

CLASS NOTES

Class: VIII

Topic: Ch. 14 FACTORISATION

Subject: Mathematics

EXERCISE 14.3

Q 1. Carry out the following divisions.

Soln:

$$(i) 28x^4 \div 56x = \frac{28x^4}{56x}$$

$$= \frac{\cancel{2} \times \cancel{2} \times \cancel{7} \times \cancel{x} \times x \times x \times x}{2 \times \cancel{2} \times \cancel{2} \times \cancel{7} \times \cancel{x}} = \frac{x^3}{2}$$

$$(ii) -36y^3 \div 9y^2 = \frac{-36y^3}{9y^2}$$

$$= \frac{\cancel{9} \times 2 \times 2 \times \cancel{3} \times \cancel{3} \times y \times \cancel{y} \times \cancel{y}}{\cancel{9} \times (-) \times \cancel{3} \times \cancel{3} \times \cancel{y}} = -4y$$

$$(iii) 66pq^2r^3 \div 11qr^2 = \frac{66pq^2r^3}{11qr^2}$$

$$= \frac{2 \times 3 \times \cancel{11} \times p \times \cancel{q} \times q \times \cancel{r} \times \cancel{r} \times r}{\cancel{11} \times \cancel{q} \times \cancel{r} \times \cancel{r}}$$

$$= 6pqr$$

$$(iv) 34x^3y^3z^3 \div 51xy^2z^3 = \frac{34x^3y^3z^3}{51xy^2z^3}$$

$$= \frac{2 \times \cancel{17} \times \cancel{x} \times x \times x \times \cancel{y} \times \cancel{y} \times y}{3 \times \cancel{17} \times \cancel{x} \times \cancel{y} \times \cancel{y} \times \cancel{z} \times \cancel{z} \times \cancel{z}} = \frac{2}{3} x^2y$$

$$(v) 12a^8b^8 \div (-6a^6b^4) = \frac{12a^8b^8}{-6a^6b^4}$$

$$= \frac{\cancel{6} \times 2 \times \cancel{a} \times \cancel{a} \times a \times a \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b}}{\cancel{6} \times (-) \times \cancel{2} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b}}$$

$$= -2a^2b^4$$

Q 2. Divide the polynomial by the given monomial.

Soln:

$$(i) (5x^2 - 6x) \div 3x = \frac{(5x^2 - 6x)}{3x}$$

$$= \frac{\cancel{x} (5x - 6)}{3\cancel{x}} = \frac{(5x - 6)}{3}$$

$$(ii) (3y^8 - 4y^6 + 5y^4) \div y^4$$

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

$$= \frac{y^4 (3y^4 - 4y^2 + 5)}{y^4}$$

$$= 3y^4 - 4y^2 + 5$$

$$(iii) 8(x^3y^2z^2 + x^2y^3z^2 + x^2y^2z^3) \div 4x^2y^2z^2$$

$$= \frac{8(x^3y^2z^2 + x^2y^3z^2 + x^2y^2z^3)}{4x^2y^2z^2}$$

$$= \frac{\cancel{8} \times \cancel{x} \times \cancel{y} \times \cancel{z} \times (x + y + z)}{\cancel{4} \times \cancel{x} \times \cancel{y} \times \cancel{z}}$$

$$= 2(x + y + z)$$

$$(iv) (x^3 + 2x^2 + 3x) \div 2x$$

$$= \frac{x^3 + 2x^2 + 3x}{2x} = \frac{\cancel{x} (x^2 + 2x + 3)}{2\cancel{x}}$$

$$= \frac{x^2 + 2x + 3}{2}$$

$$(v) (p^3q^6 - p^6q^3) \div p^3q^3 = \frac{p^3q^6 - p^6q^3}{p^3q^3}$$

$$= \frac{p^3q^3 (q^3 - p^3)}{p^3q^3} = q^3 - p^3$$

Q3.Soln.

$$(iii) 10y(6y + 21) \div 5(2y + 7)$$

$$= \frac{10y(6y + 21)}{5(2y + 7)}$$

$$= \frac{10\cancel{y}^2 \times 3(\cancel{2y} + 7)}{\cancel{5} (2y + 7)}$$

$$= 2y \times 3 = 6y$$

$$(iv) 9x^2y^2(3z - 24) \div 27xy(z - 8)$$

$$= \frac{9x^2y^2(3z - 24)}{27xy(z - 8)}$$

$$= \frac{\cancel{9} \times \cancel{x} \times \cancel{y} \times \cancel{3} (z - 8)}{\cancel{27} \times \cancel{x} \times \cancel{y} (z - 8)} = xy$$

$$(v) 96abc(3a - 12)(5b - 30) \div 144(a - 4)(b - 6)$$

$$= \frac{96abc(3a - 12)(5b - 30)}{144(a - 4)(b - 6)}$$

$$= \frac{\cancel{2} \times \cancel{2} \times \cancel{2} \times \cancel{2} \times 2 \times \cancel{3} abc}{\cancel{2} \times \cancel{2} \times \cancel{2} \times \cancel{2} \times \cancel{3} \times \cancel{3}}$$

$$= \frac{\cancel{3} (a - 4) \times 5 (b - 6)}{(\cancel{a} - 4) (\cancel{b} - 6)} = 10abc$$

Q 5. Factorise the expressions and divide them as directed.

Soln

$$\begin{aligned}
 (i) \quad & (y^2 + 7y + 10) \div (y + 5) \\
 &= \frac{(y^2 + 7y + 10)}{y + 5} \\
 &= \frac{(y^2 + 5y + 2y + 10)}{(y + 5)} \quad \left[\begin{array}{l} \because 2 + 5 = 7 \\ 2 \times 5 = 10 \end{array} \right] \\
 &= \frac{y(y + 5) + 2(y + 5)}{(y + 5)} \\
 &= \frac{\cancel{(y + 5)}(y + 2)}{\cancel{(y + 5)}} \\
 &= y + 2
 \end{aligned}$$

$$\begin{aligned}
 (ii) \quad & (m^2 - 14m - 32) \div (m + 2) \\
 &= \frac{(m^2 - 14m - 32)}{(m + 2)} \\
 &= \frac{(m^2 - 16m + 2m - 32)}{(m + 2)} \\
 & \qquad \qquad \qquad \left[\begin{array}{l} -16 + 2 = -14 \\ -16 \times 2 = -32 \end{array} \right] \\
 &= \frac{m(m - 16) + 2(m - 16)}{m + 2} \\
 &= \frac{(m - 16)\cancel{(m + 2)}}{\cancel{(m + 2)}} \\
 &= m - 16
 \end{aligned}$$

$$\begin{aligned}
 (iii) \quad & (5p^2 - 25p + 20) \div (p - 1) \\
 &= \frac{(5p^2 - 25p + 20)}{p - 1} \\
 &= \frac{5p^2 - 20p - 5p + 20}{p - 1} \\
 &= \frac{5p(p - 4) - 5(p - 4)}{p - 1} \\
 &= \frac{(p - 4)(5p - 5)}{p - 1} \\
 &= \frac{(p - 4)\cancel{5(p - 1)}}{\cancel{(p - 1)}} \\
 &= 5(p - 4)
 \end{aligned}$$

$$\begin{aligned}
 (iv) \quad & 4yz(z^2 + 6z - 16) \div 2y(z + 8) \\
 &= \frac{4yz(z^2 + 6z - 16)}{2y(z + 8)} \\
 &= \frac{4yz(z^2 + 8z - 2z - 16)}{2y(z + 8)} \\
 &= \frac{\cancel{4y} z [z(z + 8) - 2(z + 8)]}{\cancel{2y} (z + 8)} \\
 &= \frac{2z\cancel{(z + 8)}(z - 2)}{\cancel{(z + 8)}} \\
 &= 2z(z - 2)
 \end{aligned}$$

$$\begin{aligned}
 (v) \quad & 5pq(p^2 - q^2) \div 2p(p + q) \\
 &= \frac{5pq(p^2 - q^2)}{2p(p + q)} \\
 &= \frac{5\cancel{p}q(\cancel{p + q})(p - q)}{2\cancel{p}(\cancel{p + q})} \\
 &= \frac{5q(p - q)}{2}
 \end{aligned}$$

$$\begin{aligned}
 (vi) \quad & 12xy(9x^2 - 16y^2) \div 4xy(3x + 4y) \\
 &= \frac{12xy(9x^2 - 16y^2)}{4xy(3x + 4y)} \\
 &= \frac{12xy[(3x)^2 - (4y)^2]}{4xy(3x + 4y)} \\
 &= \frac{\cancel{12} \cancel{xy} (3x + 4y)(3x - 4y)}{\cancel{4} \cancel{xy} (3x + 4y)} \\
 & \qquad \qquad \qquad [\because a^2 - b^2 = (a + b)(a - b)] \\
 &= 3(3x - 4y)
 \end{aligned}$$

$$\begin{aligned}
 (vii) \quad & 39y^3(50y^2 - 98) \div 26y^2(5y + 7) \\
 &= \frac{39y^3(50y^2 - 98)}{26y^2(5y + 7)} \\
 &= \frac{3 \times 13y^3 \times 2(25y^2 - 49)}{2 \times 13y^2(5y + 7)} \\
 &= \frac{3 \times 13y^3 \times 2[(5y)^2 - (7)^2]}{2 \times 13 \times y^2(5y + 7)} \\
 &= \frac{\cancel{2} \times 3 \times \cancel{13} \cancel{y^2} (5y + 7)(5y - 7)}{\cancel{2} \times \cancel{13} \cancel{y^2} (5y + 7)} \\
 &= 3y(5y - 7)
 \end{aligned}$$

ASSIGNMENT: Write the content neatly in your fair copy. Also do Q3(i) &(ii) and Q4 to check your learning.

THIS CONTENT IS PREPARED ABSOLUTELY FROM HOME