

Fractions

Ready to Progress

Strand	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
F			<u>3F-1</u> Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.			<u>6F-1</u> Recognise when fractions can be simplified, and use common factors to simplify fractions.
			<u>3F-2</u> Find unit fractions of quantities using known division facts (multiplication tables fluency). →		<u>5F-1</u> Find non-unit fractions of quantities.	<u>6F-2</u> Express fractions in a common denominator and use this to compare fractions that are similar in value.
			<u>3F-3</u> Reason about the location of any fraction within 1 in the linear number system. →	<u>4F-1</u> Reason about the location of mixed numbers in the linear number system.		<u>6F-3</u> Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denominator as a comparison strategy.
				<u>4F-2</u> Convert mixed numbers to improper fractions and vice versa.	<u>5F-2</u> Find equivalent fractions and understand that they have the same value and the same position in the linear number system.	
			<u>3F-4</u> Add and subtract fractions with the same denominator, within 1. →	<u>4F-3</u> Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.	<u>5F-3</u> Recall decimal fraction equivalents for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$, and for multiples of these proper fractions.	

Example Assessment Questions

Taken from DFE Maths Guidance 2020

Compiled by Michelle Knott (ECM Trust & South Yorkshire Maths Hub)

Fractions

3F-1

6F-1

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<u>3F-1</u> Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.			<u>6F-1</u> Recognise when fractions can be simplified, and use common factors to simplify fractions.

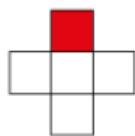
Year 3 – Fractions

Ready to Progress Criterion:

3F–1 Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.

3F–1 Example assessment questions

1. What fraction of each diagram is shaded?



2. Does each diagram show the given fraction? Explain your answers.



Is $\frac{1}{2}$ shaded?



Is $\frac{1}{3}$ shaded?



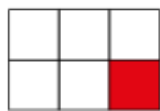
Is $\frac{1}{2}$ shaded?



Is $\frac{1}{4}$ shaded?



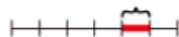
Is $\frac{1}{3}$ shaded?



Is $\frac{1}{5}$ shaded?



Is $\frac{1}{8}$ shaded?



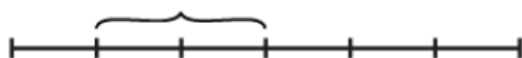
Is $\frac{1}{6}$ shaded?

3. What fraction of each diagram is shaded/highlighted?

a.



b.



c.



4. Tick or cross each diagram to show whether $\frac{3}{5}$ is shaded. Explain your answers.



Year 3 – Fractions (Continued)

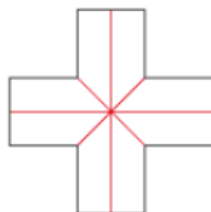
Ready to Progress Criterion:

3F–1 Interpret and write proper fractions to represent 1 or several parts of a whole that is divided into equal parts.

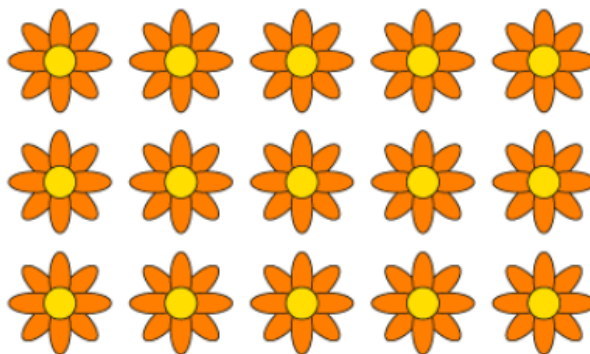
5. a. Shade $\frac{1}{10}$ of this set.



b. Shade $\frac{3}{4}$ of this shape.



c. Circle $\frac{4}{5}$ of the flowers.



d. Colour $\frac{1}{3}$ of the line.



Year 6 – Fractions

Ready to Progress Criterion:

6F–1 Recognise when fractions can be simplified, and use common factors to simplify fractions.

6F–1 Example assessment questions

1. Sort these fractions according to whether they are expressed in their simplest form or not.

$$\frac{3}{15} \quad \frac{2}{5} \quad \frac{4}{20} \quad \frac{25}{36} \quad \frac{1}{6} \quad \frac{7}{21} \quad \frac{18}{30} \quad \frac{9}{17} \quad \frac{5}{15} \quad \frac{11}{20} \quad \frac{23}{30}$$

Fraction in its simplest form	Fraction <u>not</u> in its simplest form

2. Solve these calculations, giving each answer in the simplest form.

$$\frac{2}{9} + \frac{4}{9}$$

$$\frac{3}{7} - \frac{1}{7}$$

$$\frac{4}{15} + \frac{2}{15}$$

$$\frac{5}{12} + \frac{5}{12} - \frac{2}{12}$$

$$\frac{2}{13} + \frac{7}{13} - \frac{4}{13}$$

$$\frac{4}{5} + \frac{4}{5}$$

$$\frac{7}{10} + \frac{5}{10} + \frac{3}{10}$$

$$\frac{8}{9} + \frac{8}{9} - \frac{1}{9}$$

$$3\frac{7}{10} + 2\frac{9}{10}$$

$$\frac{13}{8} + \frac{11}{8}$$

$$7\frac{1}{6} - 1\frac{2}{6}$$

$$\frac{17}{3} - \frac{5}{3}$$

3. Ahmed says, “To simplify a fraction, you just halve the numerator and halve the denominator.” Is Ahmed’s statement always true, sometimes true or never true? Explain your answer.
4. Put these numbers in order from smallest to largest by simplifying them to unit fractions.

$$\frac{3}{18}$$

$$\frac{5}{20}$$

$$\frac{4}{8}$$

$$\frac{2}{18}$$

$$\frac{4}{12}$$

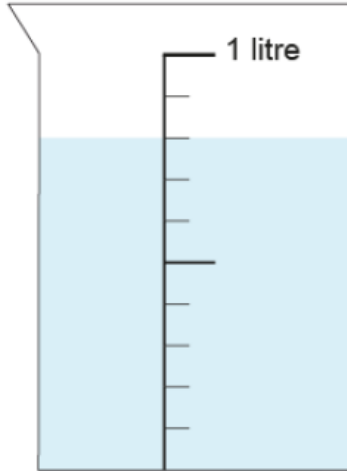
$$\frac{6}{60}$$

Year 6 – Fractions (continued)

Ready to Progress Criterion:

6F–1 Recognise when fractions can be simplified, and use common factors to simplify fractions.

5. How much water is in this beaker? Write your answer as a fraction of a litre in its simplest form.



Fractions

3F-2

5F-1

6F-2

		<u>3F-2</u> Find unit fractions of quantities using known division facts (multiplication tables fluency). →		<u>5F-1</u> Find non-unit fractions of quantities.	<u>6F-2</u> Express fractions in a common denomination and use this to compare fractions that are similar in value.
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Year 3 – Fractions

Ready to Progress Criterion:

3F–2 Find unit fractions of quantities using known division facts (multiplication tables fluency).

3F–2 Example assessment questions

1. Rohan saved £32. He spends $\frac{1}{4}$ of his money on a toy. How much does he spend?
2. Find:
 - a. $\frac{1}{5}$ of 35
 - b. $\frac{1}{10}$ of 40
 - c. $\frac{1}{8}$ of 24
3. The school caretaker buys 50 litres of paint. She uses $\frac{1}{5}$ of it to paint the year 3 classroom. How many litres of paint is this?
4. There are 16 apples in a fruit bowl. Some children eat $\frac{1}{4}$ of the apples. How many are left?

Year 5 – Fractions

Ready to Progress Criterion:

5F–1 Find non-unit fractions of quantities.

5F–1 Example assessment questions

1. Find:

$\frac{3}{8}$ of 32

$\frac{2}{9}$ of 45

$\frac{3}{5}$ of 30

$\frac{2}{7}$ of 630

$\frac{4}{9}$ of 315

$\frac{2}{5}$ of 3,500

$\frac{5}{8}$ of 2,720

2. Stan bought 15 litres of paint and used $\frac{2}{3}$ of it decorating his house. How much paint has he used?
3. My granny lives 120km from us. We are driving to see her and are $\frac{5}{6}$ of the way there. How far have we driven so far?
4. I am $\frac{3}{4}$ of the way through my holiday. I have 3 days of holiday left. How many days have I already been on holiday for?
5. A school is trying to raise £7,500 for charity. They have raised $\frac{5}{6}$ of the total so far. How much have they raised?
6. $\frac{4}{5}$ of the runners in a race have finished the race so far. If 92 people have finished, how many runners were in the race altogether?
7. There are 315 cows on a farm. $\frac{3}{5}$ of the cows are having calves this year. How many cows are not having calves?

Year 6 – Fractions

Ready to Progress Criterion:

6F–2 Express fractions in a common denominator and use this to compare fractions that are similar in value.

6F–2 Example assessment questions

1. Fill in the missing symbols (<, > or =). You will need to simplify some of the fractions and express each pair with a common denominator.

$$\frac{5}{7} \bigcirc \frac{2}{3}$$

$$\frac{6}{10} \bigcirc \frac{3}{5}$$

$$\frac{7}{9} \bigcirc \frac{3}{4}$$

$$\frac{5}{7} \bigcirc \frac{6}{8}$$

$$\frac{2}{3} \bigcirc \frac{7}{10}$$

$$\frac{2}{6} \bigcirc \frac{3}{9}$$

$$\frac{3}{11} \bigcirc \frac{1}{3}$$

$$\frac{1}{5} \bigcirc \frac{2}{11}$$

2. Express each set of fractions with a common denominator. Then put them in order from smallest to largest.

a. $\frac{4}{20}$ $\frac{1}{4}$ $\frac{3}{10}$ $\frac{2}{5}$

b. $\frac{2}{9}$ $\frac{1}{3}$ $\frac{1}{6}$ $\frac{4}{18}$

3. Ahmed has a beaker containing $\frac{7}{10}$ of a litre of water. Imran has a beaker containing $\frac{3}{5}$ of a litre of water. Express the fractions with a common denominator to work out whose beaker contains the most water.
4. Ben and Felicity are both trying to raise the same amount of money for charity. So far, Ben has raised $\frac{3}{4}$ of the amount, while Felicity has raised $\frac{5}{7}$ of the amount. Express the fractions with a common denominator to work out who is closest to meeting their target.

Fractions

3F-3

4F-1

6F-3

		<u>3F-3</u> Reason about the location of any fraction within 1 in the linear number system.	→	<u>4F-1</u> Reason about the location of mixed numbers in the linear number system.		<u>6F-3</u> Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.
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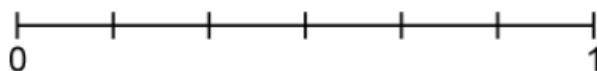
Year 3 – Fractions

Ready to Progress Criterion:

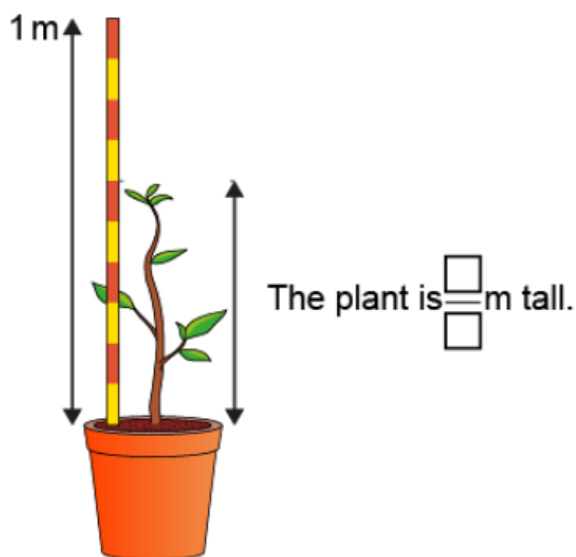
3F–3 Reason about the location of any fraction within 1 in the linear number system.

3F–3 Example assessment questions

1. Label the points on this number line.



2. How tall is this plant? Give your answer as a fraction of a metre.



3. a. Which is larger, $\frac{6}{8}$ or $\frac{3}{8}$? Explain your answer.

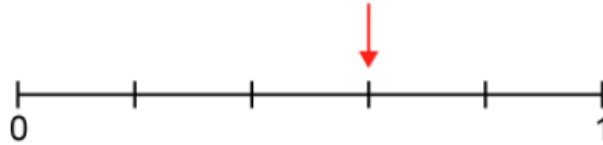
- b. Which is larger, $\frac{1}{4}$ or $\frac{1}{3}$? Explain your answer.

Year 3 – Fractions (continued)

Ready to Progress Criterion:

3F–3 Reason about the location of any fraction within 1 in the linear number system.

4. Gemma and Kasper look at this number line.

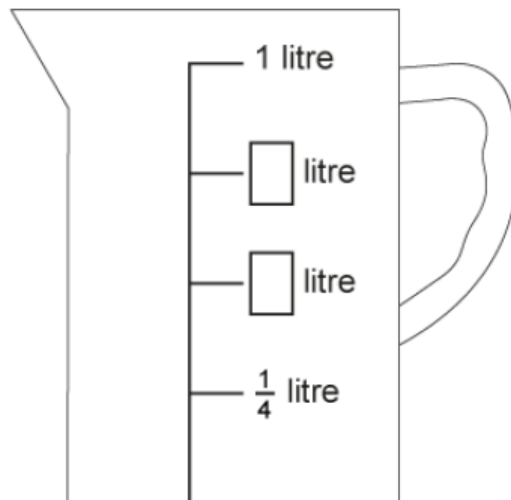


Gemma says the arrow is pointing to the number $\frac{3}{4}$.

Kasper says the arrow is pointing to the number $\frac{3}{5}$.

Who is correct? Explain your answer.

5. Add the missing labels to the measuring jug.



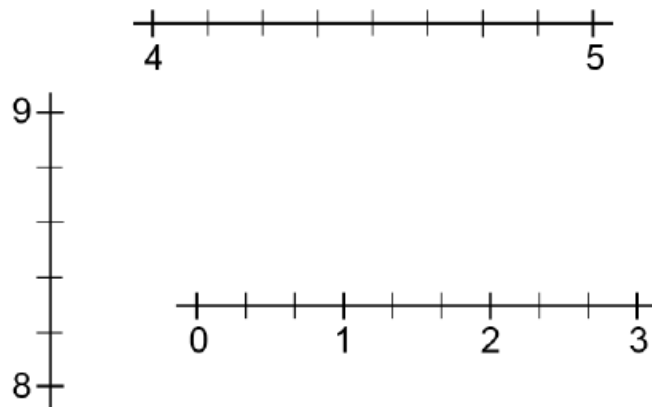
Year 4 – Fractions

Ready to Progress Criterion:

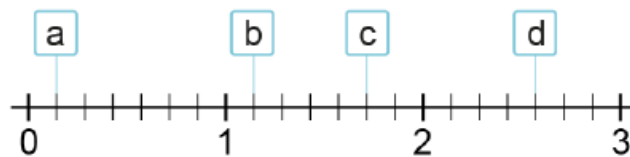
4F–1 Reason about the location of mixed numbers in the linear number system.

4F–1 Example assessment questions

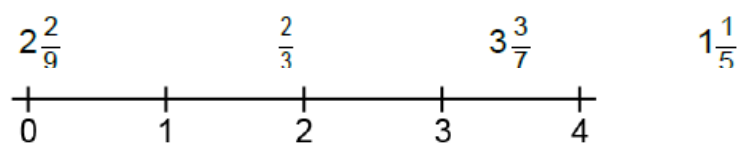
1. Add labels to each mark on the number lines.



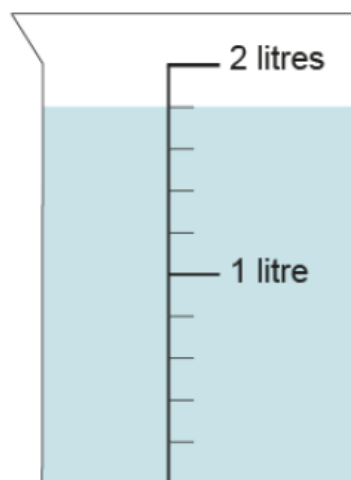
2. What are the values of a, b, c and d?



3. Estimate the position of the following numbers on the number line.



4. How much water is in the beaker? Write your answer as a mixed number.



Year 4 – Fractions (continued)

Ready to Progress Criterion:

4F–1 Reason about the location of mixed numbers in the linear number system.

5. Circle the larger number in each of these pairs. Explain your reasoning.

$3\frac{3}{9} \quad 3\frac{8}{9}$

$4\frac{1}{3} \quad 4\frac{1}{8}$

$2\frac{1}{3} \quad 1\frac{2}{3}$

Year 6 – Fractions

Ready to Progress Criterion:

6F–3 Compare fractions with different denominators, including fractions greater than 1, using reasoning, and choose between reasoning and common denomination as a comparison strategy.

6F–3 Example assessment questions

1. Which number(s) could go in the missing-number box to make this statement true?

$$\frac{1}{4} > \frac{1}{\square} > \frac{1}{10}$$

2. Without using a common denominator, put each set of fractions in order from smallest to largest.

a. $\frac{10}{8}$ $\frac{7}{8}$ $\frac{5}{8}$ $\frac{3}{8}$ $\frac{8}{8}$ $\frac{4}{8}$ $\frac{2}{8}$

b. $\frac{1}{6}$ $\frac{1}{5}$ $\frac{1}{8}$ $\frac{1}{7}$ $\frac{1}{10}$ $\frac{1}{9}$

c. $\frac{3}{3}$ $\frac{3}{8}$ $\frac{3}{11}$ $\frac{3}{100}$ $\frac{3}{5}$ $\frac{3}{2}$

3. Sabijah and Will are in a running race. Sabijah has run $\frac{9}{10}$ of the race. Will has run $\frac{8}{9}$ of the race. Who is further ahead? Explain your reasoning.

4. Fill in the missing symbols (<, > or =).

$$\frac{5}{6} \bigcirc \frac{4}{7}$$

$$\frac{8}{9} \bigcirc \frac{7}{11}$$

5. Think of a number that can go in each box so that the fractions are arranged in order from smallest to largest.

$$\frac{1}{3} \quad \frac{\square}{5} \quad \frac{1}{\square} \quad \frac{4}{7} \quad \frac{3}{\square}$$

Fractions

4F-2

5F-2

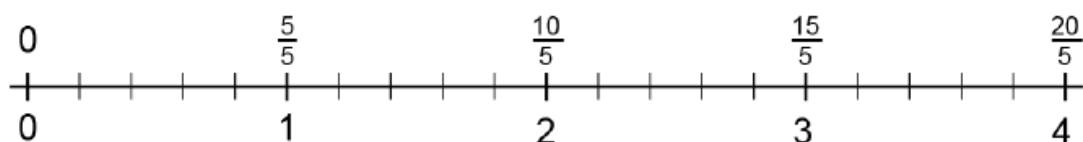
			<u>4F-2</u> Convert mixed numbers to improper fractions and vice versa.	<u>5F-2</u> Find equivalent fractions and understand that they have the same value and the same position in the linear number system.	
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Year 4 – Fractions

Ready to Progress Criterion:

4F–2 Convert mixed numbers to improper fractions and vice versa.

It should be noted that this criterion covers content that is in year 5 of the national curriculum. It has been included here, in year 4, to improve coherence. Pupils have already learnt that fractions where the numerator is equal to the denominator have a value of 1. This knowledge should be extended to other integers. For example, if we know that $\frac{5}{5} = 1$, we can repeat groups of $\frac{5}{5}$ to see that $\frac{10}{5} = 2$ and $\frac{15}{5} = 3$ and so on.



4F–2 Example assessment questions

1. Which of these fractions are equivalent to a whole number? Explain how you know.

$$\frac{48}{6}$$

$$\frac{48}{7}$$

$$\frac{48}{8}$$

$$\frac{48}{9}$$

$$\frac{48}{10}$$

2. Express the following mixed numbers as improper fractions.

$$4\frac{1}{8}$$

$$6\frac{4}{9}$$

$$3\frac{11}{12}$$

$$8\frac{2}{3}$$

3. Express the following improper fractions as mixed numbers.

$$\frac{17}{2}$$

$$\frac{13}{6}$$

$$\frac{28}{10}$$

$$\frac{41}{7}$$

4. Sarah wants to convert $\frac{17}{4}$ to a mixed number. She writes:

$$\frac{17}{4} = 3\frac{5}{4}$$

Explain what mistake Sarah has made, and write the correct answer.

5. The school kitchen has 17 packs of butter. Each pack weighs $\frac{1}{4}$ kg. How many kilograms of butter do they have altogether? Express your answer as a mixed number.
6. I have a $6\frac{1}{2}$ m length of string. How many $\frac{1}{2}$ m lengths can I cut?

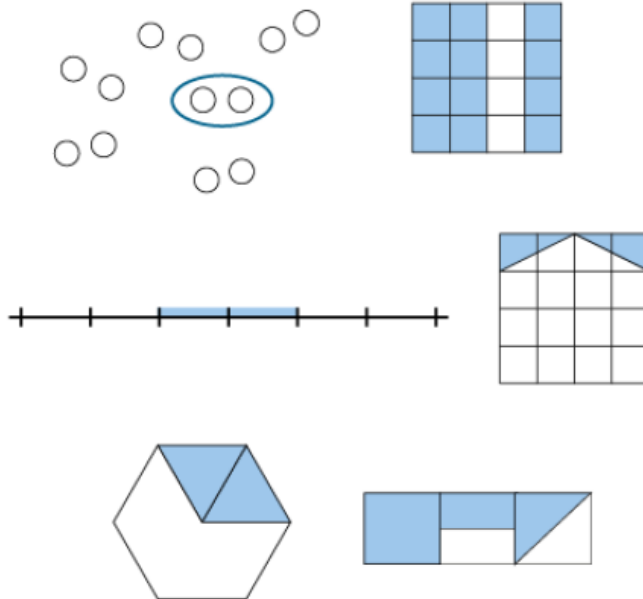
Year 5 – Fractions

Ready to Progress Criterion:

5F–2 Find equivalent fractions and understand that they have the same value and the same position in the linear number system.

5F–2 Example assessment questions

1. Find different ways to write the fraction of each shape or quantity that is shaded or highlighted.



2. Draw lines to match the unit fractions on the left with their equivalent fractions on the right.

$$\frac{1}{5}$$

$$\frac{3}{12}$$

$$\frac{1}{4}$$

$$\frac{4}{20}$$

$$\frac{1}{3}$$

$$\frac{3}{9}$$

Year 5 – Fractions (continued)

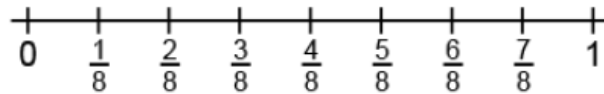
Ready to Progress Criterion:

5F–2 Find equivalent fractions and understand that they have the same value and the same position in the linear number system.

3. Mark each fraction on the number line.

$$\frac{9}{24} \quad \frac{36}{48} \quad \frac{12}{16} \quad \frac{10}{40} \quad \frac{9}{72}$$

Hint: convert each fraction to an equivalent fraction with a denominator of 8.



4. Use the numbers 3, 24, 8 and 1 to complete this chain of equivalent fractions.

$$\frac{2}{6} = \frac{\square}{\square} = \frac{\square}{\square}$$

5. Fill in the missing digits.

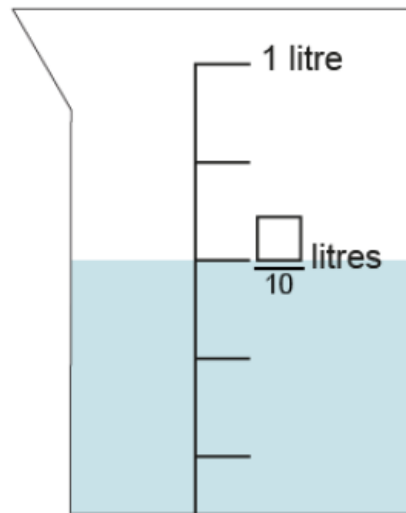
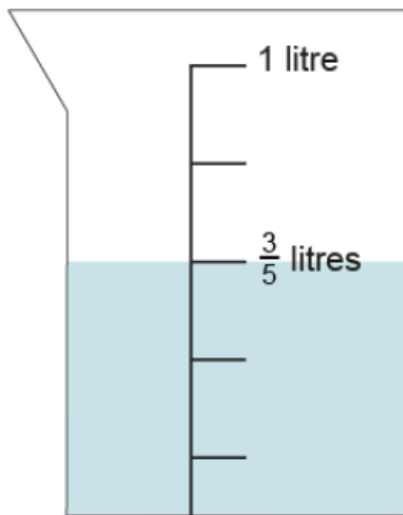
$$\frac{4}{8} = \frac{12}{\square}$$

$$\frac{3}{5} = \frac{\square}{40}$$

$$\frac{3}{\square} = \frac{21}{63}$$

$$\frac{20}{30} = \frac{\square}{15}$$

6. Fill in the missing number.



7. Sally and Tahira each have a 1m ribbon.

Sally cuts her ribbon into 5 equal parts and uses 1 of them to make a hair tie.

Tahira cuts her ribbon into 10 equal parts and uses 3 of them to make a bracelet.

Have Sally and Tahira used the same amount of ribbon? Explain your answer.

Fractions

3F-4

4F-3

5F-3

		<u>3F-4</u> Add and subtract fractions with the same denominator, within 1. →	<u>4F-3</u> Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.	<u>5F-3</u> Recall decimal fraction equivalents for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$, and for multiples of these proper fractions.	
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Year 3 – Fractions

Ready to Progress Criterion:

3F–4 Add and subtract fractions with the same denominator, within 1.

3F–4 Example assessment questions

1. Complete the calculations.

$$\frac{5}{9} + \frac{1}{9} = \frac{\boxed{}}{\boxed{}}$$

$$\frac{6}{8} - \frac{2}{8} = \frac{\boxed{}}{\boxed{}}$$

$$\frac{5}{12} + \frac{3}{12} = \frac{\boxed{}}{\boxed{}}$$

$$\frac{9}{11} - \frac{6}{11} = \frac{\boxed{}}{\boxed{}}$$

$$\frac{5}{14} + \frac{7}{14} = \frac{\boxed{}}{\boxed{}}$$

$$\frac{9}{10} - 0 = \frac{\boxed{}}{\boxed{}}$$

2. Diego writes:

$$\frac{3}{12} + \frac{5}{12} = \frac{8}{12}$$

Mark writes:

$$\frac{3}{12} + \frac{5}{12} = \frac{8}{24}$$

Who is correct? Explain the mistake that has been made.

3. Decide whether each calculation is correct or not. Explain your answers.

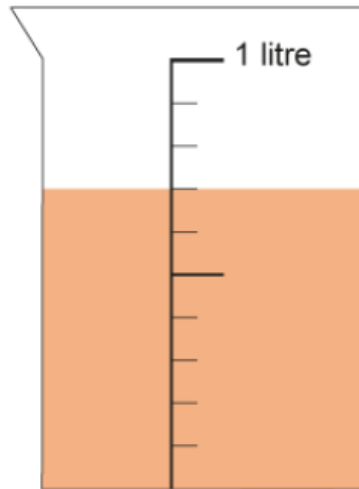
	Correct (✓) or incorrect (✗)?	Explanation
$\frac{7}{12} - \frac{2}{12} = \frac{5}{12}$		
$\frac{4}{7} - \frac{2}{7} = \frac{2}{0}$		
$\frac{8}{10} - \frac{2}{10} - \frac{1}{10} = \frac{3}{10}$		
$\frac{7}{9} - \frac{7}{9} = 0$		
$\frac{5}{8} - \frac{2}{8} - \frac{2}{8} = \frac{1}{8}$		

Year 3 – Fractions (continued)

Ready to Progress Criterion:

3F–4 Add and subtract fractions with the same denominator, within 1.

4. Sofia had a jug containing $\frac{7}{10}$ of a litre of juice. She drank $\frac{4}{10}$ of a litre. How much does she have left?



Year 4 – Fractions

Ready to Progress Criterion:

4F–3 Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.

4F–3 Example assessment questions

1. It is a $2\frac{3}{4}$ km cycle ride to my friend's house, and a further $\frac{3}{4}$ km ride to the park. How far do I have to cycle altogether?
2. I have 5m of rope. I cut off $\frac{4}{10}$ m. How much rope is left?
3. Fill in the missing numbers.

$2\frac{1}{7}$	$2\frac{4}{7}$			$3\frac{6}{7}$	
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4. The table below shows the number of hours Josie read each day during a school week. For how long did Josie read altogether?

Mon	Tues	Wed	Thurs	Fri
$1\frac{3}{4}$ hours	1 hour	$1\frac{1}{4}$ hours	$1\frac{1}{4}$ hours	$2\frac{3}{4}$ hours

5. A tailor has $3\frac{7}{10}$ m of ribbon. She uses $1\frac{9}{10}$ m to complete a dress. How much ribbon is left?

Year 5 – Fractions

Ready to Progress Criterion:

5F–3 Recall decimal fraction equivalents for $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{10}$ and for multiples of these proper fractions.

5F–3 Example assessment questions

1. Fill in the missing symbols (<, > or =).

$$\frac{1}{10} \bigcirc 0.75$$

$$0.4 \bigcirc \frac{1}{4}$$

$$0.5 \bigcirc \frac{1}{5}$$

$$\frac{3}{4} \bigcirc 0.75$$

$$0.8 \bigcirc \frac{4}{5}$$

$$\frac{1}{2} \bigcirc 0.2$$

2. Write these measurements as mixed numbers.

1.2km

5.75m

25.5kg

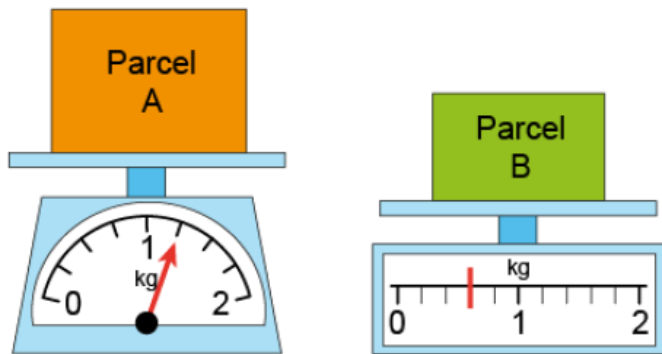
3. Write these measurements as decimals.

$1\frac{1}{4}$ litres

$10\frac{1}{2}$ cm

$4\frac{4}{5}$ m

4. My brother weighs 27.3kg. I weigh $27\frac{1}{2}$ kg. How much more than my brother do I weigh?
5. Year 6 set off on a $2\frac{3}{4}$ km woodland walk. By lunch, they had walked 1.75km. How much further do they need to walk?
6. Here are two parcels:



What is the total combined weight of the parcels, in kilograms?

7. Put each set of numbers in order from smallest to greatest.

a. 1.4 $4\frac{1}{4}$ 4.1 4.4

b. $3\frac{1}{5}$ 3.5 $1\frac{3}{5}$ 1.3