NCERT solutions for class 8 maths algebraic expressions and identities 9.1

Q1. 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) $\frac{x}{2} + \frac{y}{2} - xy$

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

Ans: (i) Terms: $5xyz^2$ and $-3zy$

Coefficient in $5xyz^2$ is 5 and in $-3zy$ is -3.

(ii) Terms: $1, x$ and x^2.

Coefficient of x and coefficient of x^2 is 1.

(iii) Terms: $4x^2y^2, -4x^2y^2z^2$ and z^2.

Coefficient in $4x^2y^2$ is 4, coefficient of $-4x^2y^2z^2$ is -4 and coefficient of z^2 is 1.

(iv) Terms: $3, -pq, qr$ and $-rp$

Coefficient of $-pq$ is -1, coefficient of qr is 1 and coefficient of $-rp$ is -1.

(v) Terms: $\frac{x}{2}, \frac{y}{2}$ and $-xy$

Coefficient of $\frac{x}{2}$ is $\frac{1}{2}$, coefficient of $\frac{y}{2}$ is $\frac{1}{2}$ and coefficient of $-xy$ is -1.

(vi) Terms: $0.3a, -0.6ab$ and $0.5b$

Coefficient of $0.3a$ is 0.3, coefficient of $-0.6ab$ is -0.6 and coefficient of $0.5b$ is 0.5.

Q2. 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, $2p+2q$

Ans: (i) Since $x+y$ contains two terms. Therefore it is binomial.

(ii) Since 1000 contains one terms. Therefore it is monomial.

(iii) Since $x+x^2+x^3+x^4$ contains four terms. Therefore it is a polynomial and it does not fit in above three categories.

(iv) Since $7+y+5x$ contains three terms. Therefore it is trinomial.

(v) Since $2y-3y^2$ contains two terms. Therefore it is binomial.

(vi) Since $2y-3y^2+4y^3$ contains three terms. Therefore it is trinomial.

(vii) Since $5x-4y+3xy$ contains three terms. Therefore it is trinomial.

(viii) Since $4x-15z^2$ contains two terms. Therefore it is binomial.

(ix) Since $ab+bc+cd+da$ contains four terms. Therefore it is a polynomial and it does not fit in above three categories.

(x) Since pqr contains one terms. Therefore it is monomial.

(xi) Since p^2q+pq^2 contains two terms. Therefore it is binomial.

(xii) Since $2p+2q$ contains two terms. Therefore it is binomial.

Q3. 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) $l^2+m^2, m^2+n^2, n^2+l^2+2lm+2mn+2nl$

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

$$\begin{array}{l} ab-bc \\ \quad +bc-ca \\ -ab \quad +ca \\ \boxed{0+0+0} \end{array}$$

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

$$\begin{array}{lll} a-b-ab & & \\ \quad +b & -c+bc & \\ -a & +c & +ac \\ \boxed{0+0+ab+0+bc+ac} & & \end{array}$$

Hence the sum if 0.

Hence the sum is $ab+bc+ac$.

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

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

$$\boxed{-p^2q^2 + 4pq + 9}$$

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

$$l^2 + m^2$$
$$+ \quad m^2 + n^2$$
$$+ l^2 \quad + n^2$$
$$+ \quad 2lm + 2mn + 2nl$$
$$\boxed{2l^2 + 2m^2 + 2n^2 + 2lm + 2mn + 2nl}$$

Hence the sum is $-p^2q^2 + 4pq + 9$.

Hence the sum is

$2\left(l^2 + m^2 + n^2 + lm + mn + nl\right)$.

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

Ans: (a)

$$12a - 9ab + 5b - 3$$
$$4a - 7ab + 3b + 12$$
$$(-) \quad (+) \quad (-)(-)$$
$$\boxed{8a - 2ab + 2b - 15}$$

(b)

$$5xy - 2yz - 2zx + 10xyz$$
$$3xy + 5yz - 7zx$$
$$(-) \quad (-) \quad (+)$$
$$\boxed{2xy - 7yz + 5zx + 10xyz}$$

(c)

$$5p^2q - 2pq^2 + 5pq - 11q - 3p + 18$$
$$4p^2q + 5pq^2 - 3pq + 7q - 8p - 10$$
$$(-) \quad (-) \quad (+) \quad (-) \quad (+) \quad (+)$$
$$\boxed{p^2q - 7pq^2 + 8pq - 18q + 5p + 28}$$

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