$
    b) $xy = y$
    c) $x = \frac{2y}{x}$
    d) $x^3 = y^2$

38. If $2a + 3b = 2b$, which of the following must equal $6a + 3b$?
    a) 0
    b) 1
    c) b
    d) $3b$

39. If $\frac{x+y}{x-y} = 4$ and $y \neq 0$, what is the value of $\frac{x}{y}$?

40. If $\frac{6}{\sqrt{x+4}} = 2$, what is the value of x?
    a) -5
    b) -3
    c) 5
    d) 3

41. If $\frac{5}{q} = \frac{4}{3}$, what is the value of q in fraction?

42. If $|3r - 5| = 10$ and $|r + 2| = 7$, then what is the value of r?
    a) 5
    b) 3
    c) -3
    d) -5

43. If k is a constant and $2x + 7 = 4kx + 7$ for all values of x, what is the value of k?
    a) 2
    b) $\frac{1}{2}$
    c) 0
    d) $\frac{2}{3}$

44. $\frac{2x-y}{y} = \frac{1}{3}$, what is the value of $\frac{x}{y}$?

$$|x - 1| = 2$$
$$|y + 2| = 3$$

45. In the equations above, given that $x < 0$ and $y > 0$, what is the value of $x - y$?
    a) 1
    b) 2
    c) 0
    d) −2

Hard

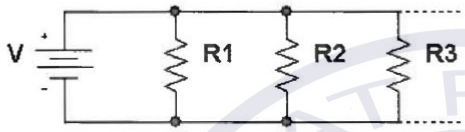
$$\sqrt{x+2} = x - 1$$

46. For all values of x greater than 1, the equation above is equivalent to which of the following?
    a) $x = x^2$
    b) $x = x^2 - 1$
    c) $x = x^2 - 2x - 1$
    d) $x = x^2 - 2x + 1$

47. $\frac{1}{3}(6x^3 - 3x^2 + 3x + 9) = ax^3 + bx^2 + cx + d$, for all values of x, where a, b, c, and d are all constants, what is the value of $a + b + c + d$?

48. If $x > 1$ and $\frac{12}{\sqrt{x-1}} = 4$, what is the value of x?

49. A parallel circuit has two or more paths for current to flow through and has more than one resistor as shown below. In a house, there are many electrical appliances that connect in parallel so they would not affect each other when their switches are turned on or off.



The total resistance, R_{Total}, in a parallel circuit can be calculated by the following formula:

$$\frac{1}{R_{Total}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

If three resistors are connected together in parallel and the resistors have values of 20 ohm, 30 ohm, and 60 ohm respectively, what is the total resistance of the circuit?

a) 15 ohm
b) 10 ohm
c) 8 ohm
d) 5 ohm