

CBSE Class –VIII Mathematics

NCERT Solutions

CHAPTER - 9

Algebraic Expressions and Identities (Ex. 9.2)

1. Find the product of the following pairs of monomials:

(i) $4, 7p$

(ii) $-4p, 7p$

(iii) $-4p, 7pq$

(iv) $4p^3, -3p$

(iv) $4p, 0$

Ans.

(i) $4 \times 7p = 4 \times 7 \times p = 28p$

(ii) $-4p \times 7p = (-4 \times 7) \times (p \times p)$

$= -28p^2$

(iii) $-4p \times 7pq = (-4 \times 7)(p \times pq)$

$= -28p^2q$

(iv) $4p^3 \times -3p = (4 \times -3)(p^3 \times p)$

$= -12p^4$

(v) $4p \times 0 = (4 \times 0)(p) = 0$

2. Find the areas of rectangles with the following pairs of monomials as their lengths

and breadths respectively:

$$(p, q); (10m, 5n); (20x^2, 5y^2); (4x, 3x^2); (3mn, 4np)$$

Ans.

(i) Area of rectangle

$$= \text{length} \times \text{breadth}$$

$$= p \times q = pq \text{ sq. units}$$

(ii) Area of rectangle

$$= \text{length} \times \text{breadth}$$

$$= 10m \times 5n = (10 \times 5)(m \times n)$$

$$= 50mn \text{ sq. units}$$

(iii) Area of rectangle = $\text{length} \times \text{breadth}$

$$= 20x^2 \times 5y^2 = (20 \times 5)(x^2 \times y^2)$$

$$= 100x^2y^2 \text{ sq. units}$$

(iv) Area of rectangle = $\text{length} \times \text{breadth}$

$$= 4x \times 3x^2 = (4 \times 3)(x \times x^2)$$

$$= 12x^3 \text{ sq. units}$$

(v) Area of rectangle = $\text{length} \times \text{breadth}$

$$= 3mn \times 4np = (3 \times 4)(mn \times np)$$

$$= 12mn^2p \text{ sq. units}$$

3. Complete the table of products:

(i)

First monomial →						
Second monomial ↓	$2x$	$-5y$	$3x^2$	$-4xy$	$7x^2y$	$-9x^2y^2$
$2x$	$4x^2$
$-5y$	$-15x^2y$
$3x^2$
$-4xy$
$7x^2y$
$-9x^2y^2$

Ans.

(i)

First monomial →						
Second monomial ↓	$2x$	$-5y$	$3x^2$	$-4xy$	$7x^2y$	$-9x^2y^2$
$2x$	$4x^2$	$-10xy$	$6x^3$	$-8x^2y$	$14x^3y$	$-18x^3y^2$
$-5y$	$-10xy$	$25y^2$	$-15x^2y$	$20xy^2$	$-35x^2y^2$	$45x^2y^3$
$3x^2$	$6x^3$	$-15x^2y$	$9x^4$	$-12x^3y$	$21x^4y$	$-27x^4y^2$
$-4xy$	$8x^2y$	$20xy^2$	$-12x^3y$	$16x^2y^2$	$-28x^3y^2$	$36x^3y^3$
$7x^2y$	$14x^3y$	$-35x^2y^2$	$21x^4y$	$-28x^3y^2$	$49x^4y^2$	$-63x^4y^3$
$-9x^2y^2$	$-18x^3y^2$	$45x^2y^3$	$-27x^4y^2$	$36x^3y^3$	$-63x^4y^3$	$81x^4y^4$

4. Obtain the volume of rectangular boxes with the following length, breadth and height respectively:

(i) $5a, 3a^2, 7a^4$

(ii) $2p, 4q, 8r$

(iii) $xy, 2x^2y, 2xy^2$

(iv) $a, 2b, 3c$

Ans. (i) Volume of rectangular box

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$= 5a \times 3a^2 \times 7a^4 = (5 \times 3 \times 7)(a \times a^2 \times a^4)$$

$$= 105a^7 \text{ cubic units}$$

(ii) Volume of rectangular box

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$= 2p \times 4q \times 8r = (2 \times 4 \times 8)(p \times q \times r)$$

$$= 64pqr \text{ cubic units}$$

(iii) Volume of rectangular box

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$= xy \times 2x^2y \times 2xy^2$$

$$= (1 \times 2 \times 2)(x \times x^2 \times x \times y \times y \times y^2)$$

$$= 4x^4y^4 \text{ cubic units}$$

(iv) Volume of rectangular box

$$= \text{length} \times \text{breadth} \times \text{height}$$

$$= a \times 2b \times 3c = (1 \times 2 \times 3)(a \times b \times c)$$

$$= 6abc \text{ cubic units}$$

5. Obtain the product of:

(i) xy, yz, zx

(ii) $a, -a^2, a^3$

(iii) $2, 4y, 8y^2, 16y^3$

(iv) $a, 2b, 3c, 6abc$

(v) $m, -mn, mnp$

Ans.

(i) $xy \times yz \times zx = x \times x \times y \times y \times z \times z$

$$= x^2 y^2 z^2$$

(ii) $a \times (-a^2) \times a^3 = (-1)(a \times a^2 \times a^3)$

$$= -a^6$$

(iii) $2 \times 4y \times 8y^2 \times 16y^3$

$$= (2 \times 4 \times 8 \times 16)(y \times y^2 \times y^3)$$

$$= 1024y^6$$

(iv) $a \times 2b \times 3c \times 6abc$

$$= (1 \times 2 \times 3 \times 6)(a \times b \times c \times abc)$$

$$= 36a^2 b^2 c^2$$

(v) $m \times -mn \times mnp = (-1)(m \times m \times m \times n \times n \times p)$

$$= -m^3 n^2 p$$