ALGEBRAIC EXPRESSIONS AND IDENTITIES

MULTIPLICATION OF ALGEBRAIC EXPRESSIONS

EXERCISE

Q.1 Find the volume of the rectangular boxes with following length, breadth and height :

	Length	Breadth	Height
(i)	$2ax$	$3by$	$5cz$
(ii)	m^2n	n^2p	p^2m
(iii)	$2q$	$4q^2$	$8q^3$

Q.2 Find each of the following products:

(i) $(-2x^2) \times (7a^2x^7) \times (6a^5x^5)$

(ii) $(4s^2t) \times (3s^3t^3) \times (2st^4) \times (-2)$

Q.3 Multiply $-\frac{4}{3}xy^3$ by $\frac{6}{7}x^2y$ and verify your result for $x = 2$ and $y = 1$.

Q.4 Find the product of $-5x^2y$, $-\frac{2}{3}xy^2z$, $\frac{8}{15}xyz^2$ and $-\frac{1}{4}$. Verify the result when $x = 1$, $y = 2$ and $y = q$.

Q.5 Find the product of $\frac{7}{2}s^2t$ and $s + t$. Verify the result for $s = \frac{1}{2}$ and $t = 5$.

Q.6 Find the following products:

(i) $100x \times (0.01x^4 - 0.01x^2)$

(ii) $121.5ab \times \left(ac+\frac{b}{10}\right)$

(iii) $0.1a \times (0.01a \times 0.001b)$

Q.7 Add:

(i) $5m(3 - m)$ and $6m^2 - 13m$

(ii) $4y(3y^2 + 5y - 7)$ and $2(y^3 - 4y^2 + 5)$

Q.8 (i) Subtract: $3l\ (l - 4m + 5n)$ from $4l\ (10n - 3m + 2l)$

(ii) Subtract : $3a\ (a + b + c) - 2b\ (a + b + c)$ from $4c(-a + b + c)$

Q.9 Multiply $\left(\frac{1}{5}x - \frac{1}{4}y\right)$ and $(5x^2 - 4y^2)$

Q.10 Multiply: $\{2m + (-n)\}$ by $\{-3m + (-5)\}$

Q.11 Find the product of the following binomials:

(i) $\left(\frac{3}{4}x + \frac{5}{6}y\right)\left(\frac{3}{4}x - \frac{5}{6}y\right)$

(ii) $\left(2a + \frac{3}{b}\right)\left(2a - \frac{3}{b}\right)$

(iii) $(a^2 + b^2)\ (-a^2 + b^2)$

(iv) $(-a + c)\ (-a - c)$

Q.12 If $x + \frac{1}{x} = 9$ and $x^2 + \frac{1}{x^2} = 53$, find the value of $x - \frac{1}{x}$.

Q.13 If $x + y = 12$ and $xy = 14$, find the value of $x^2 + y^2$.

ANSWER KEY

1. (i) $30\ abcxyz$

(ii) $m^3n^3p^3$

(iii) $64q^6$

2. (i) $-84x^{14}a^{7}$

(ii) $-48s^{6}t^{8}$

(iii) $1000x^{14}y^{11}$

3. $-\frac{8}{7}x^{3}y^{4}$

4. $-\frac{4}{9}x^{4}y^{4}z^{4}$

5. $\frac{7}{2}s^{3}t + \frac{7}{2}s^{2}t^{2}$

6. (i) $x^{5} - x^{3}$

(ii) $121.5a^{2}bc + 12.15ab^{2}$

(iii) $0.001a^{2} + 0.0001ab$

7. (i) $2m + m^{2}$

8. (i) $25ln + 5l^{2}$

(ii) $-7ac + 6bc + 4c^{2} - 3a^{2} - ab - 2b^{2}$

9. $x^{3} - \frac{4}{5}xy^{2} - \frac{5}{4}x^{2}y + y^{3}$

11. (i) $\frac{9}{16}x^{2} - \frac{25}{36}y^{2}$ (ii) $4a^{2} - \frac{9}{b^{2}}$

(iii) $b^{4} - a^{4}$ (iv) $a^{2} - c^{2}$

12. ± 5

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