

NCERT solutions for class-8 maths algebraic expressions and identities Ex-9.3

Q1. Carry out the multiplication of the expressions in each of the following pairs:

(i)
$$4p, q+r$$

(iii)
$$a + b, 7a^2b^2$$

(iv)
$$a^2 - 9.4a$$

(v)
$$pq + qr + rp, 0$$

(i)
$$4p \times (q+r) = 4p \times q + 4p \times r$$

$$=4pq+4pr$$

(ii)
$$ab \times (a-b) = ab \times a - ab \times b$$

$$= a^2b - ab^2$$

(iii)
$$(a+b) \times 7a^2b^2 = a \times 7a^2b^2 + b \times 7a^2b^2$$

$$= 7a^3b^2 + 7a^2b^3$$

(iv)
$$(a^2 - 9) \times 4a = a^2 \times 4a - 4a \times 9$$

$$= 4a^3 - 36a$$

(v)
$$(pq+qr+rp)\times 0 = pq\times 0 + qr\times 0 + rp\times 0$$

$$= 0 + 0 + 0 = 0$$

Q2. Complete the table:

	First expression	Second expression	Product
(i)	а	b+c+d	
(ii)	x+y-5	5xy	
(iii)	p	$6p^2 - 7p + 5$	
(iv)	$4p^2q^2$	p^2-q^2	
(v)	a+b+c	abc	

		Second expression	Product
(i)	а	b+c+d	$a(b+c+d)$ = $a \times b + a \times c + a$ = $ab + ac + ad$

(ii)	x+y-5	5xy	$5xy(x+y-5)$ = $5xy \times x + 5xy \times y$ = $5x^2y + 5xy^2 - 2$
(iii)	р	6p ² -7p+5	$p(6p^{2}-7p+5)$ $= p \times 6p^{2}-p \times 7$ $= 6p^{3}-7p^{2}+5p$
(iv)	$4p^2q^2$	p^2-q^2	$4p^{2}q^{2}(p^{2}-q^{2})$ $= 4p^{2}q^{2} \times p^{2}-4p^{2}$ $= 4p^{4}q^{2}-4p^{2}q^{4}$
(v)	a+b+c	abc	$abc(a+b+c)$ = $abc \times a + abc \times a$ = $a^{2}bc + ab^{2}c + a$

Q3. Find the product:

(i)
$$(a^2) \times (2a^{22}) \times (4a^{26})$$

(ii)
$$\left(\frac{2}{3}xy\right) \times \left(\frac{-9}{10}x^2y^2\right)$$

(iii)
$$\left(\frac{-10}{3}pq^3\right) \times \left(\frac{6}{5}p^3q\right)$$

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

(i)
$$(a^2) \times (2a^{22}) \times (4a^{26})$$

$$= (2 \times 4) \left(a^2 \times a^{22} \times a^{26}\right)$$

$$= 8 \times a^{2+22+26} = 8a^{50}$$

(ii)
$$\left(\frac{2}{3}xy\right) \times \left(\frac{-9}{10}x^2y^2\right)$$

$$= \left(\frac{2}{3} \times \frac{-9}{10}\right) \left(x \times x^2 \times y \times y^2\right)$$

$$=\frac{-3}{5}x^3y^3$$

(iii)
$$\left(\frac{-10}{3}pq^3\right)\left(\frac{6}{5}p^3q\right)$$

$$= \left(\frac{-10}{3} \times \frac{6}{5}\right) \left(p \times p^{3} \times q^{3} \times q\right)$$

$$= -4p^4q^4$$

(iv)
$$x \times x^2 \times x^3 \times x^4 = x^{1+2+3+4} = x^{10}$$

- **Q4.** (a) Simplify: 3x(4x-5)+3 and find values for
- (i) x = 3

(ii)
$$x = \frac{1}{2}$$
.

- **(b)** Simplify: $a(a^2 + a + 1) + 5$ and find its value for
- (i) a = 0
- (ii) a = 1
- (iii) a = -1.

Ans: (a)
$$3x(4x-5)+3$$

$$=3x\times4x-3x\times5+3$$

$$= 12x^2 - 15x + 3$$

(i) For
$$x = 3$$
, $12x^2 + 15x + 3$

$$=12(3)^2-15\times3+3$$

$$=12\times9-45+3=108-45+3=66$$

(ii) For
$$x = \frac{1}{2}$$
, $12x^2 - 15x + 3$

$$= 12\left(\frac{1}{2}\right)^2 - 15 \times \frac{1}{2} + 3$$

$$=12\times\frac{1}{4}-\frac{15}{2}+3$$

$$=6-\frac{15}{2}=\frac{12-15}{2}=\frac{-3}{2}$$

(b)
$$a(a^2+a+1)+5$$

$$= a \times a^2 + a \times a + a \times 1 + 5$$

$$= a^3 + a^2 + a + 5$$

(i) For
$$a = 0$$
, $a^3 + a^2 + a + 5$

$$= (0)^3 + (0)^2 + (0) + 5$$

$$= 0 + 0 + 0 + 5 = 5$$

(ii) For
$$a = 1$$
, $a^3 + a^2 + a + 5$

$$=(1)^3+(1)^2+(1)+5$$

$$= 1 + 1 + 1 + 5 = 8$$

(iii) For
$$a = -1$$
, $a^3 + a^2 + a + 5$

$$=(-1)^3+(-1)^2+(-1)+5$$

$$= -1+1-1+5 = -2+6 = 4$$

Q5. (a) Add:
$$p(p-q), q(q-r)$$
 and $r(r-p)$.

(b) Add:
$$2x(z-x-y)$$
 and $2y(z-y-zx)$.

(c) Subtract:
$$3l(l-4m+5n)$$
 from $4l(10n-3m+2l)$.

(d) Subtract:
$$3a(a+b+c)-2b(a-b+c)$$
 from $4c(-a+b+c)$.

(a)
$$p(p-q)+q(q-r)+r(r-p)$$

$$= p^2 - pq + q^2 - qr + r^2 - rp$$

$$= p^2 + q^2 + r^2 - pq - qr - rp$$

(b)
$$2x(z-x-y)+2y(z-y-x)$$

= $2xz-2x^2-2xy+2yz-2y^2-2xy$
= $2xz-2xy-2xy+2yz-2x^2-2y^2$
= $-2x^2-2y^2-4xy+2yz+2zx$
(c) $4l(10n-3m+2l)-3l(l-4m+5n)$
= $40ln-12lm+8l^2-3l^2+12lm-15ln$
= $8l^2-3l^2-12lm+12lm+40ln-15ln$
= $5l^2+25ln$
(d) $4c(-a+b+c)-[3a(a+b+c)-2b(a-b+c)]$
= $-4ac+4bc+4c^2-[3a^2+3ab+3ac-2ab+2b^2-2bc]$
= $-4ac+4bc+4c^2-[3a^2+2b^2+3ab-2bc+3ac-2ab]$
= $-4ac+4bc+4c^2-[3a^2+2b^2+3ab-2bc+3ac-2ab]$
= $-4ac+4bc+4c^2-[3a^2+2b^2+3ab-2bc+3ac-2ab]$
= $-4ac+4bc+4c^2-[3a^2+2b^2+3ab-2bc+3ac-2ab]$
= $-4ac+4bc+4c^2-[3a^2+2b^2+ab+3ac-2bc]$
= $-4ac+4bc+4c^2-[3a^2+2b^2+ab+3ac-2bc]$
= $-4ac+4bc+4c^2-3a^2-2b^2-ab-3ac+2bc$
= $-3a^2-2b^2+4c^2-ab+4bc+2bc-4ac-3ac$
= $-3a^2-2b^2+4c^2-ab+6bc-7ac$

********* END ********