

## Rational Numbers Ex 1.6 Q3

## Answer:

We have to verify that  $x \times (y+z) = x \times y + x \times z$ .

(i) 
$$x = \frac{-3}{7}$$
,  $y = \frac{12}{13}$ ,  $z = \frac{-5}{6}$   
 $\mathbf{x} \times (\mathbf{y} + \mathbf{z}) = \frac{-3}{7} \times (\frac{12}{13} + \frac{-5}{6}) = \frac{-3}{7} \times \frac{72 - 65}{78} = \frac{-3}{7} \times \frac{7}{78} = \frac{-1}{26}$   
 $\mathbf{x} \times \mathbf{y} + \mathbf{x} \times \mathbf{z} = \frac{-3}{7} \times \frac{12}{13} + \frac{-3}{7} \times \frac{-5}{6}$   
 $= \frac{-36}{91} + \frac{5}{14}$   
 $= \frac{-36 \times 2 + 5 \times 13}{182} = \frac{-72 + 65}{182}$   
 $= \frac{-1}{26}$   
 $\therefore \frac{-3}{7} \times (\frac{12}{13} + \frac{-5}{6}) = \frac{-3}{7} \times \frac{12}{13} + \frac{-3}{7} \times \frac{-5}{6}$ 

## Hence verified

Hence verified.

(ii) 
$$x = \frac{-12}{5}$$
,  $y = \frac{-15}{4}$ ,  $z = \frac{8}{3}$ 
 $x \times (y+z) = \frac{-12}{5} \times (\frac{-15}{4} + \frac{8}{3}) = \frac{-12}{5} \times \frac{-45+32}{12} = \frac{-12}{5} \times \frac{-13}{12} = \frac{13}{5}$ 
 $x \times y + x \times z = \frac{-12}{5} \times \frac{-15}{4} + \frac{-12}{5} \times \frac{8}{3}$ 
 $= \frac{9}{1} + \frac{-32}{5}$ 
 $= \frac{45-32}{5}$ 
 $= \frac{13}{5}$ 
 $\therefore \frac{-12}{5} \times (\frac{-15}{4} + \frac{8}{3}) = \frac{-12}{5} \times \frac{-15}{4} + \frac{-12}{5} \times \frac{8}{3}$ 

Therefore verificat:
$$\left(\text{iii}\right) x = \frac{-8}{3}, \ y = \frac{5}{6}, \ z = \frac{-13}{12}$$

$$x \times \left(y + z\right) = \frac{-8}{3} \times \left(\frac{5}{6} + \frac{-13}{12}\right) = \frac{-8}{3} \times \frac{10 - 13}{12} = \frac{-8}{3} \times \frac{-3}{12} = \frac{2}{3}$$

$$x \times y + x \times z = \frac{-8}{3} \times \frac{5}{6} + \frac{-8}{3} \times \frac{-13}{12}$$

$$= \frac{-20}{9} + \frac{26}{9}$$

$$= \frac{-20 + 26}{9}$$

$$= \frac{2}{3}$$

$$\therefore \frac{-8}{3} \times \left(\frac{5}{6} + \frac{-13}{12}\right) = \frac{-8}{3} \times \frac{5}{6} + \frac{-8}{3} \times \frac{-13}{12}$$

Hence verified .

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