

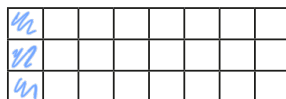
Add and subtract fractions with any denominator



- 1 a) Shade the grids to represent the fractions.



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



$$\frac{1}{8}$$

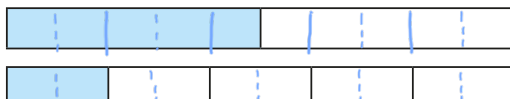
- b) Use the grids to show that $\frac{2}{3} + \frac{1}{8} = \frac{19}{24}$



- c) Why do you think this particular size grid was chosen?

- 2 Annie is working out $\frac{1}{5} + \frac{1}{2}$

She uses bar models.



Divide each bar into tenths and work out the answer to the question.

$$\frac{1}{5} + \frac{1}{2} = \frac{7}{10}$$

- 3 Tommy is calculating $\frac{1}{5} + \frac{5}{8}$

Here are his workings.

$$40 = 5 \times 8$$

The lowest common multiple of 5 and 8 is 40

$$\frac{1 \times 8}{5 \times 8} = \frac{8}{40}$$

$$\frac{5 \times 5}{8 \times 5} = \frac{25}{40}$$

$$\frac{1}{5} + \frac{5}{8} = \frac{8}{40} + \frac{25}{40}$$

$$= \frac{33}{40}$$

Do you agree with Tommy? Yes

Talk about it with a partner

- 4 Work out the additions.

a) $\frac{1}{4} + \frac{1}{2} = \frac{3}{4}$
 $\frac{1}{4} + \frac{2}{4}$

d) $\frac{1}{4} + \frac{2}{5} = \frac{13}{20}$
 $\frac{5}{20} + \frac{8}{20}$

b) $\frac{1}{4} + \frac{1}{3} = \frac{7}{12}$
 $\frac{3}{12} + \frac{4}{12}$

e) $\frac{3}{4} + \frac{1}{6} = \frac{11}{12}$
 $\frac{9}{12} + \frac{2}{12}$

c) $\frac{1}{4} + \frac{2}{3} = \frac{11}{12}$
 $\frac{3}{12} + \frac{8}{12}$

f) $\frac{3}{4} + \frac{2}{9} = \frac{35}{36}$
 $\frac{27}{36} + \frac{8}{36}$

5 Work out the subtractions.

$$\text{a) } \frac{3}{4} - \frac{2}{3} = \frac{1}{12}$$

$$\frac{9}{12} - \frac{8}{12}$$

$$\text{c) } \frac{8}{9} - \frac{5}{6} = \frac{1}{18}$$

$$\frac{16}{18} - \frac{15}{18}$$

$$\text{b) } \frac{9}{10} - \frac{2}{3} = \frac{7}{30}$$

$$\frac{27}{30} - \frac{20}{30}$$

$$\text{d) } \frac{7}{8} - \frac{2}{3} = \frac{5}{24}$$

$$\frac{21}{24} - \frac{16}{24}$$

6 Here are four fractions.

$$\frac{5}{12}$$

$$\frac{3}{11}$$

$$\frac{2}{9}$$

$$\frac{7}{15}$$

a) Which two fractions add together to give $\frac{49}{99}$?

$$\frac{3}{11} \text{ and } \frac{2}{9}$$

b) Which two fractions add together to give $\frac{23}{36}$?

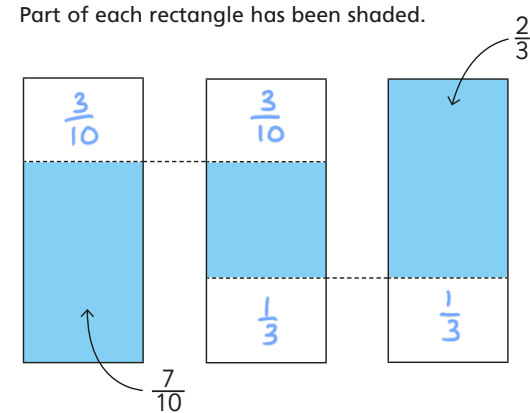
$$\frac{5}{12} \text{ and } \frac{2}{9}$$

7 Work out $1 - \frac{1}{5} - \frac{1}{12}$

$$\frac{60}{60} - \frac{12}{60} - \frac{5}{60}$$

$$\frac{43}{60}$$

8 Here are three identical rectangles.



What fraction of the middle rectangle has been shaded?

$$\frac{3}{10} + \frac{1}{3} = \frac{9}{30} + \frac{10}{30} = \frac{19}{30}$$

$$1 - \frac{19}{30} = \frac{30}{30} - \frac{19}{30} = \frac{11}{30}$$

$$\frac{11}{30}$$

9 How would you work out these calculations without a calculator?

Discuss your methods with a partner.

a) $\frac{14}{91} + \frac{3}{13}$

b) $(\frac{4}{7} - \frac{2}{17}) + (\frac{3}{7} - \frac{38}{51})$

c) $\frac{1}{2} - \frac{1}{3} + \frac{1}{4} - \frac{1}{5} + \frac{1}{6}$