

Class - 6
Sub - Maths
Chapter - 8

Algebraic Expressions (Ex - 8A - P-130)

1. Write the following using literals, numbers and signs of basic operations.

(i) x increased by 12

Solution:- $x + 12$

(ii) y decreased by 7

Solution:- $y - 7$

(iii) The difference of a and b , where $a > b$.

Solution:- $a - b$

(iv) The product of x and y added to their sum.

Solution. $(x + y) + xy$

(v) One third of x multiplied by the sum of a and b .

Solution:- $\frac{1}{3}x(a + b)$

(vi) 5 times x added to 7 times y .

Solution:- $7y + 5x$

(vii) Sum of x and the quotient of y by 5.

Solution:- $x + \frac{y}{5}$

(viii) x taken away from 4.

Solution:- $4 - x$



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(ix) 2 less than the quotient of x and y .

Ans:- $\frac{x}{y} - 2$

(x) x multiplied by itself.

Solution. x^2

(xi) Twice x increased by y

Solution:- $2x + y$

(xii) Thrice x added to y squared.

Solution:- $y^2 + 3x$

(xiii) x minus twice y

Solution:- $x - 2y$

(xiv) x cubed less than y cubed.

Solution. $y^3 - x^3$

(xv) The quotient of x by 8 is multiplied by y .

Solution. $\frac{x}{8} \times y$

② Ranjit scores 80 marks in English and x marks in Hindi. What is his total score in the two subjects?

Solution:- His total score in the two subjects is
$$= (80 + x)$$

③ Write the following in the exponential form:

(i) $b \times b \times b \times \dots \times b$ 15 times
$$= b^{15}$$

(iii) $14 \times a \times a \times a \times a \times b \times b \times b$
$$= 14a^4b^3$$

(v) $3 \times z \times z \times z \times y \times y \times x$
$$= 3z^3y^2x$$

④ Write down the following in the product form:

(i) x^2y^4
$$= x \times x \times y \times y \times y \times y$$

(iii) $9xy^2z$
$$= 9 \times x \times y \times y \times z \times z$$



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Ex - 8B P-132.

1. If $a=2$ and $b=3$, find the value of.

$$\begin{aligned} \text{(i) } a+b & \\ &= 2+3 \\ &= 5 \end{aligned}$$

$$\begin{aligned} \text{(v) } 5a^2-2ab & \\ &= 5 \times 2 \times 2 - 2 \times 2 \times 3 \end{aligned}$$

$$\begin{aligned} \text{(ii) } a^2+ab & \\ &= (2)^2 + 2 \times 3 \\ &= 4+6 \\ &= 10 \end{aligned}$$

$$\begin{aligned} &= 20-12 \\ &= 8 \end{aligned}$$

$$\begin{aligned} \text{(iii) } ab-a^2 & \\ &= 2 \times 3 - (2)^2 \\ &= 6-4 \\ &= 2 \end{aligned}$$

$$\begin{aligned} \text{(vi) } a^3-b^3 & \\ &= 2^3 - 3^3 \\ &= 2 \times 2 \times 2 - 3 \times 3 \times 3 \end{aligned}$$

$$= 8-27$$

$$= -19$$

$$\begin{aligned} \text{(iv) } 2a-3b & \\ &= 2 \times 2 - 3 \times 3 \\ &= 4-9 \\ &= -5 \end{aligned}$$

2. If $x=1, y=2$ and $z=5$, find the value of

(i) $3x - 2y + 4z$
 $= 3 \times 1 - 2 \times 2 + 4 \times 5$
 $= 3 - 4 + 20$
 $= 20 + 3 - 4$
 $= 23 - 4$
 $= 19$ Ans: 19

(ii) $x^2 + y^2 + z^2$
 $= 1^2 + 2^2 + 5^2$
 $= 1 \times 1 + 2 \times 2 + 5 \times 5$
 $= 1 + 4 + 25$
 $= 30$ Ans: 30

(iii) $2x^2 - 3y^2 + z^2$
 $= 2 \times 1^2 - 3 \times 2^2 + 5^2$
 $= 2 \times 1 \times 1 - 3 \times 2 \times 2 + 5 \times 5$
 $= 2 - 12 + 25$
 $= 25 + 2 - 12$
 $= 27 - 12$
 $= 15$
 Ans: 15

(iv) $xy + yz - zx$
 $= 1 \times 2 + 2 \times 5 - 5 \times 1$
 $= 1 \times 2 + 2 \times 5 - 5 \times 1$
 $= 2 + 10 - 5$
 $= 12 - 5$
 $= 7$ Ans: 7

(v) $2x^2y - 5yz + xy^2$
 $= 2 \times 1 \times 1 \times 2 - 5 \times 2 \times 5 + 1 \times 2 \times 2$
 $= 4 - 50 + 4$
 $= 4 + 4 - 50$
 $= 8 - 50$
 $= -42$ Ans: -42

(vi) $x^3 - y^3 - z^3$
 $= 1^3 - 2^3 - 5^3$
 $= 1 \times 1 \times 1 - 2 \times 2 \times 2 - 5 \times 5 \times 5$
 $= 1 - 8 - 125$
 $= 1 - 133$
 $= -132$

Ans: -132

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③ If $P = -2$, $q = -1$ and $r = 3$, find the value of

$$\begin{aligned} \text{(i)} \quad & p^2 + q^2 - r^2 \\ & = (-2)^2 + (-1)^2 - 3^2 \\ & = (-2) \times (-2) + (-1) \times (-1) - (3 \times 3) \\ & = 4 + 1 - 9 \\ & = 5 - 9 \\ & = -4 \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & p - q - r \\ & = (-2) - (-1) - 3 \\ & = -2 + 1 - 3 \\ & = -2 - 3 + 1 \\ & = -5 + 1 \\ & = -4 \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad & 2p^2 - q^2 + 3r^2 \\ & = 2 \times (-2) \times (-2) - (-1) \times (-1) + 3 \times 3 \times 3 \\ & = 2 \times 4 - 1 + 27 \\ & = 8 - 1 + 27 \\ & = 8 + 27 - 1 \\ & = 35 - 1 \\ & = 34 \end{aligned}$$

$(-)\times(-)=(+)$
 $(-)\times(-)\times(-)=(-)$

$$\begin{aligned}
 & \textcircled{2} \text{ (iv) } p^3 + q^3 + r^3 + 3pqr \\
 & = (-2)^3 + (-1)^3 + 3^3 + 3 \times (-2) \times (-1) \times 3 \\
 & = (-2) \times (-2) \times (-2) + (-1) \times (-1) \times (-1) + 3 \times 3 \times 3 + 3 \times (-2) \times 3 \\
 & = -8 + (-1) + 27 + 18 \\
 & = -8 - 1 + 27 + 18 \\
 & = -9 + 45 \\
 & = 36
 \end{aligned}$$

$$\begin{array}{l}
 (-) \times (-) = (+) \quad \begin{array}{r} 27 \\ 18 \\ + \\ \hline 45 \end{array} \\
 (-) \times (-) \times (-) = (-)
 \end{array}$$

$$\begin{aligned}
 & \text{(v) } 3p^2q + 5pq^2 + 2pqr \\
 & = 3 \times (-2)^2 \times (-1) + 5 \times (-2) \times (-1)^2 + 2 \times (-2) \times (-1) \times 3 \\
 & = 3 \times 4 \times (-1) + 5 \times (-2) \times 1 + 2 \times (-2) \times (-1) \times 3 \\
 & = -12 + (-10) + 12 \\
 & = -12 - 10 + 12 \\
 & = -22 + 12 \\
 & = -10
 \end{aligned}$$

$$\begin{aligned}
 & \text{(vi) } p^4 + q^4 - r^4 \\
 & = (-2)^4 + (-1)^4 - 3^4 \\
 & = (-2) \times (-2) \times (-2) \times (-2) + (-1) \times (-1) \times (-1) \times (-1) - 3 \times 3 \times 3 \times 3 \\
 & = 16 + 1 - 81 \\
 & = 17 - 81 \\
 & = -64
 \end{aligned}$$