

Class: 7
Subject: Mathematics
Topic: Algebraic Expression
No. of Questions: 24

1. What are the coefficients of y in the expression $-2y + 5$?

Sol. -2 (Coefficients are the constants which are a factor of the variable.)

2. Write the expression for the statement: the sum of three times x and 11 .

Sol. $3x + 11$ (Three times ' x ' = $3x$; Thus the expression is : $3x + 11$)

3. Write an expression: Raju's father's age is 5 years more than 3 times Raju's age . If Raju's age is x years, then father's age is

Sol. Raju's father age = $3x + 5$
Raju's age is x ; then 3 times Raju's age is $3x$
 \therefore Raju's father age = $3x + 5$

4. Identify the coefficient of x in expression $-8x + y$

Sol. The coefficient is the -8 .
Coefficients are the constants which are a factor of the variable.

5. The number of terms in $4p^2q - 3pq^2 + 5$ is

Sol. 3 terms
Namely $4p^2q$, $-3pq^2$ and 5

6. The expression for sum of numbers a and b subtracted from their product is

Sol. Product of a and $b = ab$
Sum of a and $b = a + b$

$$\therefore \text{Expression} = ab - (a+b)$$

7. The sum of $mn + 5 - 2$ and $mn+3$ is

Sol. $(mn+5-2)+(mn+3)$
 $= (mn+3)+(mn+3)$
 $= 2mn+6$

8. The value of expression $5n^2 + 5n - 2$ for $n = 2$ is

Sol. We have,
 $5n^2 + 5n - 2$
And $n = 2$
Substituting the value for 'n'
 $= 5(2)^2 + 5(2) - 2$
 $= 5(2 \times 2) + 5(2) - 2$
 $= 5 \times 4 + 5 \times 2 - 2$
 $= 20 + 10 - 2$
 $= 28$

9. The value of expression $2a^2 + 2b^2 - ab$ for $a = 2, b = 1$ is

Sol. We have, $2a^2 + 2b^2 - ab$
Also, $a = 2, b = 1$
So substituting the values,
 $2(2)^2 + 2(1)^2 - (2)(1)$
 $= 2(2 \times 2) + 2 \times 1 - 2 \times 1$
 $= 2 \times 4 + 2 - 2$
 $= 8 + 2 - 2$
 $= 8$

10. The value of $x + 7 + 4(x - 5)$ for $x = 2$ is

Sol. $x + 7 + 4(x + 5)$ for $x = 2$
First,
 $X + 7 + 4(x + 5)$
 $X + 7 + 4x + 4 \times 5$

$$\begin{aligned} &= x+7 + 4x + 20 \\ &= x + 4x + 7 + 20 \\ &= 5x + 27 \\ \text{For } x &= 2 \\ \text{We have,} \\ &= 5 (2) + 27 \\ &= 5 \times 2 + 27 \\ &= 10 + 27 = 37. \end{aligned}$$

11. The value of expression $2a - 3b - 4 - 5 + a$ at $a = 1, b = -2$ is

Sol. $2a - 2b - 4 - 5 + a$; $a = 1, b = -2$

$$\begin{aligned} &= 2a + a - 3b - 4 - 5 \\ &= 3a - 3b - 9 \\ \text{For } a &= 1, b = -2 \\ &= 3 - 3(-2) - 9 \\ &= 3 + 6 - 9 \\ &= 9 - 9 \\ &= 0. \end{aligned}$$

12. What must be subtracted from $2a + b$ to get $2a - b$?

Sol. To get the value we must subtract $2a - b$ from $2a + b$

So,

$$\begin{aligned} &(2a + b) - (2a - b) \\ &= 2a + b - 2a + b \\ &= 2a - 2a + b + b \\ &= 0 + 2b \\ &= 2b \end{aligned}$$

13. What must be added to $3x + y$ to get $2x + 3y$?

Sol. We must subtract $3x + y$ from $2x + 3y$

$$\begin{aligned} &(2x + 3y) - (3x + y) \\ &= 2x + 3y - 3x - y \\ &= 2x - 3x + 3y - y \\ &= -x + 2y \\ &\therefore (-x + 2y) \text{ must be added to } (3x + y). \end{aligned}$$

14. Subtract $a + 2b$ from sum of $a - b$ and $2a + b$.

Sol. Sum of $(a-b)$ and $(2a+b)$
 $= (a - b) + (2a + b)$
 $= a - b + 2a + b$
 $= a + 2b - b + b$
 $= 3a$
Subtraction = $3a - (a + 2b)$
 $= 3a - a - 2b$
 $= 2a - 2b.$

15. On simplifying $(a + b - 3) - (b - a + 3) + (a - b + 3)$ the result is

Sol. Simplification:
 $(a + b - 3) - (b - a + 3) + (a - b + 3)$
 $= a + b - 3 - b + a - 3 + a - b + 3$
 $= a + a + a + b - b - b - 3 - 3 + 3$
 $= 3a - b - 3$

16. What should be value of 'a' if $y^2 + y - a$ equals to 3 for $y = 1$?

Sol. We have,
 $y^2 + y - a = 3$
For $y = 1$
 $\Rightarrow (1)^2 + (1) - a = 3$
 $\Rightarrow 1 + 1 - a = 3$
 $\Rightarrow a = 2 - 3$
 $\therefore a = -1$

17. What is an expression for the statement: "p is multiplied by 16"?

Sol. The expression = $16 \times p$
 $= 16p$

18. The expression for the statement: "y multiplied by 10 and then 7 added to product".

Sol. The expression $10y + 7$
(y multiplied by 10) (7 added to produced)

19. What is the statement for the expression $2y - 9$?

Sol. 'y multiplied by 2 and 9 is reduced from it'.

20. Give expression for: "5 times of 'y' to which 3 is added",.

Sol. The expression: $5y+3$
5 times of 'y' = $5y$; to which is added = $5y + 3$

21. The sum (or difference) of two like terms is a _____.

Sol. Let the like term be x.
Sum = $x + x = 2x$.
Difference = $x - x = 0$.

22. From the sum of $2y^2 + 3yz$, $-y^2 - yz - z^2$ and $y + 2z^2$, subtract the sum of $3y^2 - z^2$ and $-y^2 + yz + z^2$.

Sol. Sum of $(2y^2 + 3yz) + (-y^2 - yz - z^2) + (y + 2z^2)$
 $= y^2 + z^2 + 2yz + y$
Sum of $(3y^2 - z^2) + (-y^2 + yz + z^2)$
 $= 2y^2 + yz - y^2$

Difference = $y^2 + z^2 + 2yz + y - (2y^2 + yz - y^2)$
 $= (z^2 - 2y^2 + yz + y)$

23. State whether a given pair of terms is of like or unlike terms. $4m^2p$, $4mp^2$

Sol. unlike terms
Since the variables are m^2p and mp^2

24. State whether a given pair of terms is of like or unlike terms. $12xz$, $12x^2z^2$.

Sol. Unlike terms
Since the variables are zx, x^2z^2

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