



SpeedLabs

MATHS

CBSE 8th

TEEVRA EDUTECH PVT. LTD.

Algebraic Expressions and Identities

Exercise 9.2

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

(i) $4, 7p$ (ii) $-4p, 7p$ (iii) $-4p, 7pq$

(iv) $4p^3, -3p$ (v) $4p, 0$.

Sol:

(i) $4 \times 7p$

$= 4 \times 7 \times p$

$= 28p$.

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

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

$= -28 p^2$

$= -28p^2$.

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

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

$= -28 \times p^2q$

$= -28p^2q$.

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

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

$= -12 \times p^4 = -12p^4$

(v) $4p \times 0$

$= 4 \times 0 \times p = 0 \times p = 0$.

Q.2 Find the areas of rectangles with the following pairs of monomials as their lengths and breadths respectively. (p, q) ; $(10m, 5n)$; $(20x^2, 5y^2)$; $(4x, 3x^2)$; $(3mn, 4np)$

Sol:

(i) (p, q)

Area of rectangle = length \times breadth

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

(ii) $10m, 5n$

Area of rectangle = length \times breadth

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

$$= 50 \times mn$$

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

(iii) $20x^2, 5y^2$

Area of rectangle = length \times breadth

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

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

(iv) $4x, 3x^2$

Area of rectangle = length \times breadth

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

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

(v) $3mn, 4np$

Area of rectangle = length \times breadth

$$= 3mn \times 4np = (3 \times 4) \times (mn \times np) = 12 \times mn^2p = 12mn^2p \text{ square units.}$$

Q.3 Complete the table of products.

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

Sol:

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

Q.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) $a, 2b, 3c$

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

Volume of rectangular box = length \times breadth \times height

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

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

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

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

Volume of rectangular box = length \times breadth \times height

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

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

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

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

Volume of rectangular box = length \times breadth \times height

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

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

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

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

Volume of rectangular box = length \times breadth \times height

$$= a \times 2b \times 3c$$

$$= 2 \times 3 \times a \times b \times c$$

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

Q.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) $m, -mn, mnp$

Sol: (i) The product of xy, yz and $zx = xy \times yz \times zx$

$$= x \times y \times y \times z \times z \times x$$

$$= x \times x \times y \times y \times z \times z$$

$$=x^2 \times y^2 \times z^2 = x^2y^2z^2.$$

(ii) The product of a , $-a^2$ and $a^3 = a \times -a^2 \times a^3$

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

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

$$= -1 \times a^6 = -a^6$$

(iii) The product of 2 , $4y$, $8y^2$ and

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

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

$$= 1024 \times y^6 = 1024y^6.$$

(iv) The product of a , $2b$, $3c$ and

$$6abc = a \times 2b \times 3c \times 6abc$$

$$= 2 \times 3 \times 6 \times a \times b \times c \times a \times b \times c$$

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

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

(v) The product of m , $-mn$ and $mnp = m \times mn \times mnp$

$$= (-1) \times m \times m \times n \times m \times n \times p$$

$$= (-1) m^3 \times n^2 \times p$$

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