

## SATPREP

### Assignment :Algebraic Expression(Evaluate)

#### Easy

1. If  $x = 3$ , what is  $2y(6 - 5x)$  in terms of  $y$ ?
  - a)  $12y - 30$
  - b)  $12y$
  - c)  $12y - 10$
  - d)  $-18y$
2. If  $f(x) = \frac{x^2+35}{x^2-10}$ , what is the value of  $f(5)$ ?
  - a) 0
  - b) 3
  - c) 4
  - d) 7
3. If  $a = \left| \frac{1}{x+2} \right|$  and  $b = \frac{1}{y}$ , what is the value of  $a + b$  when  $x = -3$  and  $y = -3$ ?
  - a)  $\frac{1}{6}$
  - b)  $\frac{1}{4}$
  - c)  $\frac{2}{3}$
  - d)  $\frac{1}{2}$
4. If  $x = 5$  and  $y = -4$ , then  $x^2 + xy + y^2 = ?$ 
  - a) 4
  - b) -12
  - c) 0
  - d) 21
5. If  $x + y = 8$ ,  $y = z - 3$ , and  $z = 1$ , then what is the value of  $x$ ?
  - a) 10
  - b) 3
  - c) -8
  - d) -6
6. If  $a - 2b = 12$ ,  $b - c = 5$ , and  $c = -1$ , what is the value of  $a$ ?
  - a) 6
  - b) 12
  - c) 16
  - d) 20

7. If  $x = \frac{5}{3}yz$ , what is the value of  $y$  when  $z = 6$  and  $x = 40$ ?

- a) 2
- b) 4
- c) 10
- d) 12

8. If  $4 + \sqrt{k} = 7$ , then  $k = ?$


- a) 3
- b) 6
- c) 9
- d)  $\sqrt{3}$

9. If  $x = 4y$  and  $y = 2$ , what is the value of  $5x$ ?

- a) 4
- b) 10
- c) 20
- d) 40

10. If one soft drink costs \$0.40 and one burger cost \$2, which of the following represents the cost, in dollars, of  $S$  soft drinks and  $B$  burgers?

- a)  $S \times B$
- b)  $.8S \times B$
- c)  $2.4(B + S)$
- d)  $2B + 0.4S$

11. What is the least value of integer  $x$  such that the value of  $2x - 1$  is greater than 9? 

- a) 7
- b) 6
- c) 5
- d) 4


12. If  $\frac{x+y}{z} = 9$ ,  $\frac{x}{y} = 8$ , and  $\sqrt{x} = 4$ , what is the value of  $z$ ?

- a) 1
- b) 2
- c) 3
- d) 4

13. If  $x - y = 7$ ,  $y = 2z + 1$ , and  $z = 3$ , what is the value of  $x$ ?

- a) -14
- b) -12
- c) 10
- d) 14

14. If  $x + 2y = 5$ , what is the value of  $x + 2y - 5$ ?
15. If  $\frac{x}{y} = 4$ ,  $x = 8z$ , and  $z = 7$ , what is the value of  $y$ ?
- 12
  - 13
  - 14
  - 16
16. If  $a = \frac{3}{5}xy$ , what is the value of  $y$  when  $x = 2$  and  $a = 24$ ?
- 10
  - 20
  - 35
  - 40
17. If  $f(x) = \frac{2-x^2}{x}$  for all nonzero  $x$ , then  $f(1) = ?$
- 1
  - 2
  - 3
  - 4
18. If  $3(x - 5) = 15$ , what does  $\frac{x-5}{x+5}$  equal?
19. If  $ab + 3b = a - 2c$ , what is the value of  $b$  when  $a = -2$  and  $c = -1$ ?
20. If  $(x^2 - 3x + 4)(2x + 1) = ax^3 + bx^2 + cx + d$  for all values of  $x$ , what is the value of  $c$ ?
- 5
  - 4
  - 5
  - 2
21. If  $x = y(y - 2)$ , then  $x + 3 = ?$
- $y^2 - y$
  - $y^2 - 3y$
  - $y^2 - 2y + 2$
  - $y^2 - 2y + 3$

22. Which of the following is not equal to  $6x^2$ ?
- a)  $2x^2 + 4x^2$
  - b)  $2x + 4x$
  - c)  $(2x)(3x)$
  - d)  $(6x)(x)$
23. If  $z = \frac{12x^4}{y}$ , what happens to the value of  $z$  when both  $x$  and  $y$  are doubled?
- a)  $z$  is multiplied by 32.
  - b)  $z$  is multiplied by 16.
  - c)  $z$  is multiplied by 8.
  - d)  $z$  is doubled.
24. If  $\frac{x}{2} = 0$ , what is the value of  $1 + x + 2x^2 + 3x^3 = ?$
- a) 2
  - b) 1
  - c) 0
  - d) 3
25. If  $n$  is a positive integer and  $\frac{n}{2^n} = \frac{1}{4}$  then  $n = ?$
- a) 1
  - b) 3
  - c) 4
  - d) 5
26. If  $x = 3$ ,  $y = 5$ , what is the value of  $2 \times \left(\frac{x}{y}\right)^2 \times y^2$ ?
- a) 5
  - b) 10
  - c) 15
  - d) 18
27. If  $I$  and  $J$  are integers and  $2I + 3J = 17$ , which of the following CANNOT be a value of  $J$ ? 
- a) -1
  - b) 1
  - c) 2
  - d) 3

28.  $f(x) = \frac{x^3 - 5}{x^2 - 2x + 8}$ , then what is  $f(3)$ ?

- a) 0
- b) 2
- c) 4
- d) 6

29.  $x = -4$  and  $y = 2$ , what is the value of  $|\sqrt[3]{xy} - 5y|$ ?


- a) 12
- b) 18
- c) -12
- d) 24

30. If  $\frac{6x}{\sqrt{x+1}} = 3\sqrt{2}$ , what is one possible value of  $x$ ?

- a) -7
- b) -1
- c) 0
- d) 1

31. If  $x > y > 0$ , which of the following is less than  $\frac{x}{y}$ ? 

- a)  $\frac{3}{2}$
- b)  $\frac{y}{x}$
- c)  $\frac{2y}{x}$
- d)  $\frac{x}{3y}$

32. The table below gives values of the quadratic function  $f(x)$  at selected values of  $x$ . Which of the following defines  $f(x)$ ? 

$x$	0	1	2	3
$f(x)$	5	7	13	23

- a)  $f(x) = x^2 + 5$
- b)  $f(x) = x^2 + 1$
- c)  $f(x) = 2x^2 - 5$
- d)  $f(x) = 2x^2 + 5$

33. If  $(x + y)^2 = 49$  and  $(x - y)^2 = 29$ , what is the value of  $xy$ ?

- a) 2
- b) 5
- c) 6
- d) 10

## Hard

Questions 34 – 35 refer to the following information:

The Doppler effect is the change in frequency of a wave while its source is moving. The Doppler effect formulas shown below are used to calculate the frequency of sound as a result of relative motion between the source and the observer.

If the source is moving toward an observer at rest, the change of observed frequency can be calculated by:

$$f_{\text{observed}} = f_{\text{original}} \left( \frac{v_{\text{sound}}}{v_{\text{sound}} - v_{\text{source}}} \right)$$

If the observer is moving toward the sound and the source moving closer to the observer, the change of frequency can be calculated by:

$$f_{\text{observed}} = f_{\text{original}} \left( \frac{v_{\text{sound}} + v_{\text{observer}}}{v_{\text{sound}} - v_{\text{source}}} \right)$$

$f_{\text{observed}}$  = observed frequency

$f_{\text{original}}$  = frequency of the original wave

$v_{\text{sound}}$  = speed of the sound

$v_{\text{observer}}$  = speed of the observer

$v_{\text{source}}$  = speed of the source

34. Standing on the side walk, you observe an ambulance moving toward you. As the ambulance passes by with its siren blaring, you hear the pitch of the siren change. If the ambulance is approaching at the speed of 90 miles/hour and the siren's pitch sounds at a frequency of 340 Hertz, what is the observed frequency, in Hertz? Assume the speed of sound in air is 760 miles/hour.
- 302
  - 324
  - 386
  - 419
35. If you are driving a car at the speed of 30 miles/hour while an ambulance is approaching to you at the speed of 60 miles/hour, what is the observed frequency of the siren, in Hertz? Assume that the ambulance sounds at a frequency of 340 Hertz and the speed of sound in air is 760 miles/hour.
- 362
  - 384
  - 409
  - 439

36. If  $x = -5$  and  $y = 3$ , what is the value of  $x^2(2y + x)$ ?
- a) -275
  - b) -75
  - c) -25
  - d) 25
37. If  $a$  and  $b$  are consecutive odd integers, where  $a > b$ , which of the following is equal to  $a^2 - b^2$ ?
- a) 4
  - b)  $2a - 2b$
  - c)  $2b + 4$
  - d)  $4b + 4$
38. If  $\frac{a^3}{b^2}$  is an integer, but  $\frac{2a+9}{b}$  is not an integer, which of the following could be the values of  $a$  and  $b$ ?
- a)  $a = 2, b = 1$
  - b)  $a = 3, b = 2$
  - c)  $a = 5, b = 5$
  - d)  $a = 6, b = 4$
39. Which of the following expressions must be negative if  $x < 0$ ?
- a)  $x^4 - 2$
  - b)  $x^3 - 3$
  - c)  $x^4 - 3x^2 - 1$
  - d)  $x^6 + 3x^2 + 1$

