

Addition of Rational Numbers

Q1.

Solve:

i.

$$\begin{aligned} & \frac{5}{6} + \frac{-1}{6} \\ &= \frac{5 + (-1)}{6} \\ &= \frac{4}{6} \\ &= \frac{2}{3} \end{aligned}$$

ii.

$$\begin{aligned} & \frac{-8}{9} + \frac{11}{6} \\ &= \frac{-8 \times 2}{9 \times 2} + \frac{11 \times 3}{6 \times 3} \\ &= \frac{-16}{18} + \frac{33}{18} = \frac{-16 + 33}{18} \\ &= \frac{17}{18} \end{aligned}$$

iii.

$$\begin{aligned} & \frac{-3}{10} + \frac{4}{15} \\ &= \frac{-3 \times 3}{10 \times 3} + \frac{4 \times 2}{15 \times 2} \\ &= \frac{-9}{30} + \frac{8}{30} = \frac{-9 + 8}{30} \\ &= \frac{-1}{30} \end{aligned}$$

iv.

$$\begin{aligned} & \frac{2}{13} + \frac{4}{13} + \frac{3}{13} \\ &= \frac{(2 + 4 + 3)}{13} \\ &= \frac{9}{13} \end{aligned}$$

Notebook Task:

Q2.

a) Add the following:

i) $\frac{2}{3}$ and $\frac{4}{3}$

ii) $\frac{-5}{9} + \left(\frac{-1}{3}\right)$

iii) $\frac{15}{12}$ and $\frac{2}{16}$

iv) $\frac{3}{-40} + \left(\frac{-5}{14}\right)$

v) $\frac{3}{4}$ and $\frac{-6}{5}$

vi) $\frac{3}{4} + \left(\frac{-2}{5}\right) + \left(\frac{-7}{20}\right)$

- b) Zain poured $1\frac{2}{3}$ buckets of water into his bathtub. A few minutes later he poured another $\frac{1}{4}$ buckets of water into the tub. If each bucket holds 2 litres of water.

How many litres of water Zain poured into the bathtub?

Q2: a) Add the following

i) $\frac{2}{3}$ and $\frac{4}{3}$

$$= \frac{2}{3} + \frac{4}{3}$$

$$= \frac{2+4}{3}$$

$$= \frac{6}{3} = 2$$

ii) $-\frac{5}{9} + (-\frac{1}{3})$

$$= -\frac{5}{9} + (-\frac{1}{3}) \times (\frac{3}{3})$$

$$= -\frac{5}{9} + (-\frac{3}{9})$$

$$= \frac{-5+(-3)}{9}$$

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

iii) $\frac{15}{12}$ and $\frac{2}{16}$

$$= \frac{15}{12} + \frac{2}{16}$$

$$= \frac{15}{12} \times \frac{4}{4} + \frac{2}{16} \times \frac{3}{3}$$

$$= \frac{60}{48} + \frac{6}{48}$$

$$= \frac{60+6}{48}$$

$$= \frac{66}{48} = \frac{11}{8}$$

iv) $\frac{3}{-40} + (-\frac{5}{14})$

$$= \frac{3}{-40} \times \frac{7}{7} + (-\frac{5}{14}) \times \frac{20}{20}$$

(we can write)

$$= \frac{-3}{40} \times \frac{7}{7} + (-\frac{5}{14}) \times \frac{20}{20}$$

$$= \frac{-21}{280} + (-\frac{100}{280})$$

$$= \frac{-21+(-100)}{280}$$

$$= \frac{-121}{280}$$

$$v) \frac{3}{4} \text{ and } -\frac{6}{5}$$

$$= \frac{3}{4} + \left(-\frac{6}{5}\right)$$

$$= \frac{3}{4} \times \frac{5}{5} + \left(-\frac{6}{5}\right) \times \frac{4}{4}$$

$$= \frac{15}{20} + \left(-\frac{24}{20}\right)$$

$$= \frac{15 + (-24)}{20}$$

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

$$vi) \frac{3}{4} + \left(\frac{2}{5}\right) + \left(-\frac{7}{20}\right)$$

$$= \frac{3}{4} \times \frac{5}{5} + \left(\frac{2}{5}\right) \times \frac{4}{4} + \left(-\frac{7}{20}\right)$$

$$= \frac{15}{20} + \left(\frac{8}{20}\right) + \left(-\frac{7}{20}\right)$$

$$= \frac{15 + 8 + (-7)}{20}$$

$$= \frac{15 + 8 - 7}{20}$$

$$= \frac{16}{20}$$

b) Zain poured $1\frac{2}{3}$ buckets of water into his bathtub. A few minutes later he poured another $\frac{1}{4}$ bucket of water into the tub. If each bucket holds 2 litres of water. How many liters of water Zain poured into the bathtub.

$$1\frac{2}{3} + \frac{1}{4}$$

$$= \frac{5}{3} + \frac{1}{4}$$

$$= \frac{5}{3} \times \frac{4}{4} + \frac{1}{4} \times \frac{3}{3}$$

$$= \frac{20}{12} + \frac{3}{12}$$

$$= \frac{20 + 3}{12}$$

$$= \frac{23}{12}$$

Each bucket hold 2 litres of water

$$= \frac{23}{12} \times 2$$

$$= \frac{46}{12}$$

$$= \frac{23}{6}$$

Zain poured $\frac{23}{6}$ litres of water into the bathtub.