Add and subtract fractions (2)

1. Amir is using fraction strips to work out $\frac{2}{3} + \frac{1}{4}$.

Amir says he needs to find a common denominator.

a) Complete Amir's method.

\[
\frac{2}{3} = \frac{8}{12} \\
\frac{1}{4} = \frac{3}{12} \\
\frac{2}{3} + \frac{1}{4} = \frac{8}{12} + \frac{3}{12} = \frac{11}{12}
\]

b) Show the addition on the fraction strip.

[Fraction strip diagram]

c) Could you have used a different denominator?

2. What common denominator can you use to add the fractions?

a) $\frac{2}{5} + \frac{1}{2}$  
   Common denominator = 10

b) $\frac{2}{3} + \frac{4}{5}$  
   Common denominator = 15

c) $\frac{7}{8} - \frac{1}{4}$  
   Common denominator = 8

d) $\frac{7}{9} - \frac{1}{6}$  
   Common denominator = 18

e) $\frac{11}{15} + \frac{3}{10}$  
   Common denominator = 30

3. Ron and Eva are working out $\frac{1}{4} + \frac{5}{6}$.

Ron's method

Eva's method

\[
\frac{1}{4} + \frac{5}{6} = \frac{3}{12} + \frac{10}{12} = \frac{13}{12}
\]

\[
\frac{1}{4} + \frac{5}{6} = \frac{6}{24} + \frac{20}{24} = \frac{26}{24}
\]

a) What is the same about Ron's and Eva's methods?

They both found a common denominator.

b) What is different about their methods?

They used a different common denominator.

c) Which method do you prefer? Why?
4. Complete the calculations.
   a) $\frac{1}{5} + \frac{3}{4} = \frac{19}{20}$
   b) $\frac{7}{8} - \frac{1}{3} = \frac{13}{24}$
   c) $\frac{1}{2} - \frac{1}{7} = \frac{5}{14}$
   d) $\frac{11}{18} + \frac{7}{12} = \frac{7}{36}$

5. Mo is drawing jumps on a number line. The jumps are the same size.

   a) What is the size of the jump?
   b) What is the value of A?

6. Complete the bar model.

7. Complete the additions.
   Give your answers as mixed numbers and as improper fractions.
   a) $\frac{4}{5} + \frac{5}{4} = \frac{141}{20} = 2 \frac{11}{20}$
   b) $\frac{2}{3} + \frac{3}{2} = \frac{13}{6} = 2 \frac{1}{6}$
   c) $\frac{9}{8} + \frac{8}{9} = \frac{145}{72} = 2 \frac{1}{72}$
   d) $\frac{6}{13} + \frac{34}{15} = \frac{5}{3} + \frac{3}{5}$

   What patterns do you notice?

8. Look at these additions.
   a) When does this pattern first give an answer greater than 2?
      $\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \frac{1}{6} + \frac{1}{7} + \frac{1}{8} + \frac{1}{9} + \frac{1}{10} + \frac{1}{11}$
   b) Do you think the pattern will ever give an answer greater than 100?