

Subtract from mixed numbers

Notes and guidance

In this small step, children subtract from mixed numbers. This step only covers subtracting a whole or a fraction from a mixed number; this will be developed in more detail and extended to subtracting mixed numbers from mixed numbers in Year 5

Children are introduced to these subtractions using bar models and number lines. Firstly, they explore what happens when they subtract a whole number from a mixed number, and then a fraction that does not cross a whole from a mixed number. Once this is secure, children complete subtractions that cross a whole number, exploring different methods.

Things to look out for

- When subtracting a whole number from a mixed number, children may subtract a fraction instead, for example $3\frac{4}{7} - 1 = 3\frac{3}{7}$
- Children may think they cannot complete a subtraction if the fraction they are subtracting is greater than the fractional part of the mixed number, for example $3\frac{1}{3} - \frac{2}{3}$

Key questions

- How is subtracting from a mixed number different from subtracting from wholes or fractions? How is it the same?
- How can you show the subtraction as a bar model? Will you subtract whole bars or parts of bars?
- How can you show the subtraction on a number line?
- How can you partition the mixed number/fraction to help you solve the calculation?
- If you subtracted back to the previous whole number, why would this help?

Possible sentence stems

- If the denominators are the same, to subtract the fractions I need to subtract the _____
- I can partition _____ into _____ and _____
- When I subtract a whole number from a mixed number, the _____ stays the same.

National Curriculum links

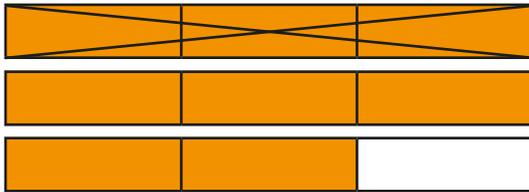
- Add and subtract fractions with the same denominator

Subtract from mixed numbers

Key learning

- Aisha uses a bar model to show that $2\frac{2}{3} - 1 = 1\frac{2}{3}$

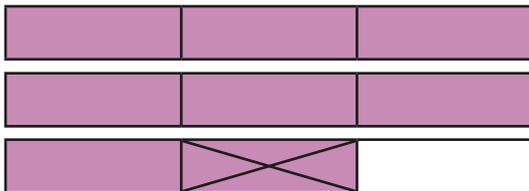
What do you notice?



Use Aisha's method to work out the subtractions.

$3\frac{2}{3} - 2$	$2\frac{4}{5} - 1$	$5\frac{3}{10} - 3$	$4\frac{6}{7} - 4$
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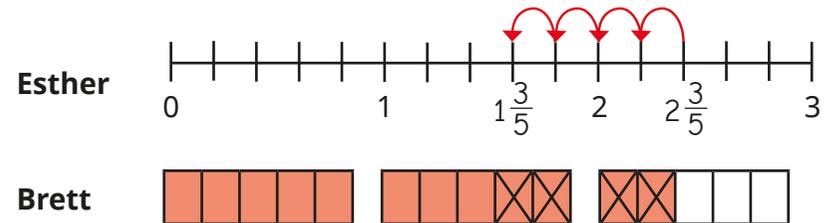
- Ron uses a bar model to show that $2\frac{2}{3} - \frac{1}{3} = 2\frac{1}{3}$



Use Ron's method to work out the subtractions.

$3\frac{4}{5} - \frac{1}{5}$	$3\frac{4}{5} - \frac{3}{5}$	$2\frac{7}{10} - \frac{3}{10}$	$3\frac{9}{10} - \frac{9}{10}$
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- Esther and Brett are working out $2\frac{2}{5} - \frac{4}{5} = 1\frac{3}{5}$

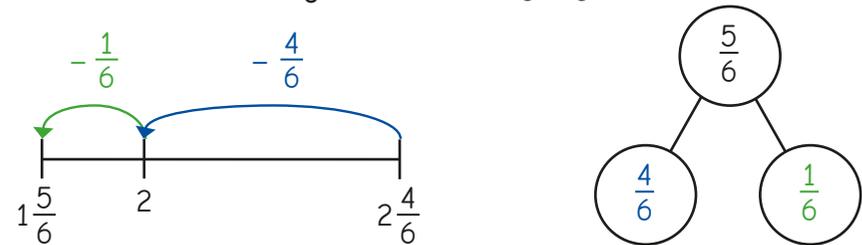


What is the same about the methods? What is different?

Use your preferred method to work out the subtractions.

$2\frac{1}{5} - \frac{4}{5}$	$3\frac{2}{5} - \frac{3}{5}$	$2\frac{1}{6} - \frac{5}{6}$	$3\frac{4}{7} - \frac{6}{7}$
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- Jack has partitioned $\frac{5}{6}$ to work out $2\frac{4}{6} - \frac{5}{6}$



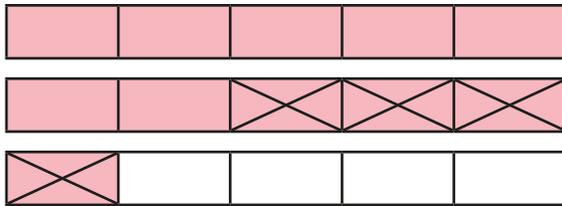
Use Jack's method to work out the subtractions.

$3\frac{2}{7} - \frac{5}{7}$	$2\frac{3}{5} - \frac{4}{5}$	$5\frac{3}{10} - \frac{7}{10}$
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Subtract from mixed numbers

Reasoning and problem solving

What subtraction does the bar model show?



$$2\frac{1}{5} - \frac{4}{5} = 1\frac{2}{5}$$

How do you know?



A piece of ribbon is $3\frac{1}{4}$ m long.



Tom and Alex cut off $\frac{3}{4}$ m of ribbon each.

Nijah needs 2 m of ribbon to complete an art project.

Is there enough ribbon left for Nijah?

Explain your answer.

No



Tiny is working out $7\frac{1}{4} - \frac{3}{4}$



I cannot complete this because $\frac{1}{4}$ is less than $\frac{3}{4}$

No

Do you agree with Tiny?

Explain your answer.



Use the digit cards to complete the calculation.



$$3\frac{4}{7} - \frac{5}{7} = 2\frac{6}{7}$$

You may use each card only once.

$$\square \frac{\square}{7} - \frac{\square}{7} = 2 \frac{\square}{\square}$$