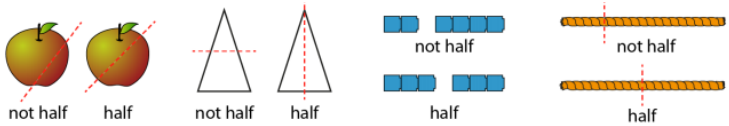
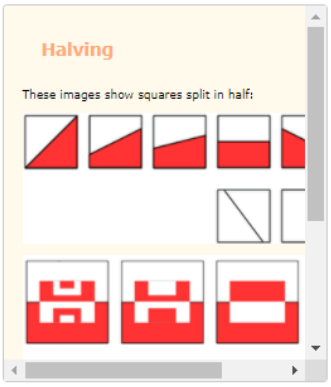
Planning Overview
Year 2 Fractions

Recognise, find, name and write fractions $\frac{1}{3}, \frac{1}{4}, \frac{2}{4}, \frac{3}{4}$ of a length, shape, set of objects or quantity
Write simple fractions for example, $\frac{1}{2}$ of 6 = 3
Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.

Identify $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{2}{4}, \frac{3}{4}$ of a number or shape, and know that all parts must be equal parts of the whole (TAF ARE)

	Teaching and Learning
Introduction using real life contexts	What do the children already know? Use a real-life context as a way of first talking to the children about fractions to see what they have retained from Year 1. E.g. a practical scenario of 4 children going home for a play after school and having to share 2 pieces of toast. Some children may end up cutting each piece into 4, others will cut each piece into 2. Some make crumbs then share those. You can then see whether they know and use the words half and quarter. Discuss the term whole – can they find something that they could have the whole of (apple, banana, orange, Numicon tile, shape) What is the children's understanding of a fraction? Can they relate that to their whole object? Can they draw what half of their object would look like? Does it have to be equal?  *Images taken from NCTEM – PD Materials* Where have they heard the word half before? Use the words 'The apple has been divided (draw line) into 2 equal parts (write denominator) and I have 1 part (write the 1)' – links to division which they will have completed in the multiplication and division unit. Introduce the words numerator and denominator at this stage if you feel this is appropriate for your cohort.

Use concrete materials and pictorial representations to explore and recognise that the denominator is the number of equal parts into which a whole has been split	Share examples of shapes and fold them in half. How many parts are there? Shade ½ red. Discuss why we write ½ - Start using precise language the bottom number or denominator tells us how many equal parts we need, the numerator or top number tells us how many parts we are interested in. Can we spilt a given shape in half in more than one way?  *Images taken from NCTEM – PD Materials* NRICH Halving **Halving** **Age 5 to 7** **Challenge Level** ★★ **Why do this problem?** This exploratory problem is a fantastic way to consolidate children's understanding of halving and halves. It also gives learners experience of mathematical proof. **Possible approach** To introduce the problem, you could use this PowerPoint presentation. It shows squares being halved in different ways and would provoke interesting discussion. (It loops so starts again when it reaches the end.) You may want to show the presentation (or at least some of it) and invite the children to watch in silence. What is happening? Give them time to talk to a partner about what they've seen and then bring the whole group together. This will allow children to clarify their understanding of halving before going on to the main task.  **Mastery** Jayne says that the shaded part of the whole square below does not show a half because there are three pieces, not two. Do you agree? Explain your reasoning. 

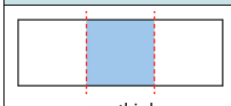
Name fractions one half, third and quarter and use correct notation $\frac{1}{2}, \frac{1}{3}$ and $\frac{1}{4}$

What about if we split our whole object into more parts? What would they be called? And how would we write them as a fraction?

What would it mean to split our whole into $\frac{1}{4}$? Recap language of fractions (the bottom number is how many parts all together) What would our whole look like now?

Repeat above with a variety of shapes. What do they notice? Encourage understanding that all 4 pieces need to be same shape and size to be quarters for example. Also draw out understanding that you can create a quarter by halving and halving again.

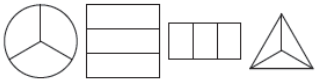
Repeat the activity with $\frac{1}{3}$.
Reiterate the use of language in table below as you write fractions to secure fractions notation.

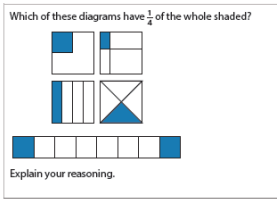
Model	Say	Write	Notation
 one-third	*'The rectangle has been divided…'*	Write the division bar.	$\frac{1}{3}$
	'…into 3 equal parts…'	Write '3' as the denominator.	
	'…and 1 of the parts is shaded.'	Write '1' as the numerator.	

Images taken from NCTEM – PD Materials

Mastery

Shade $\frac{1}{3}$ of each shape.

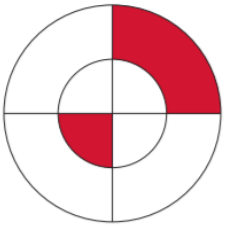


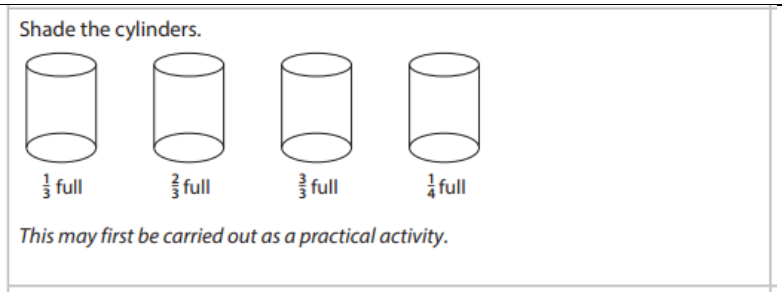


Mastery with Greater Depth

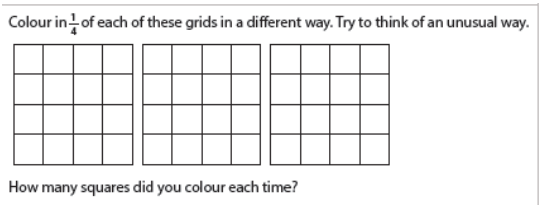
What fraction is the red part of the whole circle?

Explain your reasoning.





This greater depth question is a way for children to 'discover' the link between fractions of shapes and fractions of amounts as they consider how many smaller squares are being coloured in each time.



Recognise that one 'whole' could be one whole group of items

Write number sentences which represent the fractions of amounts being calculated e.g.
½ of 8 = 4
¼ of 8 = 2

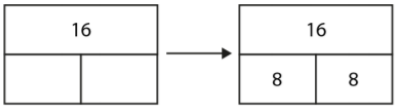
Recap the term whole with the children and ask for examples of different 'whole' objects that can be halved. E.g. tomato, pineapple, bar of chocolate.

Introduce to children that a whole could also be a group of objects – such as a packet of 16 sweets.

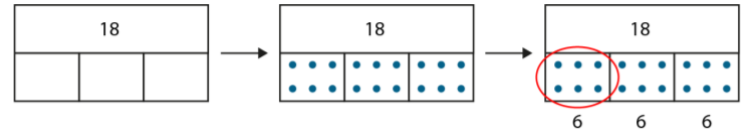
Explore how to half these objects. Maintain the language of fraction – the denominator tells us how many equal parts we need, the numerator tells us how many parts we are interested in.

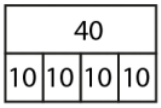
Use a strip of paper and ask the children to fold it in half. Ask them to record the sharing process on their strip of paper. Move from physically sharing 16 objects across the bar model onto drawing dots as a pictorial representation.

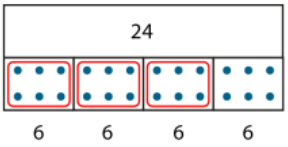
Record the halving process using a bar model.

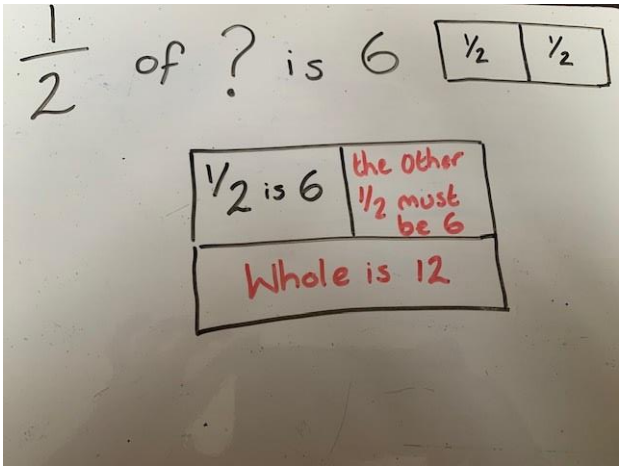


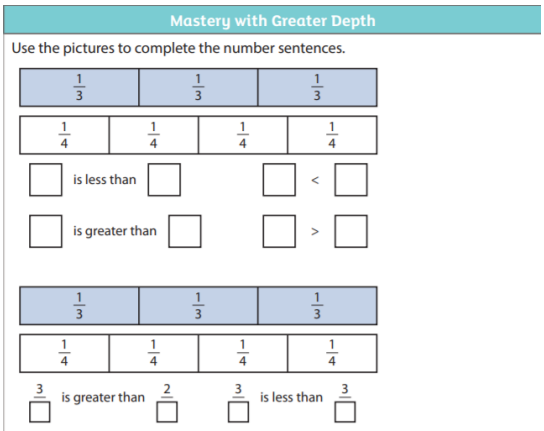
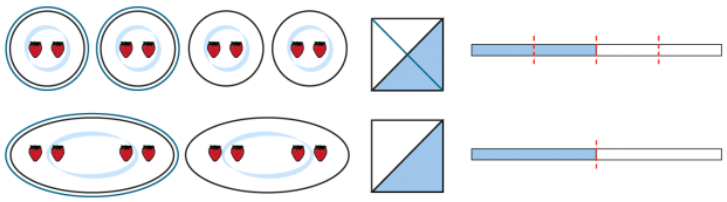
Use this same strategy to find different fractions of sets of objects or groups e.g. $\frac{1}{3}$ and $\frac{1}{4}$.

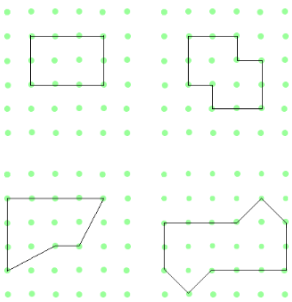


	Although children do not know their 3 or 4 times tables, some children may be able to apply commutativity alongside known times-tables facts to quickly populate the bar model for a few fractions problems such as $\frac{1}{4}$ of 40.  **Mastery** Jo bought a bag of 12 cherries. Jo ate half the number of cherries in the bag. How many cherries did Jo eat? Sam bought a bag of 18 cherries. Sam ate 6 cherries. What fraction of the bag of cherries did Sam eat? **Mastery with Greater Depth** Jo bought a bag of cherries. Jo ate half the number of cherries in the bag. Jo had 7 cherries left. How many cherries did Jo buy? Sam bought a bag of cherries. Sam ate 9 cherries and had 3 left over. What fraction of the bag of cherries did Sam eat?
Recognise $\frac{2}{3}$, $\frac{2}{4}$ and $\frac{3}{4}$ of an object, shape or length;	In order to introduce non-unit fractions effectively, use the images that children have become confident with already within the unit of work. Using a familiar image of quarters, show children the fraction $\frac{3}{4}$ discuss with them if we were splitting a shape into 4 how many of the sections would I be interested in? Repeat activities that were completed for unit fractions to investigate and discuss other examples of non-unit fractions of objects such as food and shapes. Ask children to state the fraction or shade the representation in. As part of this investigation, children should notice that $\frac{2}{4}$ is equivalent to $\frac{1}{2}$.

Recognise $\frac{2}{3}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a quantity	Now start to look at non-unit fractions of quantities. Using the concrete representation of the strips of paper and counters, solve a range of real-life problems that involve finding non-unit fractions of amounts. Share the steps needed e.g. • Decide if we are splitting our paper/bar into thirds or quarters. • Share all of the objects into the sections of paper • Look at the numerator to find out how many parts we need to add • Add the parts to find the answer. Link this to the bar model strategy that was shared in previous sessions. Except now discuss with the children that we need to know how much of the whole quantity we have in 3 of the sections once we have done our sharing.  Repeat for fractions $\frac{2}{3}$, and $\frac{2}{4}$. **Mastery** Complete: Half of 12 is ☐ $\frac{2}{4}$ of 12 is ☐ $\frac{1}{4}$ of 20 = $\frac{3}{4}$ of 20 = Some children will able to start looking at the link between $\frac{1}{2}$ and $\frac{2}{4}$ through reasoning questions such as $\frac{1}{2}$ of 20 = $\frac{2}{4}$ of 20 = What do you notice? Why is this the case? **Mastery with Greater Depth** Complete: Half of ☐ is 6 $\frac{2}{4}$ of ☐ is 6 $\frac{1}{4}$ of ☐ = 5 $\frac{3}{4}$ of ☐ = 15 20 children are in a class and $\frac{1}{4}$ are girls. How many are boys? The children need to consider the information that is needed to solve the Greater Depth question. If I know half of ? is 6 then I can fill that information in on my bar model.

	My bar needs to be split into 2 sections because that is what my denominator tells me. I know 1 of those sections is worth 6 so I can now work out my whole. 
Comparing Fractions **Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$**	 Using a fractions wall ask children to find certain fractions. Question the children on which is the largest $\frac{1}{3}$ or $\frac{1}{2}$? Which is larger $\frac{1}{3}$ or $\frac{1}{4}$? Do the children notice anything about the denominator and the relative size of the fraction? Relate this is real life – Would you rather have $\frac{1}{2}$ a pizza or a $\frac{1}{4}$ of a pizza? Give the children a fraction strip for halves and quarters. Ask the children to use the stem sentences …is less than… …is more than… to make statements about the fraction strips e.g. $\frac{3}{4}$ is more than $\frac{1}{2}$. Can they repeat this with the third and half strips and then all 3 strips together?

	Can the children use the stem sentence …is the same as… to start thinking about equivalence?  Referring back to the work on fractions of amounts alongside the fraction wall consolidate the children's understanding of equivalence linked to $\frac{2}{4}$ and $\frac{1}{2}$. Explore this using a range of images and models  *Images taken from NCTEM – PD Materials* Would you rather have $\frac{1}{2}$ of a pizza or $\frac{2}{4}$ of a pizza? Would you rather have $\frac{1}{2}$ of £20 or $\frac{2}{4}$ of £20? Would you rather have $\frac{1}{2}$ of 20 sweets or $\frac{2}{4}$ of 40 sweets? Do children know that $\frac{2}{4}$ of 40 will be greater without working it out? Can they justify their reasoning?
Count on and back in steps of $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{3}$	Begin by displaying the fractions wall. Can children use the fractions wall to count in quarters (one quarter, two quarters, three quarters and four quarters which is the whole). As the teacher, model moving your finger along the bottom of the fraction wall split into quarters and ask the children to chant one quarter, two quarters, three quarters, four quarters as your finger gets to the appropriate place. What would this look like on a number line? Repeat for thirds. What would happen if our number line went from 0 to 2?

	Help children count past the whole to start to count 1 and a quarter, one and two quarters… **Mastery** If you count in steps of $\frac{1}{2}$ starting from 0, how many steps will it take to reach: 2, 4 or 6 What do you notice? Allow children, once they are confident with the count, to fill in blank spaces on a fractions number line and to move on to placing fractions on a blank number line. **Mastery with Greater Depth** Mark another fraction on this line. And another, and another. 
Consolidation, problem solving & reasoning	Share a selection of problems for the children to apply their fraction knowledge. NRICH – Fruit Bowl **A Bowl of Fruit** **Age 5 to 7** **Challenge Level** ★★ Here is a bowl of fruit.  Half of the pieces of fruit in the bowl are apples. There are also 3 oranges, 2 pears and a banana. How many apples are there in the bowl? If, instead, one quarter were apples and one quarter were oranges and there were also 4 bananas, 3 pears and 3 plums how many would be apples? NRICH – Happy Halving **Happy Halving** **Age 5 to 7** **Challenge Level** ★★★ Can you split each of the shapes below in half so that the two parts are exactly the same? 

Examples of previous reasoning and arithmetic paper fractions questions can be found here ncetm_spine3_segment00_y2.pdf