

$$110 \text{ (a)} \quad x = -\frac{1}{2}, y = \frac{3}{4}, z = \frac{1}{4}$$

$$\begin{aligned} \text{LHS} &= x \times (y+z) \\ &= -\frac{1}{2} \times \left(\frac{3}{4} + \frac{1}{4}\right) \\ &= -\frac{1}{2} \left(\frac{4}{4}\right) \\ &= -\frac{1}{2} \end{aligned}$$

$$\begin{aligned} \text{RHS} &= x \times y + x \times z \\ &= -\frac{1}{2} \times \frac{3}{4} + -\frac{1}{2} \times \frac{1}{4} \\ &= -\frac{3}{8} + -\frac{1}{8} \\ &= -\frac{4}{8} \\ &= -\frac{1}{2} \end{aligned}$$

$$\therefore x \times (y+z) = x \times y + x \times z$$

$$110 \text{ (b)} \quad x = -\frac{1}{2}, y = \frac{2}{3}, z = \frac{3}{4}$$

$$\text{LHS} = x \times (y+z)$$

$$= -\frac{1}{2} \left(\frac{2}{3} + \frac{3}{4}\right)$$

$$= -\frac{1}{2} \times \frac{8+9}{12}$$

$$= -\frac{1}{2} \times \frac{17}{12}$$

$$= -\frac{17}{24}$$

$$x \times y + x \times z$$

$$= -\frac{1}{2} \times \frac{2}{3} + -\frac{1}{2} \times \frac{3}{4}$$

$$= -\frac{1}{3} + -\frac{3}{8}$$

$$= \frac{-8 + -9}{24}$$

$$= -\frac{17}{24}$$

$$\therefore x \times (y+z) = x \times y + x \times z$$

$$110 \text{ (c)} \quad x = -\frac{2}{3}, y = \frac{2}{15}, z = -\frac{3}{10}$$

$$x \times (y+z)$$

$$= -\frac{2}{3} \left(\frac{2}{15} + -\frac{3}{10}\right)$$

$$= -\frac{2}{3} \left(\frac{4 + -9}{30}\right)$$

$$= -\frac{2}{3} \times -\frac{5}{30}$$

$$x \times y + x \times z$$

$$= -\frac{2}{3} \times \frac{2}{15} + -\frac{2}{3} \times -\frac{3}{10}$$

$$= -\frac{4}{45} + \frac{1}{5}$$

$$= \frac{-4 + 9}{45}$$

$$= \frac{5}{45}$$

$$= \frac{1}{9}$$