

Question 1.

Work out the following divisions:

(i) $(35x + 28) \div (5x + 4)$

(ii) $7p^2q^2(9r - 27) \div 63pq(r - 3)$

Solution:

(i) $(35x + 28) \div (5x + 4)$

$$= \frac{7(5x+4)}{(5x+4)} = 7$$

(ii) $7p^2q^2(9r - 27) \div 63pq(r - 3)$

$$= \frac{7p^2q^2 \times 9(r-3)}{63pq(r-3)}$$

$$= p^{2-1} q^{2-1} \times 9 = 9pq$$

Question 2.

Divide as directed:

(i) $6(2x + 7)(5x - 3) \div 3(5x - 3)$

(ii) $33pq(p + 3)(2q - 5) \div 11p(2q - 5)$

Solution:

(i) $6(2x + 7)(5x - 3) \div 3(5x - 3)$

$$= \frac{6(2x+7)(5x-3)}{3(5x-3)} = 2(2x + 7)$$

(ii) $33pq(p + 3)(2q - 5) \div 11p(2q - 5)$

$$= \frac{33pq(p+3)(2q-5)}{11p(2q-5)} = 3q(p + 3)$$

Question 3.

Factorise the expression and divide them as directed:

(i) $(7x^2 - 63x) \div 7(x - 3)$

(ii) $(3p^2 + 17p + 10) \div (p + 5)$

(iii) $10xy(14y^2 + 43y - 21) \div 5x(7y - 3)$

(iv) $12pqr(6p^2 - 13pq + 6q^2) \div 6pq(2p - 3q)$

Solution:

$$(i) (7x^2 - 63x) \div 7(x - 3)$$

$$= \frac{7x(x^2 - 9)}{7(x - 3)} = \frac{7x[(x)^2 - (3)^2]}{7(x - 3)}$$

$$= \frac{7x(x + 3)(x - 3)}{7(x - 3)} = x(x + 3)$$

$$(ii) (3p^2 + 17p + 10) \div (p + 5)$$

$$= \frac{3p^2 + 2p + 15p + 10}{p + 5}$$

$$\left\{ \begin{array}{l} \because 3 \times 10 = 30 \\ \therefore 30 = 2 \times 15 \\ 17 = 2 + 15 \end{array} \right\}$$

$$= \frac{p(3p + 2) + 5(3p + 2)}{p + 5}$$

$$= \frac{(3p + 2)(p + 5)}{(p + 5)} = 3p + 2$$

$$(iii) 10xy(14y^2 + 43y - 21) \div 5x(7y - 3)$$

$$= \frac{10xy[14y^2 + 49y - 6y - 21]}{5x(7y - 3)}$$

$$\left\{ \begin{array}{l} \because -21 \times 14 = -294 \\ \therefore -294 = 49 \times (-6) \\ 43 = 49 - 6 \end{array} \right\}$$

$$= \frac{10xy[7y(2y + 7) - 3(2y + 7)]}{5x(7y - 3)}$$

$$= \frac{10xy(2y+7)(7y-3)}{5x(7y-3)} = 2xy(2y+7)$$

(iv) $12pqr(6p^2 - 13pq + 6q^2) \div 6pq(2p - 3q)$

$$= \frac{12pqr[6p^2 - 9pq - 4pq + 6q^2]}{6pq(2p - 3q)}$$

$$\left\{ \begin{array}{l} \because 6 \times 6 = 36 \\ \therefore 36 = -9 \times (-4) \\ -13 = -9 - 4 \end{array} \right\}$$

$$= \frac{12pqr[3p(2p - 3q) - 2q(2p - 3q)]}{6pq(2p - 3q)}$$

$$= \frac{12pqr(2p - 3q)(3p - 2q)}{6pq(2p - 3q)} = 2r(3p - 2q)$$