Subtract two fractions

Notes and guidance

In this small step, children subtract two fractions with the same denominator. They should link this to adding fractions with the same denominator, realising that when the denominators are the same, they need to subtract the numerators.

Children start by folding paper and then link this to diagrams and bar models. Encourage children to explore all the different structures of subtraction: taking away, partitioning and difference.

The questions in this step only explore subtracting from proper and improper fractions. Subtraction from whole numbers and mixed numbers are covered later in the block.

Things to look out for

- Children may subtract both the numerators and the denominators, for example $\frac{5}{8} - \frac{3}{8} = \frac{2}{0}$

- When comparing methods, children may not be aware of the different structures of subtraction.

- Children do not need to give answers as mixed numbers, but some may not recognise that an improper fraction can be converted to a mixed number.

Key questions

- Are the denominators the same? Why is this important?

- How could you represent the subtraction in a diagram/bar model?

- How would a number line help you?

- Is your answer greater or smaller than 1? How do you know?

- What is the same when you are adding or subtracting fractions with the same denominator? What is different?

- How would you explain how to subtract fractions to someone who does not understand?

Possible sentence stems

- If the denominators are the same, to subtract the fractions I need to subtract the _____

- _____ minus _____ is equal to _____

National Curriculum links

- Add and subtract fractions with the same denominator

Subtract two fractions

Key learning

- Fold strips of paper into eighths and use them to work out the subtractions.

| $\frac{7}{8} - \frac{1}{8}$ | $\frac{7}{8} - \frac{3}{8}$ | $\frac{6}{8} - \frac{3}{8}$ | $\frac{8}{8} - \frac{5}{8}$ |
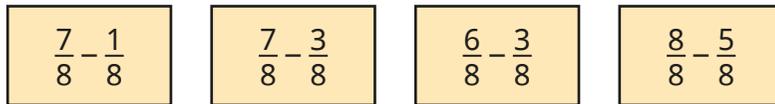
- Filip and Kim use bar models to work out $\frac{8}{9} - \frac{3}{9} = \frac{5}{9}$

Filip   **Kim**

?
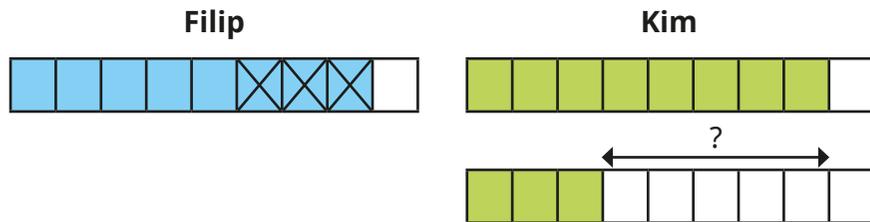
What is the same about their methods? What is different?

- Use bar models to work out the subtractions.

| $\frac{7}{9} - \frac{5}{9}$ | $\frac{9}{9} - \frac{7}{9}$ | $\frac{7}{10} - \frac{6}{10}$ | $\frac{9}{10} - \frac{8}{10}$ |

| $\frac{7}{9} - \frac{4}{9}$ | $\frac{5}{6} - \frac{2}{6}$ | $\frac{6}{6} - \frac{5}{6}$ | $\frac{12}{12} - \frac{10}{12}$ |
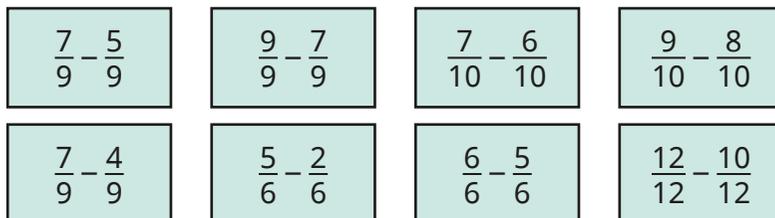
- Use the bar models to complete the calculations.
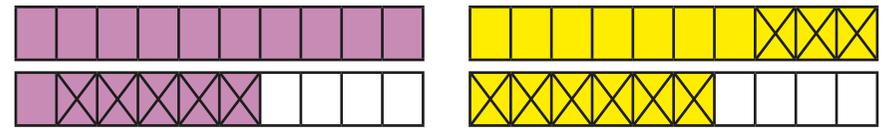
$\frac{16}{10} - \frac{5}{10}$ $\frac{16}{10} - \frac{9}{10}$

What is the same? What is different?

- Annie is using a number line to show that $\frac{7}{6} - \frac{5}{6} = \frac{2}{6}$

I will count back 5 times.
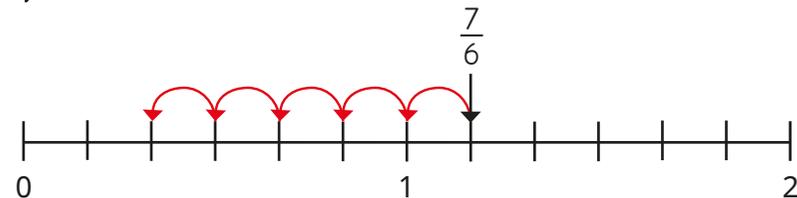
Use Annie's method to work out the subtractions.

| $\frac{7}{6} - \frac{4}{6}$ | $\frac{9}{6} - \frac{5}{6}$ | $\frac{11}{6} - \frac{5}{6}$ | $\frac{11}{6} - \frac{8}{6}$ |
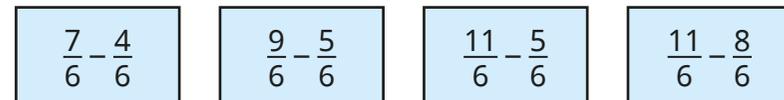
Subtract two fractions

Reasoning and problem solving

Tiny is subtracting fractions.

$$\frac{7}{10} - \frac{4}{10} = 3$$

Do you agree with Tiny?

Explain your answer.

No

Complete the calculations in as many different ways as you can.

$$\frac{\Box}{7} - \frac{3}{7} = \frac{\Box}{7} + \frac{\Box}{7}$$

$$\frac{\Box}{7} - \frac{3}{7} = \frac{\Box}{7} - \frac{\Box}{7}$$

multiple possible answers, e.g.

$$\frac{6}{7} - \frac{3}{7} = \frac{1}{7} + \frac{2}{7}$$

$$\frac{7}{7} - \frac{3}{7} = \frac{6}{7} - \frac{2}{7}$$

Dora and Dexter are working out $\frac{13}{3} - \frac{5}{3}$

My answer is $\frac{8}{3}$

Dora
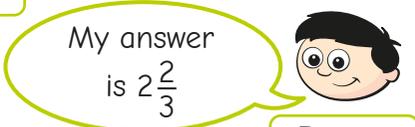
My answer is $2\frac{2}{3}$

Dexter

Who is correct?

How do you know?

Both are correct.

A chocolate bar has been split into 10 equal parts.

Rosie eats $\frac{3}{10}$ of the bar.

Dexter eats $\frac{1}{10}$ of the bar more than Rosie.

What fraction of the chocolate bar is left?

$\frac{3}{10}$