Updated December 2017

Year 6

Small Steps Guidance and Examples

Block 3 – Fractions

White Rose Maths

Simplify Fractions

Notes and Guidance

Children build on their knowledge of factors to help them simplify fractions.

They must choose which method is most efficient.

Is it identifying if the denominator is a multiple of the numerator, or is it finding a highest common factor?

Mathematical Talk

In order to make a simpler fraction, which direction do you move on the fraction wall? Up or down?

Is the most efficient method dividing by two? Explain your reasoning.

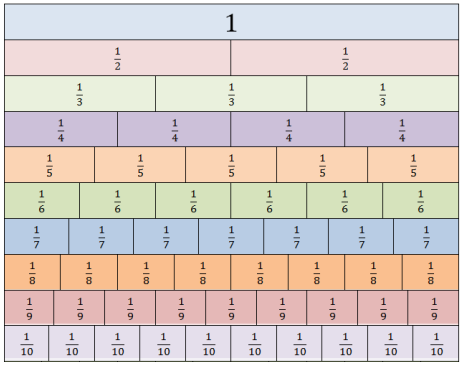
What is the highest common factor of the numerator and the denominator? How does this help you when simplifying?

Varied Fluency

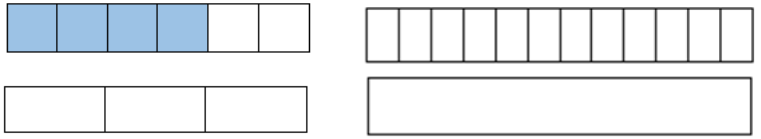
1 Use the fraction wall to simplify: $\frac{2}{8}$, $\frac{3}{9}$ and $\frac{4}{10}$

Which direction did you move on the fraction wall?

What have the numerator and denominator been divided by?



2 Use the bar models to simplify the fractions.
Make sure your bar model has fewer equal parts than the original fraction.



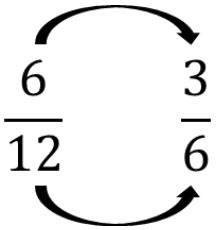
$\frac{4}{6} = \frac{\square}{3}$

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

Simplify Fractions

Reasoning and Problem Solving

Sam has simplified $\frac{6}{12}$



What method has he used?

Is this the most efficient method?
Explain your answer.

This is not the best method because it isn't in the simplest form. He should have noticed that 12 is a multiple of 6 and divided by 6

Hassan thinks that $\frac{2}{5}$ in its simplest terms is $\frac{1}{2.5}$

Do you agree? Convince me.

No because $\frac{2}{5}$ is simplified as it has two prime numbers and you don't have decimal numbers in a fraction.

Always, sometimes, never?

To simplify a fraction you divide by 2 until you can't divide by 2 anymore.

It is sometimes true.

This works for fractions like $\frac{4}{8}$ but it doesn't work for fraction like $\frac{6}{12}$ because you can't divide by 2 when you get to $\frac{3}{6}$ so you have to find another common factor.

Fractions on a Number Line

Notes and Guidance

Children use their knowledge of equivalent fractions and ordering fractions to place fractions on a number line.

They can draw their own divisions to help them place the fractions more accurately.

Mathematical Talk

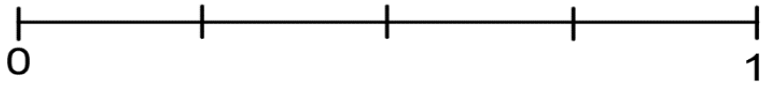
How are the number lines similar and different?

Are there any other fractions we can place on the number line? Which fractions can't be placed on the number line?

Which method have you used to help you place improper fractions on a number line?

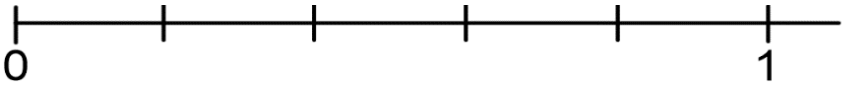
Varied Fluency

1 On the number line place $\frac{2}{8}$, $\frac{4}{8}$, $\frac{1}{8}$, $\frac{4}{4}$, $\frac{7}{8}$, $\frac{3}{16}$



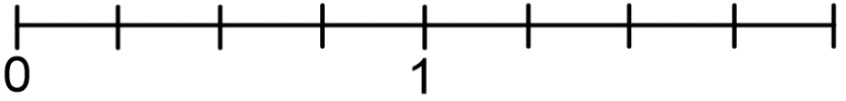
Which other fractions, with different denominators can be placed on the number line?

2 On the number line place: $\frac{2}{5}$, $\frac{3}{10}$, $\frac{6}{15}$, $\frac{10}{15}$, $\frac{4}{5}$



3 What other fractions can you place on the number line?

On the number line place: $\frac{10}{20}$, $\frac{1}{4}$, $\frac{6}{4}$, $1\frac{3}{8}$, $\frac{15}{8}$, $1\frac{7}{8}$



Fractions on a Number Line

Reasoning and Problem Solving

What would you split your number line into to plot the following fractions?

$$\frac{1}{3}, \frac{11}{12}, \frac{5}{6}$$

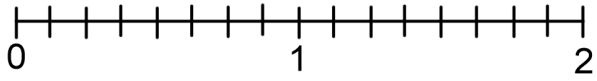
Explain your answer.

Is this the only answer?

You can split the number line into twelfths because you would be able to plot all three fractions on this.

You could also split it into any multiple of 12

How many ways can you show a difference of one quarter on the number line?



Various answers available.

Some examples:

$\frac{1}{4}$ and $\frac{2}{4}$

$\frac{3}{8}$ and $\frac{5}{8}$

$\frac{7}{8}$ and $1\frac{1}{8}$

$1\frac{3}{4}$ and 2

Compare & Order (denominator)

Notes and Guidance

Children build on their equivalent fraction and common multiple knowledge to compare and order fractions where the denominators are not always multiples of the same number.

Mathematical Talk

What has happened to the original fractions?

What do you notice about the original denominators and the new denominator?
Explain what has happened.

What do you notice?
How did you find a common denominator?
What else could the common denominator be?

Varied Fluency

1 Use the bar models to show $\frac{1}{4}$ and $\frac{2}{3}$ then complete the sentences.

□ is larger than □

□ is smaller than □

□ < □

2 Complete the circles using <, > or =

$\frac{3}{5}$ ◯ $\frac{4}{7}$ $\frac{2}{6}$ ◯ $\frac{1}{4}$ $2\frac{1}{5}$ ◯ $2\frac{3}{8}$

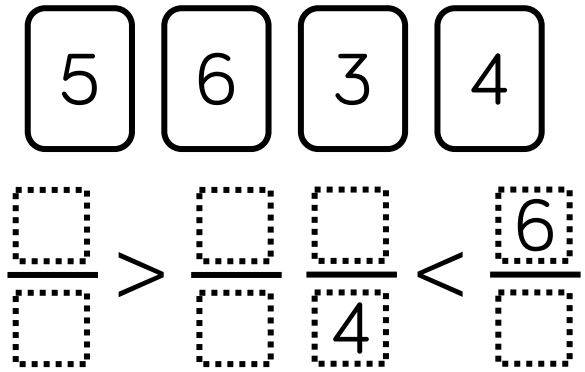
$\frac{7}{8}$ ◯ $\frac{4}{6}$ ◯ $\frac{3}{4}$

3 Jen read $\frac{3}{4}$ of her book, Emma read $\frac{3}{10}$ of her book and Amy had read $\frac{4}{5}$ of her book.
Put them in order starting with the person who read the most of their book.

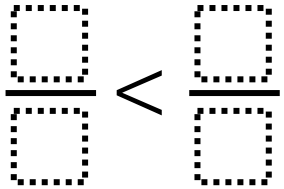
Compare & Order (denominator)

Reasoning and Problem Solving

Use the digit cards to complete the statements below:



Find three examples of ways you could complete the statement:



Can one of your ways include an improper fraction?

Multiple answers.

E.g. $\frac{4}{6} > \frac{3}{5}$ for the first one, and $\frac{3}{5} < \frac{6}{4}$ for the second one.

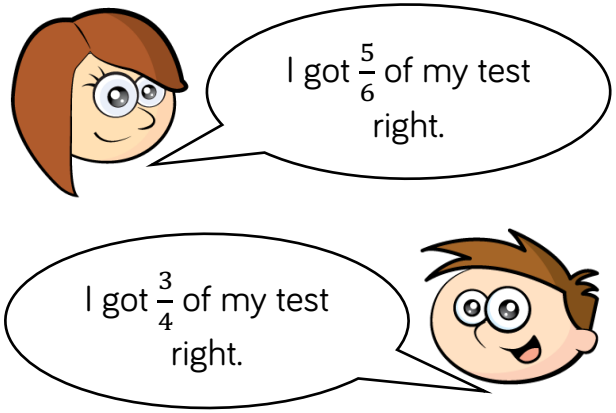
$\frac{3}{5} < \frac{6}{4}$

$\frac{3}{4} < \frac{6}{5}$

$\frac{4}{5} < \frac{6}{3}$

More answers available.

Ellie and Josh sat the same maths test.



Who did better on the test?

Explain how you know.

Ellie did better because $\frac{5}{6}$ is greater than $\frac{3}{4}$

Compare & Order (numerator)

Notes and Guidance

To build on finding common denominators, children explore how finding a common numerator can be effective too.

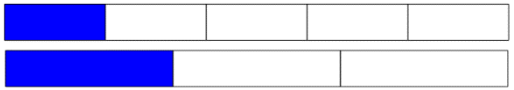
It's important foe children to develop number sense and discover which is the most effective strategy for a range of questions.

Mathematical Talk

What's the same and what's different about the fractions on the bar model? Can we create a rule? How is this different to when the denominators are the same?
Can you find a common numerator to help you compare? How will you do this?
Why is finding a common numerator the most efficient method? What do you notice about all the denominators? How can we find a common numerator?

Varied Fluency

1 Compare the fractions.



One third is …… one fifth. $\square/\square \bigcirc \square/\square$

What is the rule when comparing fractions with the same numerator?

2 What fraction could go in the empty box?

$\frac{4}{7}$		$\frac{4}{11}$
Greatest		Smallest

3 Complete the circles using <, > or =

$\frac{8}{11} \bigcirc \frac{8}{19}$ $1\frac{2}{7} \bigcirc 1\frac{4}{5}$

2 fifths ◯ 4 sevenths

Compare & Order (numerator)

Reasoning and Problem Solving

Bob is comparing the fractions $\frac{3}{7}$ and $\frac{6}{11}$

He wants to find a common denominator.

Explain whether you think this is the most effective strategy.

This is not the most effective strategy because both denominators are prime. He could find a common numerator by changing $\frac{3}{7}$ into $\frac{6}{14}$ and comparing them by using the rule 'when the numerator is the same, the smaller the denominator, the bigger the fraction'

$\frac{6}{11}$ is bigger.

Here are two fractions of two pieces of wood.

$\frac{5}{6}$

$\frac{3}{4}$

Which piece of wood is the longest?

Explain your answer.

Can you explain your method?

The second piece is longer because $\frac{1}{4}$ is bigger than $\frac{1}{6}$ so if the missing pieces were added on the second piece would be longer.

Could discuss why $\frac{3}{4}$ is bigger in this compared to previous small step.

Add & Subtract Fractions (1)

Notes and Guidance

Building on their skills of finding common denominators, children will add fractions when the answer is less than 1.

They will work with fractions with different denominators where one is a multiple of the other and where they are not.

It is important that children find the lowest common denominator not just a common denominator.

Mathematical Talk

What must we do if our denominator is different?
Could your answered be simplified?

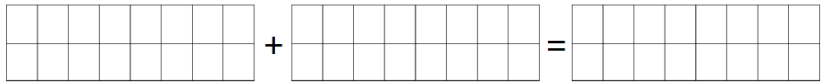
How will you make 1 whole one?

Are there any other ways? What do you notice about the denominators?

Explain your method.

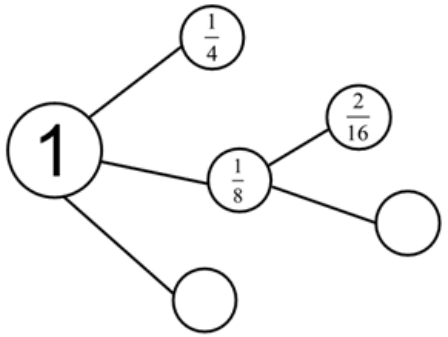
Varied Fluency

1 Shade in the diagram to show that $\frac{5}{8} + \frac{3}{16} = \frac{13}{16}$



Draw your own diagram to show that $\frac{1}{3} + \frac{2}{9} = \frac{5}{9}$

2 Complete the part whole model.



3 Emma uses $\frac{1}{3}$ of her tin of paint on Friday, $\frac{1}{21}$ on Saturday and on Sunday she uses $\frac{2}{7}$.
How much paint does she have left?

Add & Subtract Fractions (1)

Reasoning and Problem Solving

Can you complete the calculation using the same digit?

$$\frac{\square}{5} + \frac{1}{\square} = \frac{9}{10}$$

$$\frac{2}{5} + \frac{1}{2} = \frac{9}{10}$$

Shelden subtracted $\frac{3}{5}$ from a fraction and his answer was $\frac{8}{45}$. What was the original question?

$$\frac{35}{45} - \frac{27}{45} = \frac{8}{45}$$

So the original question would have been

$$\frac{7}{9} - \frac{3}{5} = \frac{8}{45}$$

Amy answered the following calculation:

$$\frac{3}{6} + \frac{1}{15} = \frac{4}{21}$$

Do you agree with her? Explain your answer.

If you don't agree with Amy, what should the answer be?

Amy is wrong because she has just added the numerators and the denominators rather than finding a common denominator.
It should be

$$\frac{15}{30} + \frac{2}{30} = \frac{17}{30}$$

Add & Subtract Fractions (2)

Notes and Guidance

During this small step, children are to build on their knowledge of adding fractions that total <1, finding common denominators and applying it to mixed numbers.

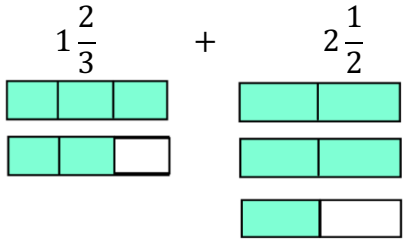
At this stage, children may choose to deal with the whole numbers and fractions separately, or convert the mixed numbers to improper fractions. Can they prove and explain why both methods work in this case? When might it not work?

Mathematical Talk

What do you notice about your answer? Can you convert it back into a mixed number?
How might we approach this question? Do we need to convert the mixed number into an improper fraction? Explain why.
Which is the most efficient method?
Could you show me how you might use a number line to answer this question? Can you explain how you might solve this mentally?

Varied Fluency

1 Can you split the bar models so each fraction has the same denominator?

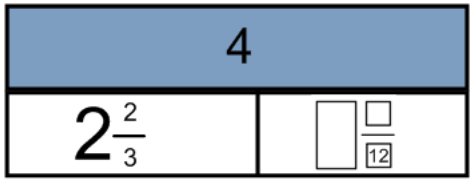


How can you use this information to solve the original calculation?

2 Complete the calculation.

$\square\frac{\square}{\square} = 3\frac{1}{2} + 1\frac{1}{4}$

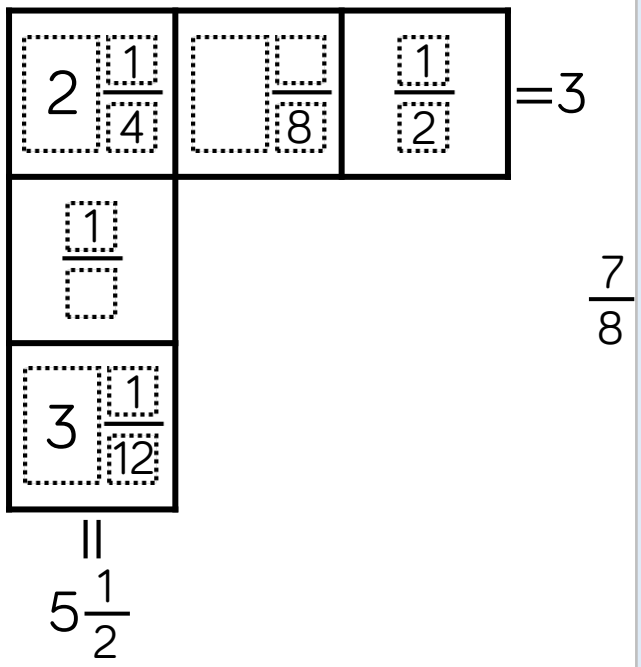
3 Complete the bar model.



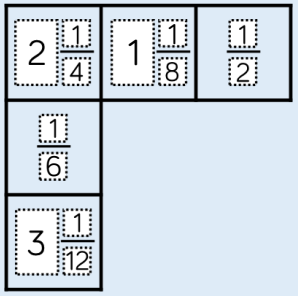
Add & Subtract Fractions (2)

Reasoning and Problem Solving

Fill in the blank boxes.



Solution:



$a = d - 7$

$c + c = 2$

$3 \times 4 = d$

$b = a - 3$

Use this information to complete the following calculation and find the value of e.

$$a\frac{c}{b} - 3\frac{c}{d} = e\frac{a}{d}$$

$5\frac{1}{2} - 3\frac{1}{12} = 2\frac{5}{12}$

$e = 2$

Adding Fractions

Notes and Guidance

To build on knowledge of adding fractions, children now add fractions that give a total great than one.

It is important that children are exposed to a range of examples e.g. adding improper fractions and mixed numbers.

Mathematical Talk

How can we represent $\frac{2}{5}$ and $\frac{4}{5}$ on the number line?

When adding two fractions with sixths, how will we split our number line?

What do you notice is happening when you add fractions with the same denominator?

What can we do if our denominators are different?

Varied Fluency

1 Use the number line to solve $\frac{2}{5} + \frac{4}{5}$

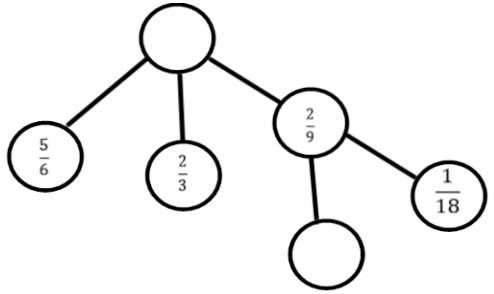
Use a number line to solve

- 3 sixths plus 5 sixths
- $\frac{11}{7} + \frac{5}{7}$

2 Find the sum of:

$\frac{13}{4}$ and $\frac{5}{6}$ $\frac{26}{7}$ and $\frac{2}{3}$

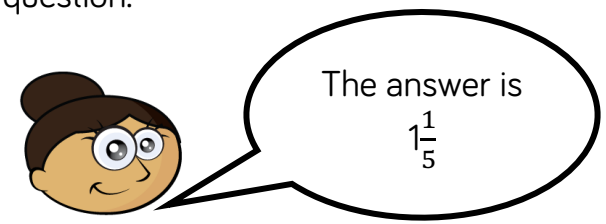
3 Complete the part whole model.



Adding Fractions

Reasoning and Problem Solving

Amanda has worked out the answer to a question.



What could the question have been?

Lots of answers available.

Possible answers:

$\frac{4}{5} + \frac{2}{5}$

$\frac{4}{10} + \frac{16}{20}$

Etc.

Fill in the boxes to make the calculation correct.

$1\frac{\square}{10} = \frac{3}{\square} + \frac{\square}{10}$

$1\frac{1}{10} = \frac{3}{5} + \frac{5}{10}$

Subtracting Fractions

Notes and Guidance

Children are building on their knowledge of subtracting fractions.
This small step encourages children to use one of their wholes to create a new mixed number fraction so they can complete the calculation.
It is vital that the children know that fractions such as $3\frac{1}{4}$ and $2\frac{5}{4}$ are the same

Mathematical Talk

Which fraction is greatest? How do you know? We must look at the whole numbers to help us.

Have we still got the same fraction? How do you know?

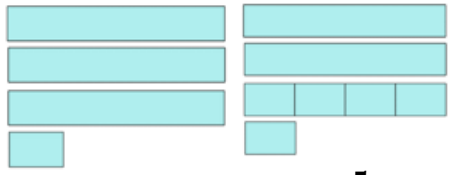
What are the five wholes made up of? How do you know? Can you use one of these wholes to help you complete the calculation?

What calculation will we complete to solve the problem?

Varied Fluency

1 Calculate $3\frac{1}{4} - 1\frac{3}{4}$

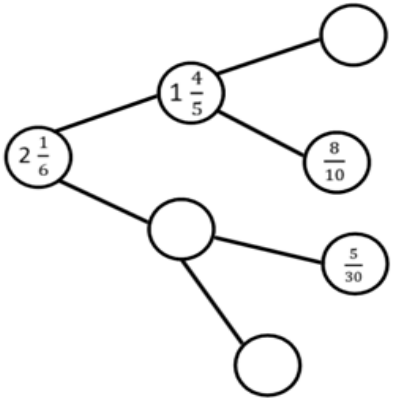
$3\frac{\mathbf{1}}{\mathbf{4}}$ can become $2\frac{\mathbf{5}}{\mathbf{4}}$



How can you use the equivalent fraction of $2\frac{\mathbf{5}}{\mathbf{4}}$ to complete the calculation?

2 Tina has $3\frac{2}{3}$ bags left of bird feed. She uses $1\frac{4}{6}$.
How much will she have left?

3 Complete the part whole model.



Subtracting Fractions

Reasoning and Problem Solving

Tina has 5 bags of sweets.

On Monday she eats $\frac{2}{3}$ of a pack and gives $\frac{4}{5}$ of a pack to her friend.

On Tuesday she eats $1\frac{1}{3}$ packets and gives $\frac{2}{5}$ of a packet to her friend.

What fraction of her sweets does she have left?

$\frac{2}{3} + \frac{4}{5} = 1\frac{7}{15}$

$5 - 1\frac{7}{15} = 3\frac{8}{15}$

$1\frac{1}{3} + \frac{2}{5} = 1\frac{11}{15}$

$3\frac{8}{15} - 1\frac{11}{15} = 1\frac{12}{15}$

Tina has $1\frac{12}{15}$ of her sweets left.

Fill in the boxes to make the calculation correct.

$$1\frac{\square}{2} = 3\frac{1}{\square} - 1\frac{\square}{10}$$

$1\frac{1}{2} = 3\frac{1}{5} - 1\frac{7}{10}$

Mixed Addition and Subtraction

Notes and Guidance

Children are given the opportunity to consolidate adding and subtracting fractions.

The examples provided encourage the use of the bar model, part whole models and word problems which include mixed number and improper fractions.

Mathematical Talk

What other calculations could you write using the bar model?

Can you draw a bar model to show the second calculation? Where would the '?' go?

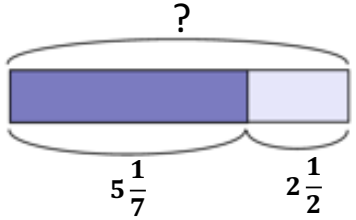
Explain how you know the fraction can be simplified?

How many different ways can you show $6\frac{7}{30}$?

How might these different representations help you solve the calculation?

Varied Fluency

1 Complete the bar model and use it to answer the following calculations



$2\frac{1}{2} + 5\frac{1}{7} = \square$

$\square - 2\frac{1}{2} = 5\frac{1}{7}$

Can you rewrite the calculations as improper fractions?

2 Fill in the blank. Give your answer in the simplest form:

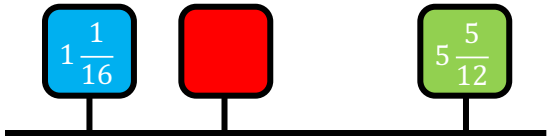
$$\frac{4}{15} + \frac{1}{5} + \square = 1$$

3 Lizzie and Marie each had an ice cream sundae. Lizzie only ate $\frac{3}{4}$ of hers and Marie left $\frac{2}{5}$ of her sundae. How much ice cream was left over? Who ate the largest fraction of their sundae? By how much?

Mixed Addition and Subtraction

Reasoning and Problem Solving

Fill in the blank boxes.



The green box is $3\frac{2}{3}$ more than the red box.

The red box is $\frac{\square}{\square}$

The red box is $\frac{\square}{\square}$ greater than the blue box.

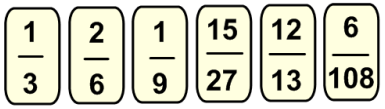
$5\frac{5}{12} - 3\frac{2}{3} = 1\frac{9}{12}$

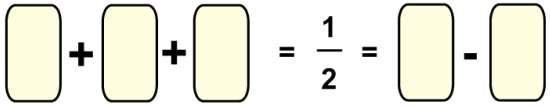
The red box is $1\frac{3}{4}$

$1\frac{3}{4} - 1\frac{1}{16} = \frac{11}{16}$

The red box is $\frac{11}{16}$ greater than the blue box.

Fill in the boxes to make the calculation correct.





$\frac{1}{3} + \frac{1}{9} + \frac{6}{108}$

$= \frac{1}{2}$

$= \frac{15}{27} - \frac{6}{108}$

Multiply Fractions by Integers

Notes and Guidance

Children will use their understanding of fractions to multiply whole numbers and fractions together.

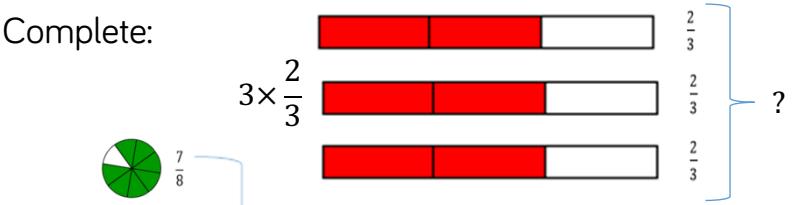
It is important that they experience varied representations of fractions. They must also be able to multiply whole numbers and mixed numbers.

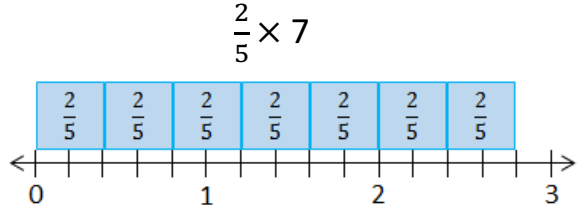
Mathematical Talk

How could you represent this fraction?
What is the denominator? How do you know?
How many whole pieces do we have?
What is multiplying fractions similar to? (repeated addition)
Why have you chosen to represent the fraction in this way?
How many wholes are there?
How many parts are there?

Varied Fluency

1 Complete:





2 Sally and 3 of her friends have $1\frac{2}{3}$ of a chocolate bar each.
How much chocolate do they have altogether?

3 Complete and then order:

- $6 \times \frac{5}{7}$ $\quad \frac{5}{6} \times 5$ $\quad 4 \times \frac{7}{8}$
- $4 \times 2\frac{3}{5}$ $\quad 3\frac{4}{9} \times 3$ $\quad 5 \times 2\frac{3}{7}$

Multiply Fractions by Integers

Reasoning and Problem Solving

There are 9 lamp posts on a road. There is $4\frac{3}{8}$ of a metre between each lamp post.

What is the distance between the first and last lamp post?

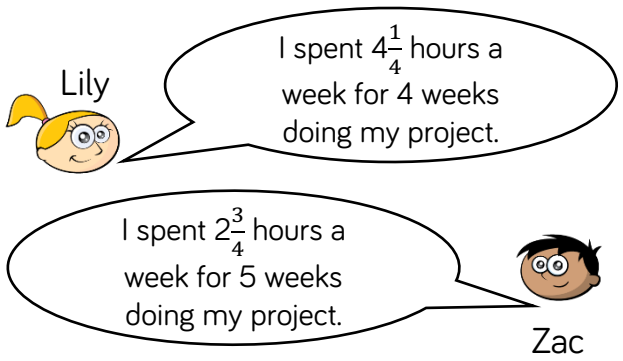
$8 \times 4\frac{3}{8} = 8 \times \frac{35}{8}$

$= \frac{280}{8} = 35$

The distance between the first and last lamp post is 35 metres.

Children may think they need to multiply by 9, encourage them to draw a picture to see otherwise.

Lily and Zac both work on a homework project.



Who spent the most time on their project?

Explain your reasoning.

$4 \times 4\frac{1}{4} = \frac{68}{4}$

$= 17$ hours

$5 \times 2\frac{3}{4} = \frac{55}{4}$

$= 13\frac{3}{4}$ hours

Lily spent longer on her project than Zac did by $3\frac{1}{4}$ hours.

Multiply Fractions by Fractions

Notes and Guidance

Children will use their understanding of multiplying fractions by whole numbers and find the link between this and multiplying fractions by fractions.

It is important that children see the link between multiplying fractions by whole numbers and fractions by fractions.

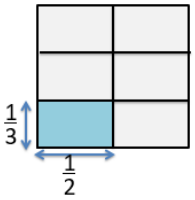
Mathematical Talk

Using a piece of paper/drawing:
Show me a whole, show me thirds, now split each third in half.
Shade one section
What fraction do you have?
What do you notice about the numerators and denominators when they are multiplied?
(multiply numerators together and multiply denominators together)

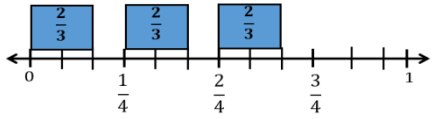
Varied Fluency

1 Calculate:

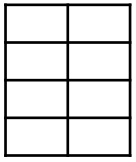
$\frac{1}{3} \times \frac{1}{2}$



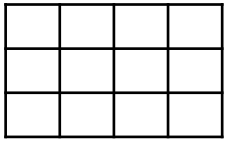
$\frac{2}{3}$ of $\frac{3}{4}$



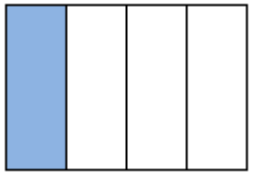
$\frac{1}{4} \times \frac{1}{2}$



$\frac{2}{3}$ of $\frac{1}{4}$



2 Use the diagram below to work out $\frac{1}{3} \times \frac{1}{4}$



3 Work out:

$\frac{1}{4} \times \frac{1}{2}$

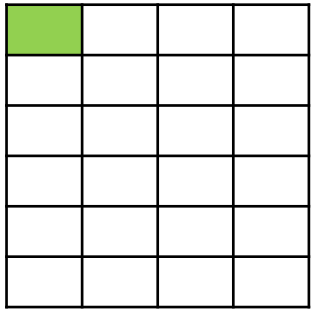
$\square \times \frac{1}{2} = 1$

Multiply Fractions by Fractions

Reasoning and Problem Solving

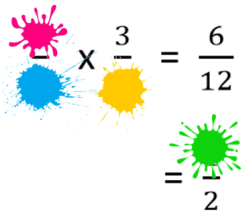
The shaded square in the grid below is the answer to a multiplying fractions question.

What was the question?



$\frac{1}{6} \times \frac{1}{4}$

How many ways can you answer the following?

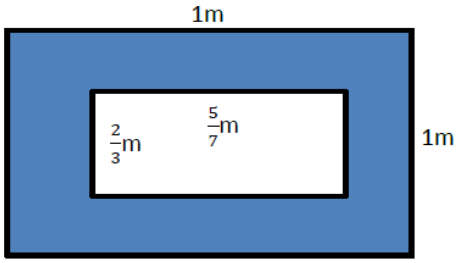


Possible answers:

$\frac{2}{3} \times \frac{3}{4} = \frac{6}{12} = \frac{1}{2}$

$\frac{2}{2} \times \frac{3}{6} = \frac{6}{12} = \frac{1}{2}$

Find the area of the shaded part of the shape.



$1 \times 1 = 1$

$\frac{2}{3} \times \frac{5}{7} = \frac{10}{21}$

$1 - \frac{10}{21} = \frac{11}{21}$

The shaded area is $\frac{11}{21}m^2$

Divide Fractions by Integers (1)

Notes and Guidance

Children will use their understanding of fractions to divide fractions by whole numbers, where the numerator is directly divisible by the divisor.

It is important that they experience varied representations of fractions in different contexts.

Mathematical Talk

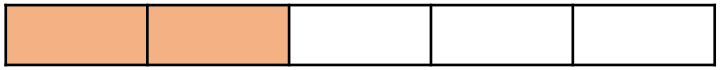
How could you represent this fraction?
How many parts of the whole are there? How do you know?

How do you know how many parts to shade?
Is the numerator divisible by the whole number?

Why doesn't the denominator change?
Why have you chosen to represent the fraction in this way?

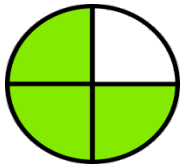
Varied Fluency

1 Lee has $\frac{2}{5}$ of a chocolate bar. He shares it with his friend.
How much chocolate do they get each?

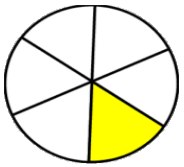


2 Use the diagrams to help you calculate:

$\frac{3}{4} \div 3$



$\frac{1}{6} \div 3$



3 Calculate:

$\frac{7}{8} \div 2$ $\frac{10}{13} \div 5$ $\frac{6}{7} \div 3$

Divide Fractions by Integers (1)

Reasoning and Problem Solving

Roman says

When dividing fractions by a whole number, I just ignore the numerator.

Do you agree?
Explain why.

No, you do not ignore the numerator as it is also divided in the process.

Solve the following calculations:

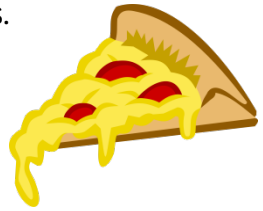
$\frac{1}{3} \div 2 =$ $\frac{1}{4} \div 2 =$

$\frac{1}{5} \div 2 =$ $\frac{1}{6} \div 2 =$

What do you notice?

The numerator stays the same; the denominator changes. The denominator has doubled in each fraction.

Becky's mum ordered a pizza for her and her friends.



By the time they arrived home there was only $\frac{3}{4}$ of it left.
When she shared it among her friends they each got $\frac{1}{4}$
How many friends did Becky have with her?

Becky had three friends:

$\frac{3}{4} \div 3 = \frac{1}{4}$

Divide Fractions by Integers (2)

Notes and Guidance

Children will divide fractions by a whole number, including mixed number fractions. They should learn how to represent the fractions and divide it visually.

They may find an alternative strategy for dividing fractions during this process.

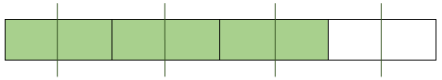
Mathematical Talk

How could you represent this fraction?
Which parts should you shade?
What would happen if we divided each eighth into half? How many pieces would we have in total?
How many sub-parts would you dive each section into?
What is the value of the denominator?
What is the value of the numerator?
Can it be simplified?

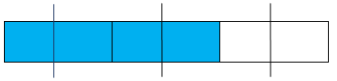
Varied Fluency

1 Calculate:

$\frac{7}{8} \div 2$

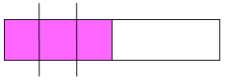


$\frac{2}{3} \div 2$



$\frac{3}{5} \div 2$

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



What do you notice?
Is there another strategy you could use to solve these calculations?

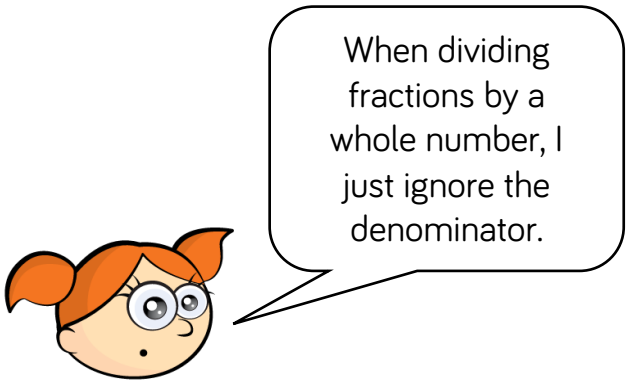
2 Calculate:

$\frac{3}{7} \div 4$ $\quad$ $\frac{7}{9} \div 3$ $\quad$ $\frac{3}{8} \div 5$

Divide Fractions by Integers (2)

Reasoning and Problem Solving

Kelly says,



Do you agree?
Explain why.

No, Kelly is incorrect. The denominator shows the parts the whole is divided into therefore we need to divide it by the whole number.

Solve

$$\square \div 4 = \frac{7}{36}$$

$$\frac{6}{29} \div \square = \frac{6}{58}$$

$$\square \div \square = \frac{9}{65}$$

Have you found all of the possibilities?

There are various possibilities:

1. $\frac{7}{9}$

2. 2

3. $\frac{9}{13} \times 5$ or $\frac{9}{65} \times 1$

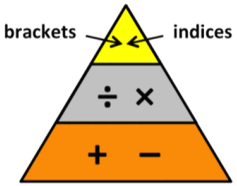
(denominators and whole numbers can swap)

Four Rules with Fractions

Notes and Guidance

During this small step children will apply the rules of the four operations when working with fractions.

They may need to be reminded of which operation to use first.

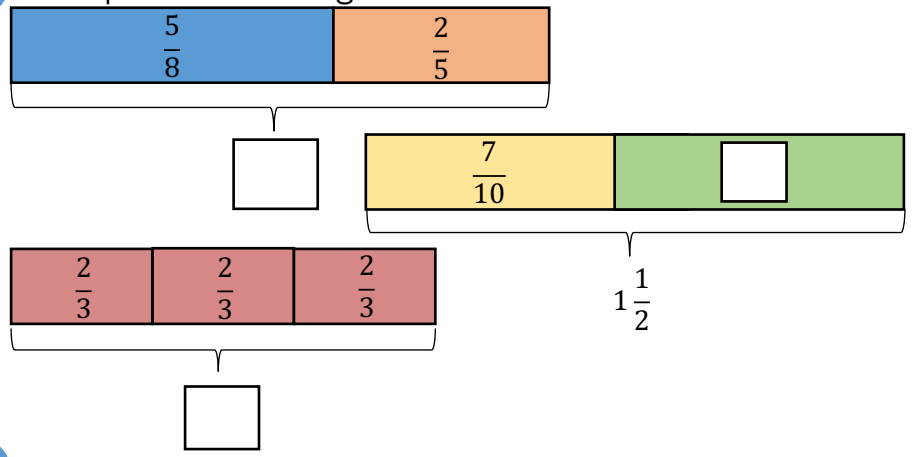


Mathematical Talk

What does it mean when we have a number or a fraction in front of the bracket?
Which operation should we use first? Why?
Is there another way we could answer this?
What would happen if we did not use the brackets? Would the answer be correct? Why?

Varied Fluency

1 Complete the missing boxes.



2 Jack had one quarter of a bag of sweets and Harry had two thirds of the sweets. They shared their sweets with Sophie. What fraction of the sweets do they all receive?

3 Match each calculation to the correct answer.

$(\frac{2}{3}+\frac{1}{5})\times 3$	$\frac{41}{70}$
$\frac{5}{9}-\frac{1}{3}\div 2$	$\frac{7}{18}$
$\frac{2}{5}\times 2-(\frac{3}{7}\div 2)$	$2\frac{3}{5}$

Four Rules with Fractions

Reasoning and Problem Solving

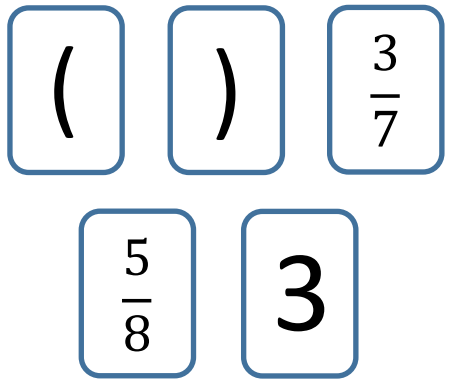
Add two set of brackets to make the following calculation correct:

$$\frac{1}{2} + \frac{1}{4} \times 8 + \frac{1}{6} \div 3 = 6\frac{1}{18}$$

Explain where the brackets go and why.
Did you find any difficulties?

$(\frac{1}{2} + \frac{1}{4}) \times 8 + (\frac{1}{6} \div 3)$

Using the following cards and any operation find an answer of $\frac{33}{56}$



$(\frac{5}{8} - \frac{3}{7}) \times 3 = \frac{33}{56}$

$\frac{33}{56} - \frac{24}{56} = \frac{11}{56}$

$\frac{11}{56} \times 3 = \frac{33}{56}$

Fraction of an Amount

Notes and Guidance

Children will learn how to find the whole amount from the known value of the fraction. In this small step children will look at examples where the amounts both increase and decrease in value.

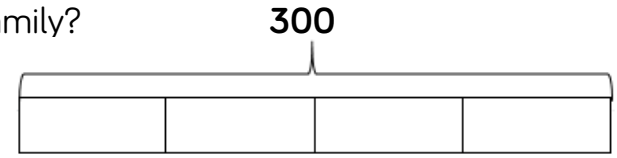
Mathematical Talk

How can you represent this problem?
Which parts should you shade?
What is the value of the shaded parts?
What is the value of the whole?
How much has the value increased/decreased by?

Varied Fluency

1 The school kitchen has 48 kg of potatoes. They use $\frac{5}{8}$ to make mash potato for lunch.
How much potato do they have left?
Use the bar model to find the answer to this question.

2 A football team has 300 tickets to give away. They give $\frac{3}{4}$ of them to a local school and give $\frac{1}{3}$ of the remainder to a local business. How many tickets are left to give to friends and family?



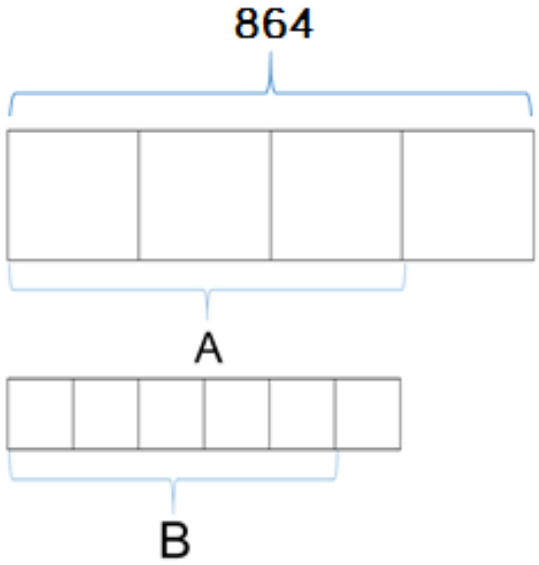
3 Complete: $\frac{3}{8}$ of 40 = $\frac{\quad}{10}$ of 150

$\frac{1}{5}$ of 315 = $\frac{\quad}{8}$ of 72

Fraction of an Amount

Reasoning and Problem Solving

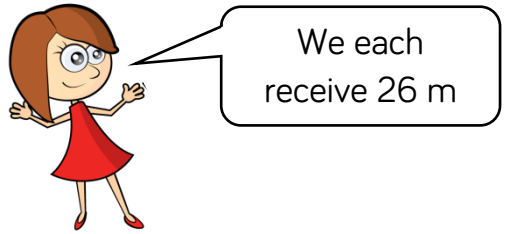
What is the value of A?
What is the value of B?



A = 648
B = 540

Two fashion designers receive $\frac{3}{8}$ of 208 m of materials.

One of them says:



Is she correct?
Explain your reasoning

She is incorrect because 26 is only one eighth of 208.
She needs to multiply her answer by 3 so that they each get 78 m each.

Finding the Whole

Notes and Guidance

Children will learn how to find the whole amount from the known value of a fraction.

Children should use their knowledge of finding fractions of amounts and apply this when finding the whole amount.

Mathematical Talk

How could you represent this fraction?

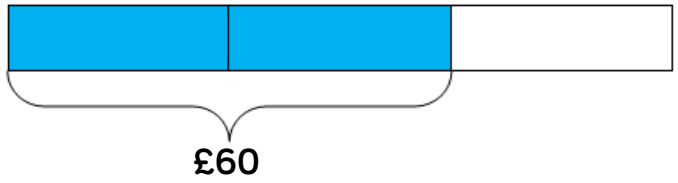
Which parts should you shade?

What is the value of the shaded parts?

What is the value of the whole bar?

Varied Fluency

1 Sam has spent $\frac{2}{3}$ of his money.
He spent £60, how much did he have to start with?



2 Jen eats $\frac{2}{5}$ of a packet of biscuits. She eats 10.
How many in original packet?

$\frac{3}{8}$ of a town voted.
If 120 people voted, how many people lived in the town?

3 Write a problem which this bar model could represent.

Finding the Whole

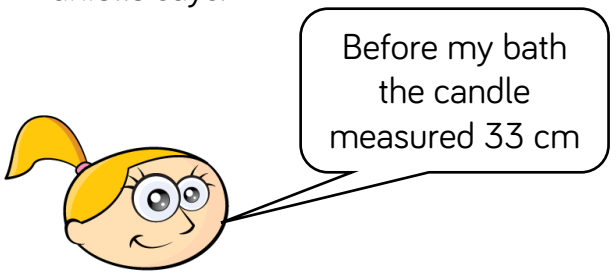
Reasoning and Problem Solving

Danielle lit a candle while she had a bath.

After her bath, $\frac{2}{5}$ of the candle was left.

It measured 13 cm.

Danielle says:



Is she correct?

Explain your reasoning.

She is incorrect.

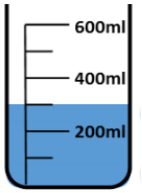
$13 \div 2 = 6.5$

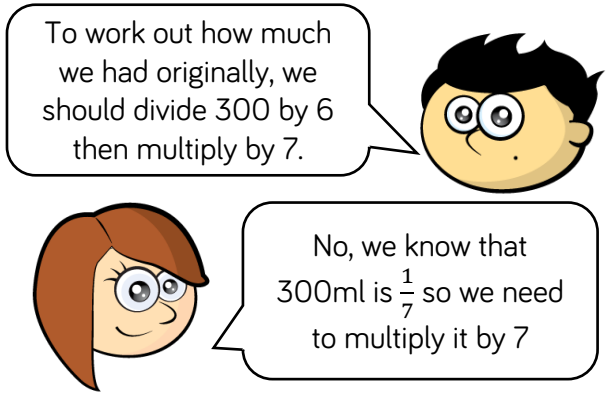
$6.5 \times 5 = 32.5$cm

She either didn't half correctly or didn't multiply correctly

Milly and Sam are making juice.

They use $\frac{6}{7}$ of the water in a jug and are left with this amount of water:





Who is correct?

Explain your reasoning.

They are both correct. Milly's method calculates $\frac{1}{7}$ then $\frac{7}{7}$ whereas Sam's method recognises $\frac{1}{7}$ is left in the jug therefore multiplies it by 7 to find the whole.