

NCERT SOLUTIONS OF Algebraic Expressions and Identities Exercise 1

Question 1

Identify the terms, their coefficients for each of the following expressions.

(i) $5xyz^2 - 3zy$

(ii) $1 + x + x^2$

(iii) $4x^2y^2 - 4x^2y^2z^2 + z^2$

(iv) $3 - pq + qr - rp$

(v) $(x/2) - (y/2) - xy$

(vi) $0.3a - 0.6ab + 0.5b$

Answer:

No	Expression	Coefficient
1	Term: xyz^2 Term: zy	5 -3
2	Term: 1 Term: x Term x^2	1 1 1
3	Term: x^2y^2 Term: $x^2y^2z^2$ Term z^2	4 -4 1

4	3 pq qr rp	3 -1 1 -1
5	x Y xy	$\frac{1}{2}$ -1/2 -1
6	a ab b	.3 -.6 .5

Question 2

Classify the following polynomials as monomials, binomials, trinomials. Which polynomials do not fit in any of these three categories?

$$x + y$$

$$1000$$

$$x + x^2 + x^3 + x^4$$

$$7 + y + 5x$$

$$2y - 3y^2$$

$$2y - 3y^2 + 4y^3$$

$$5x - 4y + 3xy$$

$$4z - 15z^2$$

$$ab + bc + cd + da$$

$$pqr$$

$$p^2q + pq^2$$

$$2p + 2q$$

Answer:

$x + y$: Binomial

1000: Monomial

$x + x^2 + x^3 + x^4$: Polynomial

$7 + y + 5x$: Binomial

$2y - 3y^2$: Binomial

$2y - 3y^2 + 4y^3$: Trinomial

$5x - 4y + 3xy$: Trinomial

$4z - 15z^2$: Binomial

$ab + bc + cd + da$: Polynomial

pqr : Monomial

$p^2q + pq^2$: Binomial

$2p + 2q$: Binomial

Question 3

Add the following.

(i) $ab - bc$, $bc - ca$, $ca - ab$

(ii) $a - b + ab$, $b - c + bc$, $c - a + ac$

$$(iii) 2p^2q^2 - 3pq + 4, 5 + 7pq - 3p^2q^2$$

$$(iv) l^2 + m^2, m^2 + n^2, n^2 + l^2, 2lm + 2mn + 2nl$$

Answer:

$$i) (ab - bc) + (bc - ca) + (ca - ab)$$

$$= ab + bc + ca - bc - ca - ab$$

$$= 0$$

$$ii) (a - b + ab) + (b - c + bc) + (c - a + ac)$$

$$= a + b + c + ab + bc + ca - b - c - a$$

$$= ab + bc + ca$$

$$iii) 2p^2q^2 - 3pq + 4, 5 + 7pq - 3p^2q^2$$

$$= (2p^2q^2 - 3pq + 4) + (5 + 7pq - 3p^2q^2)$$

$$= 2p^2q^2 - 3p^2q^2 - 3pq + 7pq + 4 + 5$$

$$= -p^2q^2 + 4pq + 9$$

$$iv) (l^2 + m^2) + (m^2 + n^2) + (n^2 + l^2) + (2lm + 2mn + 2nl)$$

$$= l^2 + l^2 + m^2 + m^2 + n^2 + n^2 + 2lm + 2mn + 2nl$$

$$= 2l^2 + 2m^2 + 2n^2 + 2lm + 2mn + 2nl$$

Question 4.

(a) Subtract $4a - 7ab + 3b + 12$ from $12a - 9ab + 5b - 3$

(b) Subtract $3xy + 5yz - 7zx$ from $5xy - 2yz - 2zx + 10xyz$

(c) Subtract $4p^2q - 3pq + 5pq^2 - 8p + 7q - 10$

from $18 - 3p - 11q + 5pq - 2pq^2 + 5p^2q$

Answer:

While subtracting, we need to remember signs are reversed after –sign once bracket is opened

ie. + becomes - and - becomes +

Let solve the below question keeping that in mind

$$\begin{aligned} \text{i) } & (12a - 9ab + 5b - 3) - (4a - 7ab + 3b + 12) \\ &= 12a - 9ab + 5b - 3 - 4a + 7ab - 3b - 12 \\ &= 8a - 2ab + 2b - 15 \end{aligned}$$

$$\begin{aligned} \text{ii) } & (5xy - 2yz - 2zx + 10xyz) - (3xy + 5yz - 7zx) \\ &= 5xy - 2yz - 2zx + 10xyz - 3xy - 5yz + 7zx \\ &= 2xy - 7yz + 5zx + 10xyz \end{aligned}$$

$$\begin{aligned} \text{iii) } & (18 - 3p - 11q + 5pq - 2pq^2 + 5p^2q) - (4p^2q - 3pq + 5pq^2 - 8p + 7q - 10) \\ &= 18 - 3p - 11q + 5pq - 2pq^2 + 5p^2q - 4p^2q + 3pq - 5pq^2 + 8p - 7q + 10 \\ &= 28 + 5p - 18q + 8pq - 7pq^2 - p^2q \end{aligned}$$