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(Affiliated to CBSE up to +2 Level)

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SUB.: MATHEMATICS

Question 3. Work out the following divisions.

(i) $(10x - 25) \div 5$

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

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

(ii) $(10x - 25) \div (2x - 5)$

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

Solution:

$$(i) (10x - 25) \div 5 = \frac{10x - 25}{5}$$

$$= \frac{\cancel{5}(2x - 5)}{\cancel{5}} = 2x - 5$$

$$(ii) (10x - 25) \div (2x - 5) = \frac{(10x - 25)}{(2x - 5)}$$

$$= \frac{5(\cancel{2x - 5})}{(\cancel{2x - 5})} = 5$$

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

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

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

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

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

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

$$= \frac{\cancel{9}^x \cancel{x^2}^y \times \cancel{y^2} \times \cancel{3}(z - 8)}{\cancel{27}_9 \times y \times \cancel{y}(z - 8)} = xy$$

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

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

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

$$\times \cancel{3}(a - 4) \times 5(\cancel{b - 6})$$

$$= \frac{\cancel{2} \times \cancel{2} \times \cancel{2} \times \cancel{2} \times \cancel{3} \times \cancel{3}}{(\cancel{a - 4})(\cancel{b - 6})} = 10abc$$

Question 4. Divide as directed.

(i) $5(2x + 1)(3x + 5) \div (2x + 1)$

(ii) $26xy(x + 5)(y - 4) \div 13x(y - 4)$

(iii) $52pqr(p + q)(q + r)(r + p) \div 104pq(q + r)(r + p)$

(iv) $20(y + 4)(y^2 + 5y + 3) \div 5(y + 4)$

(v) $x(x + 1)(x + 2)(x + 3) \div x(x + 1)$

Solution:

(i) $5(2x + 1)(3x + 5) \div (2x + 1)$

$$= \frac{5\cancel{(2x+1)}(3x+5)}{\cancel{(2x+1)}} = 5(3x + 5)$$

(ii) $26xy(x + 5)(y - 4) \div 13x(y - 4)$

$$= \frac{26xy(x+5)(y-4)}{13x(y-4)}$$
$$= \frac{2 \times \cancel{13} \cancel{x} y(x+5) \cancel{(y-4)}}{\cancel{13} \cancel{x} \cancel{(y-4)}}$$
$$= 2y(x + 5)$$

(iii) $52pqr(p + q)(q + r)(r + p) \div 104pq(q + r)(r + p)$

$$= \frac{52pqr(p+q)(q+r)(r+p)}{104pq(q+r)(r+p)}$$
$$\frac{\cancel{2} \times \cancel{2} \times \cancel{13} \cancel{p} \cancel{q} r(p+q)}{\cancel{2} \times \cancel{2} \times 2 \times \cancel{13} \cancel{p} \cancel{q}}$$
$$= \frac{\cancel{(q+r)} \cancel{(r+p)}}{\cancel{(q+r)} \cancel{(r+p)}}$$
$$= \frac{r(p+q)}{2}$$

(iv) $20(y + 4)(y^2 + 5y + 3) \div 5(y + 4)$

$$= \frac{20(y+4)(y^2+5y+3)}{5(y+4)}$$
$$= \frac{2 \times 2 \times \cancel{5} \cancel{(y+4)}(y^2+5y+3)}{\cancel{5} \cancel{(y+4)}}$$
$$= 4(y^2 + 5y + 3)$$

(v) $x(x + 1)(x + 2)(x + 3) \div x(x + 1)$

$$= \frac{\cancel{x} \cancel{(x+1)}(x+2)(x+3)}{\cancel{x} \cancel{(x+1)}}$$
$$= (x + 2)(x + 3)$$