Add and subtract fractions where denominators share a simple common multiple
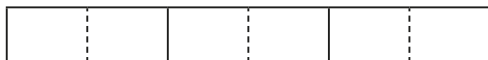
1 Write the lowest common multiple of the pairs of numbers.

a) 3, 9   c) 6, 10   e) 12, 5

b) 6, 9   d) 12, 10   f) 12, 6

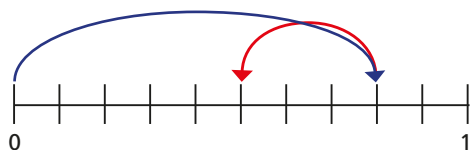**2** a) Use the bar model to show that $\frac{2}{3} + \frac{1}{6} \equiv \frac{4}{6} + \frac{1}{6}$

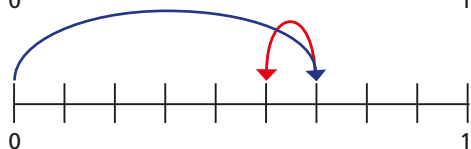What is the answer to $\frac{2}{3} + \frac{1}{6}$?

Using the same bar model, work out the answers to the calculations.

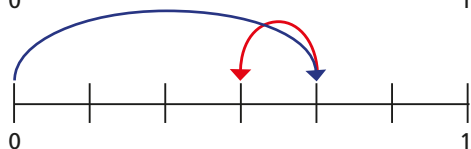b) $\frac{5}{6} - \frac{1}{3}$ c) $\frac{1}{3} + \frac{1}{6}$ d) $\frac{1}{2} + \frac{1}{3}$

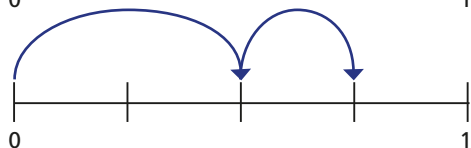**3** Match the number line to the calculation and complete the calculation.

$\frac{1}{2} + \frac{1}{4} = \boxed{}$
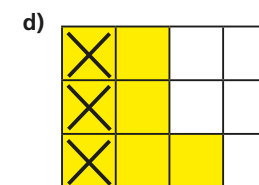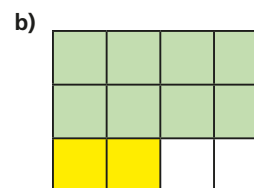
$\frac{2}{3} - \frac{1}{6} = \boxed{}$

$\frac{2}{3} - \frac{1}{9} = \boxed{}$

$\frac{4}{5} - \frac{3}{10} = \boxed{}$

Which answers can be simplified?

4 What fractional calculations are the arrays representing?

Give all fractions in their simplest form.

a)

c)

b)

d)

5 Which calculation is equivalent to $\frac{1}{10} + \frac{1}{15}$?

$\frac{1.5}{15} + \frac{1}{15}$ $\frac{1}{30} + \frac{1}{30}$ $\frac{3}{30} + \frac{2}{30}$ $\frac{3}{10} + \frac{2}{15}$
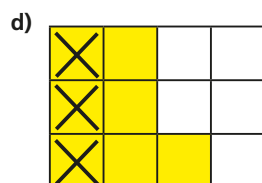
How do you know? Talk to a partner.

6 Work out the calculations using equivalent fractions.

Give your answers in their simplest form.

a) $\frac{1}{6} + \frac{1}{18}$ c) $\frac{2}{3} - \frac{2}{9}$ e) $\frac{9}{20} + \frac{5}{10}$ g) $\frac{7}{10} - \frac{1}{4}$

b) $\frac{5}{9} + \frac{1}{18}$ d) $\frac{20}{21} - \frac{3}{7}$ f) $\frac{4}{9} + \frac{1}{6}$ h) $\frac{4}{15} + \frac{3}{10}$

4 What fractional calculations are the arrays representing?

Give all fractions in their simplest form.

a)

c)

b)

d)

5 Which calculation is equivalent to $\frac{1}{10} + \frac{1}{15}$?

$$\frac{1.5}{15} + \frac{1}{15} \qquad \frac{1}{30} + \frac{1}{30} \qquad \frac{3}{30} + \frac{2}{30} \qquad \frac{3}{10} + \frac{2}{15}$$
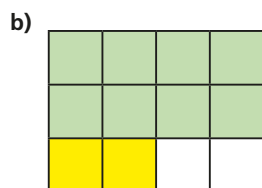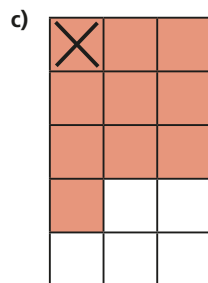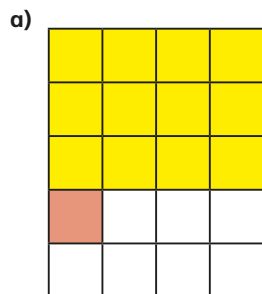
How do you know? Talk to a partner.

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b) $\frac{5}{9} + \frac{1}{18}$ d) $\frac{20}{21} - \frac{3}{7}$ f) $\frac{4}{9} + \frac{1}{6}$ h) $\frac{4}{15} + \frac{3}{10}$

7 Work out the calculations.

Give your answers in their simplest form.

a) $\frac{5}{18} + \frac{1}{36} + \frac{1}{6}$ b) $\frac{11}{12} - \frac{11}{30} - \frac{1}{5}$

8 Solve the equation $x + \frac{2}{3} = \frac{7}{12}$

9 Here are some number cards.

| 3 | 6 | 12 | 15 |

a) What is the smallest positive answer you can make using the cards in these calculations?

You can use each card only once per calculation.

$$\frac{\Box}{20} - \frac{\Box}{30} \qquad\qquad \frac{\Box}{20} + \frac{\Box}{30}$$

b) Where would you put the number cards to make a total of $\frac{1}{5}$?

What about a negative answer?