Summer 1 Year 3

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Links to prior learning/ objectives	Resources	Vocabulary:
Children will have learned how to identify ½, ¼, 1/3, 2/4 and ¾ of shapes, lengths and amounts. Children will have been shown what a fraction is. Children will have learnt multiplication and division facts to support them with finding fractions. Children will have been taught about turns, linking to quarter/half/ three quarters/ whole turn (linking to a clock). Children will have been exposed to a range of 2-D shapes and their properties.	Physical objects, fraction wall, fraction representations (games), Bar models, angle eater, 2-D shapes, **Mastery:** (where to find some resources) • Teaching for Mastery • White Rose **New and old documents** • Mastery maths stickers • Nrich (curriculum mapping)	Angles, acute, obtuse, reflex, right angle, properties of shape, vertices, vertex, sum, quarter, half, full, greater than, less than, equivalent, identify, recognise. Recognise, find, name, write, fractions, numerator, denominator, half, quarter, three-quarter, third, fractions, order, compare, equivalence, numerator, denominator equivalent, represent, recognise, Add subtract, fractions, denominator, numerator.

Objectives and Teaching

Barriers to ARE (misconceptions)		
Week 1 Children may struggle to see how two fractions can represent the same. Children may struggle to apply their multiplication and division knowledge. Children may struggle to represent a fraction pictorially.	Recognise and show, using diagrams, equivalent fractions with small denominators. • To know how to show equivalent fractions. • To know how to recognise equivalent fractions. • To develop the skill of recognizing equivalent fractions. • To understand equivalent fractions.	
Fluency	**Reasoning**	**Problem Solving**

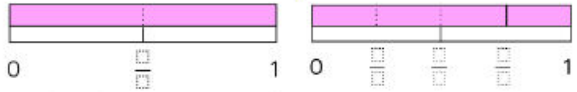
The pink rod is worth 1

Which rod would be worth $\frac{1}{4}$? Which rods would be worth $\frac{2}{4}$?
Which rod would be worth $\frac{1}{2}$?
Use the Cuisenaire to find rods to investigate other equivalent fractions.

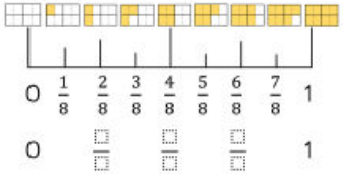
Use two strips of equal sized paper. Fold one strip into quarters and the other into eighths. Place the quarters on top of the eighths and lift up one quarter, how many eighths can you see? How many eighths are equivalent to one quarter? Which other equivalent fractions can you find?

Using squared paper, investigate equivalent fractions using equal parts. e.g. $\frac{\square}{4}=\frac{\square}{8}$. Start by drawing a bar 8 boxes along. Underneath compare the same length bar split into four equal parts.

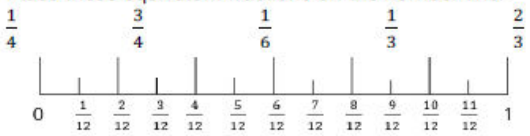
Use the models on the number line to identify the missing fractions. Which fractions are equivalent?



Complete the missing equivalent fractions.

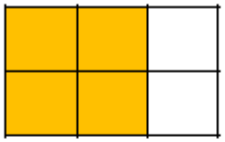


Place these equivalent fractions on the number line.

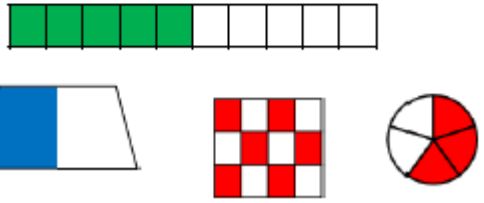


Are there any other equivalent fractions you can identify on the number line?

Explain how the diagram shows both $\frac{2}{3}$ and $\frac{4}{6}$



Which is the odd one out? Explain why.



Lucas makes this fraction:

Jermaine says he can make an equivalent fraction with a denominator of 9

Shania disagrees. She says it can't have a denominator of 9 because the denominator would need to be double 3

Who do you agree with? Explain why.

Always, sometimes, never.

To find an equivalent fraction you can just double the numerator and the denominator.

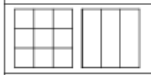
Prove it.

Use the clues to work out which fraction is being described for each shape.

- My denominator is 6 and my numerator is half of my denominator.
- I come before the shape equivalent to $\frac{1}{2}$ and I am equivalent to $\frac{2}{6}$
- I am equivalent to 1
- I am the same as $\frac{2}{3}$

Can you write what fraction each shape is worth? Can you record an equivalent fraction for each one?

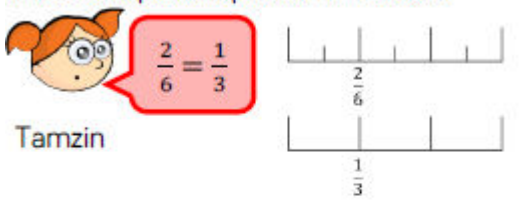
Complete the table. Can you spot any patterns?

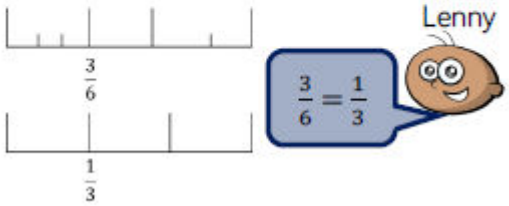
Pictorial representation	Fraction	Words
	$\frac{6}{8} = \frac{3}{4}$	Six eighths is equivalent to three quarters
	$\frac{1}{3} = \frac{\square}{9}$	_____is equivalent to _____
	$\frac{\square}{4} = \frac{\square}{12}$	Three twelfths is equivalent to _____ quarters
	$\frac{4}{12} = \frac{\square}{\square}$	_____is equivalent to _____

Complete the statements.
Use practical equipment or strips to help you.

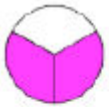
$\frac{1}{2} = \frac{\square}{6} = \frac{\square}{12}$ $\frac{\square}{2} = \frac{2}{4} = \frac{\square}{8}$ $\frac{1}{4} = \frac{\square}{8} = \frac{\square}{16}$

Tamzin and Lenny are using number lines to explore equivalent fractions.

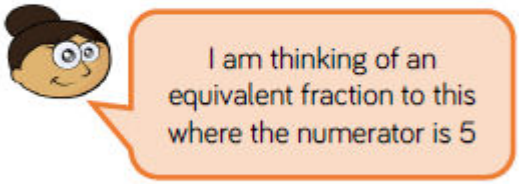




Who do you agree with? Explain why.



Here is a diagram that has some equal parts shaded.
Alisha says,



Is this possible? Explain why.

Week 2

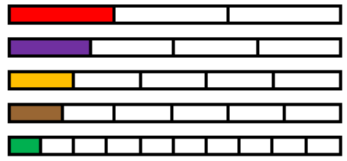
Children may not understand what a fraction is. They may not know that the larger the denominator the smaller the fraction.
Children may struggle to apply their knowledge of fractions of a range of objects/ lengths and shapes.
Children may not have a secure understanding of multiplication and division.
Children may not recognise what the equivalence means and that two fractions can be the same.
Children may not recognise what the numerator and denominator represent.

Compare and order unit fractions, and fractions with the same denominator.

- To know how to compare fractions with the same denominator.
- To know how to order fractions with the same denominator.
- To develop the skill of comparing and ordering fractions.
- To understand how to compare and order fractions.

Fluency	Reasoning	Problem Solving

Using the fraction strips below, use the >, < or = symbol to compare the fractions.



$\frac{1}{10} \bigcirc \frac{1}{4}$ $\frac{1}{3} \bigcirc \frac{1}{6}$ $\frac{1}{5} \bigcirc \frac{1}{4}$

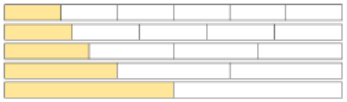
When the numerators are the same, the _____ the denominator, the _____ the fraction.

Using strips of paper, compare these fractions using the >, < or = symbols.

$\frac{3}{4} \bigcirc \frac{1}{4}$ $\frac{1}{6} \bigcirc \frac{5}{6}$ $\frac{3}{8} \bigcirc \frac{5}{8}$

When the denominators are the same, the _____ the numerator, the _____ the fraction.

Split strips of paper into halves, thirds, quarters, fifths and sixths and colour in one part of each strip.
Now order the strips from smallest to largest.



When the numerators are the same, the _____ the denominator, the _____ the fraction.

Place these fractions on the number line.

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

Order the fractions in descending order.

$\frac{3}{8}$ $\frac{5}{8}$ $\frac{1}{8}$ $\frac{8}{8}$ $\frac{7}{8}$

I know that $\frac{1}{3}$ is larger than $\frac{1}{2}$ because 3 is bigger than 2

Do you agree with Sally? Explain how you know.

When the denominators are the same, the larger the numerator, the smaller the fraction.

Is James correct?
Prove it.

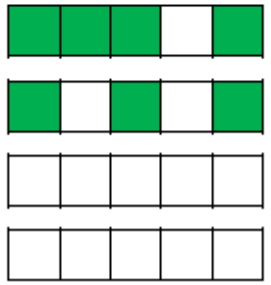
What fraction could go in the missing box? How many can you find?

$\frac{1}{2} > \square > \frac{1}{10}$

Complete the fractions so the fractions are ordered correctly.

Fractions in ascending order

Fractions in descending order



Week 3	Add and subtract fractions with the same denominator within one whole. (e.g. 5/7 + 1/7 = 6/7) • To know how to add fractions with the same denominator.

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Children may struggle to understand how to add and subtract fractions (especially if they are taught procedurally first).

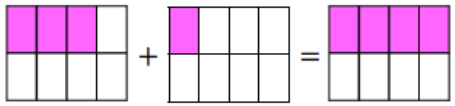
- To know how to subtract fractions with the same denominator.
- To develop the skill of adding and subtracting fractions.
- To understand how to add and subtract fractions.

Fluency

Take a paper circle. Fold your circle to split it into 4 equal parts. Colour one part red and two parts blue. Use your model to complete the sentences.

_____ quarter is red.
_____ quarters are blue.
_____ quarters are coloured in.

Show this as a number sentence. $\square_4 + \square_4 = \square_4$



We can use this model to calculate $\frac{3}{8} + \frac{1}{8} = \frac{4}{8}$

Draw your own models to calculate

$\frac{1}{5} + \frac{2}{5} = \square_5$ $\frac{2}{7} + \frac{3}{7} + \frac{1}{7} = \square_{\square}$ $\frac{7}{10} + \frac{\square}{\square} = \frac{9}{10}$

Isla eats $\frac{5}{12}$ of the pizza and Lily eats $\frac{1}{12}$ of the pizza.
What fraction of the pizza do they eat altogether?

Reasoning

Nicola and Nisha are solving:

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

Nicola says,

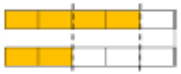
Nisha says,

Who do you agree with?
Explain why.

Jack and Kira are solving $\frac{4}{5} - \frac{2}{5}$

Jack's method:

Kira's method:



They both say the answer is two fifths.
Can you explain how they have found their answers?

Problem Solving

Bix and Josh share these chocolates.

They both eat an odd number of chocolates.
Complete this number sentence to show what fraction of the chocolates they each could have eaten.

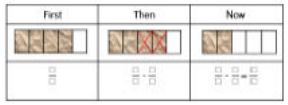
$$\frac{\square}{\square} + \frac{\square}{\square} = \frac{12}{12}$$

Find the missing fractions:

$$\frac{7}{7} - \frac{3}{7} = \frac{2}{7} + \frac{\square}{7}$$

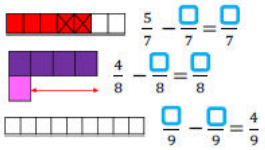
$$\frac{\square}{9} - \frac{5}{9} = \frac{4}{9} - \frac{2}{9}$$

Emily is eating a chocolate bar. Fill in the missing information.

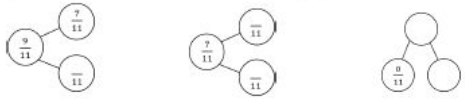


Can you write a number story using 'first', 'then' and 'now' to describe your calculation?

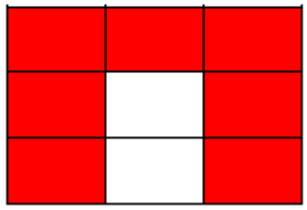
Use the models to help you subtract the fractions.



Complete the part whole models. Use equipment if needed.



How many fraction addition and subtractions can you make from this model?



Week 4

Children may struggle to make the link between angles and a turn.
Children may struggle to recognise a right angle, or whether an angel is greater or less than 90'.
Children may struggle to see the relationships between shapes and their angles.
Children may struggle to identify a right angle in different orientations.

Recognise angles as a property of shape or a description of a turn.

- To know that an angle is a turn.
- To know how to recognise an angle in a shape

Fluency

Reasoning

True or false?
Some shapes have no angles.

True or false?
The amount of angles a shape has is equal to the amount of sides it has.

Problem Solving

Which of these could be angles?

90°

-75°

90°c

Explain your choices to a partner.

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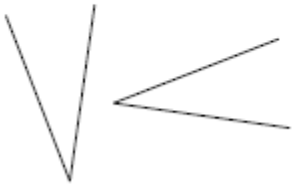
- Has this angle turned 90° to the left or the right?



Stick the words North, East, South and West on four walls. Ask children to face north then turn to west.
How many quarter turns have you made?

Tick all the angles in this shape.

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<td>Week 5

Same as week 4.</td>
<td colspan="2">Identify right angles, recognise that two right angles make half a turn, three makes three quarters of a turn and four make a complete turn: identify whether angles are greater than or less than a right angle.

To know how to identify a right angle.
To know the relationship between right angles and turns.
To know how to recognise angles greater than or less than a right angle.
To develop the skill of recognizing angles.
To understand how to recognise angles.

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<td>Fluency</td>
<td>Reasoning</td>
<td>Problem Solving</td>
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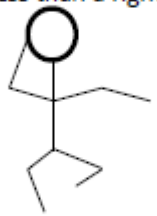
How many right angles does this circle have?  Tick the angles that are less than a right angle  Using 2 sticks or straws, can you make 1, 2 and 4 right angles?	**True or false?** You can make a right angle with curved lines. Sahil says, A complete turn equals 360° therefore a shape cannot have more than 360° when their angles are added together. Do you agree?	Draw different stick men with two arms and two legs. How many different ways can you do where the arms and legs are different sized angles (including greater than and less than a right angle)?  For each drawing write how many greater and/or less than angles there are e.g. 2 angles less than a right angle 2 angles greater than a right angle Create a group freeze frame showing lots of different angles and draw this afterwards. Can you turn 45° to the left? How has your angle changed?
Week 6	Consolidate	
Fluency	**Reasoning**	**Problem Solving**