Chapter 14

Factorisation

DIVISION OF POLYNOMIALS USING FACTORISATION:

You have already learnt the long division method to divide a polynomial by another polynomial. Let us now learn to divide polynomial using factorisation.

(I) DIVISION OF A MONOMIAL BY A MONOMIAL:

Example:

Divide $24x^3$ by $3x$?

Sol.

To divide a monomial by another monomial, follow these steps.

Given $24x^3$ by $3x \Rightarrow \frac{24x^3}{3x}$.

Step (1): Find the factors of numerator term.

$24x^3 = 2 \times 2 \times 2 \times 3 \times x \times x \times x$

Step (2): Find the factors of denominator term.

$3x = 3 \times x$

Step (3): Find out simplest form.

$$\frac{24x^3}{3x} = \frac{2\times 2\times 2\times \cancel{3}\times \cancel{x}\times x\times x}{\cancel{3}\times \cancel{x}} = 8x^2$$

Step (4): The result obtained in step (3) is the required answer.

$$\therefore \frac{24x^3}{3x} = 8x^2$$

(II) DIVISION OF A POLYNOMIAL BY A MONOMIAL:

Example:

Divide $4l^5 - 6l^4 + 8l^3$ by $2l^2$.

To divide a polynomial by a monomial follows these steps.

Step (1): Split the polynomial to be divided into separate terms.

Given $\left(4l^5 - 6l^4 + 8l^3\right) \div 2l^2 = \dfrac{4l^5 - 6l^4 + 8l^3}{2l^2}$

Step (2): Divide each term by the given monomial.

$$= \frac{4l^5}{2l^2} - \frac{6l^4}{2l^2} + \frac{8l^3}{2l^2}$$

$$= 2l^3 - 3l^2 + 4l$$

$$\therefore \left(4l^5 - 6l^4 + 8l^3\right) \div 2l^2 = 2l^3 - 3l^2 + 4l.$$