



Parent workshop

Fractions

Aims

- To gain an understanding of what your child learns in each year group
- To know how to help your child at home
- To know the school's improvement areas



Early Years overview

- Numbers: children count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.
- Shape, space and measures: children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems. They recognise, create and describe patterns. They explore characteristics of everyday objects and shapes and use mathematical language to describe them.



National Curriculum

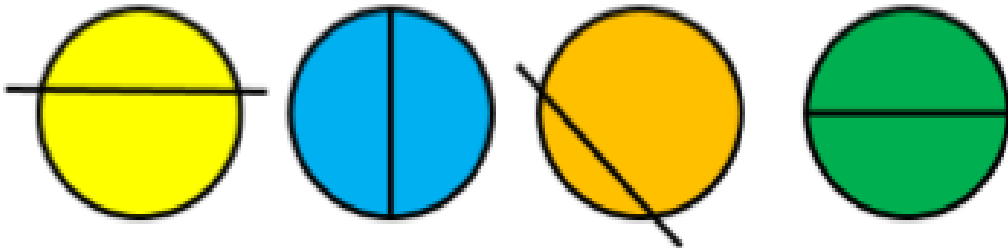
	Y1 FRACTIONS	Y2 FRACTIONS	Y3 FRACTIONS
STATUTORY	Recognise, find and name a half as one of two equal parts of an object, shape or quantity. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	Recognise, find, name and write fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape and set of objects or quantity. Write simple fractions for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.	Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10. Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators. Recognise and show, using diagrams, equivalent fractions with small denominators. Add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]. Compare and order unit fractions, and fractions with the same denominators. Solve problems that involve all of the above.

	Y4 FRACTIONS	Y5 FRACTIONS (including decimals and percentages)	Y6 FRACTIONS (including decimals and percentages)
STATUTORY	Recognise and show, using diagrams, families of common equivalent fractions.	Compare and order fractions whose denominators are all multiples of the same number.	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.
	Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.	Compare and order fractions, including fractions > 1 .
	Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.	Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number.	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
	Add and subtract fractions with the same denominator.	Add and subtract fractions with the same denominator & denominators that are multiples of the same number.	Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$].
	Recognise and write decimal equivalents of any number of tenths or hundredths.	Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.	Divide proper fractions by whole numbers [for example $\frac{1}{4} \div 2 = \frac{1}{8}$].
	Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$.	Read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$].	Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example $\frac{3}{8}$].
	Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.
	Round decimals with one decimal place to the nearest whole number.	Round decimals with two decimal places to the nearest whole number and to one decimal place.	Multiply one-digit numbers with up to two decimal places by whole numbers.
	Compare numbers with the same number of decimal places up to two decimal places.	Read, write, order and compare numbers with up to three decimal places.	Use written division methods in cases where the answer has up to two decimal places.
	Solve simple measure and money problems involving fractions and decimals to two decimal places.	Solve problems involving number up to three decimal places.	Solve problems which require answers to be rounded to specified degrees of accuracy.
		Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal.	Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
		Solve problems which require knowing percentage & decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.	

Year 1

Recognise, find and name a half as one of two equal parts of an object, shape or quantity. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.

which circles have been split into equal halves?



what is half of the amount shown?



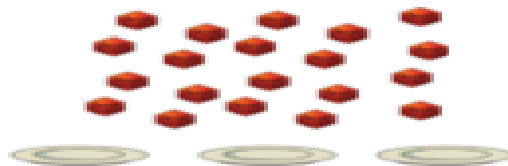
The total is ___ p
Half of ___ p is ___ p



The total is ___ p
Half of ___ p is ___ p

Task 5 – Reasoning – Use jottings to help you

Sam is halving the number 20
He gets 20 cubes and 3 plates
Has he done this correctly? Explain why.

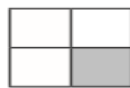
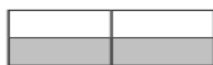
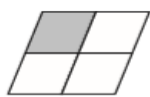


Year 1

Recognise, find and name a half as one of two equal parts of an object, shape or quantity. **Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.**

Is It a Quarter?

Can you sort these shapes into the correct column?



$\frac{1}{4}$

Not $\frac{1}{4}$

Reasoning - Fractions

Sam and Ellen were given a bowl of smarties. There were 4 colours altogether. Half of all the smarties were red, 5 were yellow, 2 were blue and 3 were green. How many smarties were there altogether?

10 children on a holiday camp went for breakfast. Half the group chose rice crispies; 2 chose corn flakes and the others chose Weetabix. How many chose to have Weetabix for breakfast?

Task 1

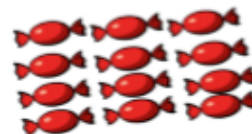
Share each quantity into four equal groups.



There are ___ cakes.

There is ___ cake in each quarter.

A quarter of ___ is ___



There are ___ sweets.

There are ___ sweets in each quarter.

A quarter of ___ is ___



There are ___ peaches.

There are ___ peaches in each quarter.

A quarter of ___ is ___

Task 2

Use counters to complete the sentences.

A quarter of 4 is

A quarter of 8 is

1 is one quarter of

3 is one quarter of

Year 2

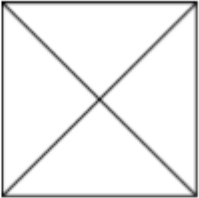
Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape and set of objects or quantity.

Write simple fractions for **example** $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.

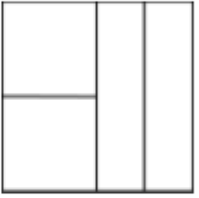
Reasoning

Three children are splitting a square into equal parts.

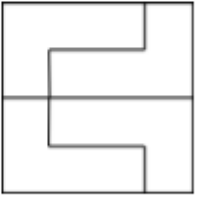
Child A



Child B

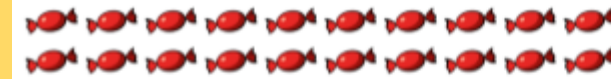


Child C



Who has split the square into equal parts? Explain why.

James has 20 sweets. He gives half of them to his friend. How many do they each have?



The whole is _____. Half of _____ is _____

Use counters to find half of the amounts. Complete the stem sentences for each amount.



The whole is _____. Half of _____ is _____

Fill in the blanks. Use counters to help you if needed.

$$\frac{1}{2} \text{ of } 10 = \square \quad \frac{1}{2} \text{ of } \square = 10$$

$$\frac{1}{2} \text{ of } 12 = \square \quad \frac{1}{2} \text{ of } \square = 12$$

$$\frac{1}{2} \text{ of } 14 = \square \quad \frac{1}{2} \text{ of } \square = 14$$

What do you notice?

Year 2

Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape and set of objects or quantity.

Write simple fractions for example $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.

Finding and recognising $\frac{1}{4}$

Share the smarties equally between 4 people.

The cake is split into equal parts.



Each part is worth a

This is the same as

Circle one quarter of the cars.



One quarter of is

is $\frac{1}{4}$ of

Complete

$$\frac{1}{2} \text{ of } 12 = \boxed{} \quad \frac{1}{2} \text{ of } 12 = \boxed{}$$

$$\frac{1}{2} \text{ of } 20 = \boxed{} \quad \frac{1}{4} \text{ of } 20 = \boxed{}$$

$$\frac{1}{2} \text{ of } 8 = \boxed{} \quad \frac{1}{4} \text{ of } 8 = \boxed{}$$

What do you notice?

Sam and Faye each have a piece of ribbon that they have cut into quarters.



How long was Sam's whole piece of ribbon?

How long was Faye's whole piece of ribbon?

Whose whole piece of ribbon was the longest?

$$\begin{array}{l} \frac{1}{4} \text{ of } 24 = \boxed{} \\ \frac{2}{4} \text{ of } 24 = \boxed{} \\ \frac{3}{4} \text{ of } 24 = \boxed{} \\ \frac{4}{4} \text{ of } 24 = \boxed{} \end{array}$$

$$\begin{array}{l} \frac{1}{4} \text{ of } 4 = \boxed{} \\ \frac{3}{4} \text{ of } 4 = \boxed{} \\ \frac{1}{4} \text{ of } 8 = \boxed{} \\ \frac{3}{4} \text{ of } 8 = \boxed{} \end{array}$$

$$\begin{array}{l} \frac{1}{4} \text{ of } \boxed{} = 5 \\ \frac{3}{4} \text{ of } \boxed{} = 15 \\ \frac{1}{4} \text{ of } \boxed{} = 2 \\ \boxed{} \text{ of } 8 = 6 \end{array}$$



Fractions games

- <http://www.snappymaths.com/counting/fractions/interactive/halfquartersimm/halfquartersimm.htm>
- <https://www.topmarks.co.uk/maths-games/hit-the-button>
- <http://www.bbc.co.uk/skillswise/game/ma17frac-game-dolphin-racing->
- <http://www.maths-games.org/fraction-games.html>



Help at Home

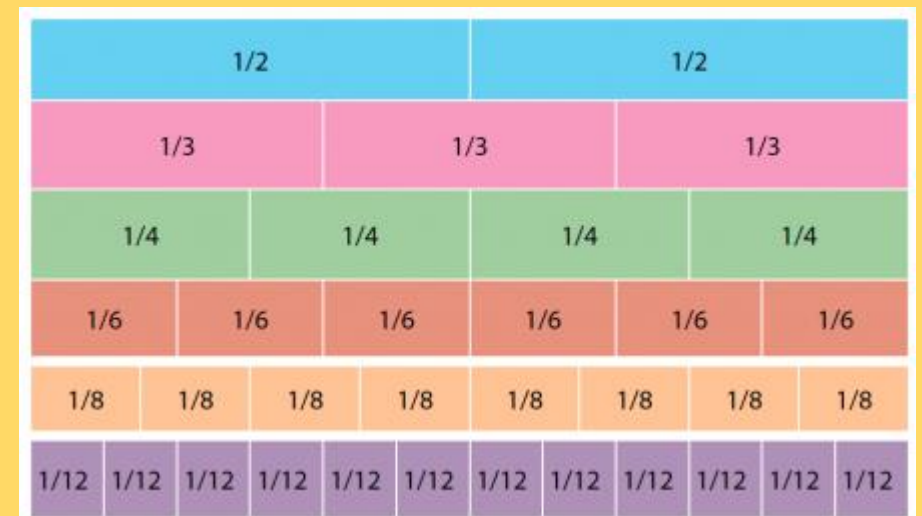
In **Year 1** children will learn about **halving numbers**. The best way to show children halving, is to actually give them an even number of objects (for example: sweets, pasta shapes or counters). Ask them to divide the group into two groups of the same number. They may not be sure of how to do this, so you may need to draw two big circles on a piece of paper and show them how to share the objects, one by one, into the two circles.

In **Year 2** they'll continue learning about halves and quarters. This will also coincide with learning more about telling the time on an analogue clock, as they'll be beginning to tell the time to the nearest half past/to and quarter past/to the hour.

KS1 Sats Example Question:

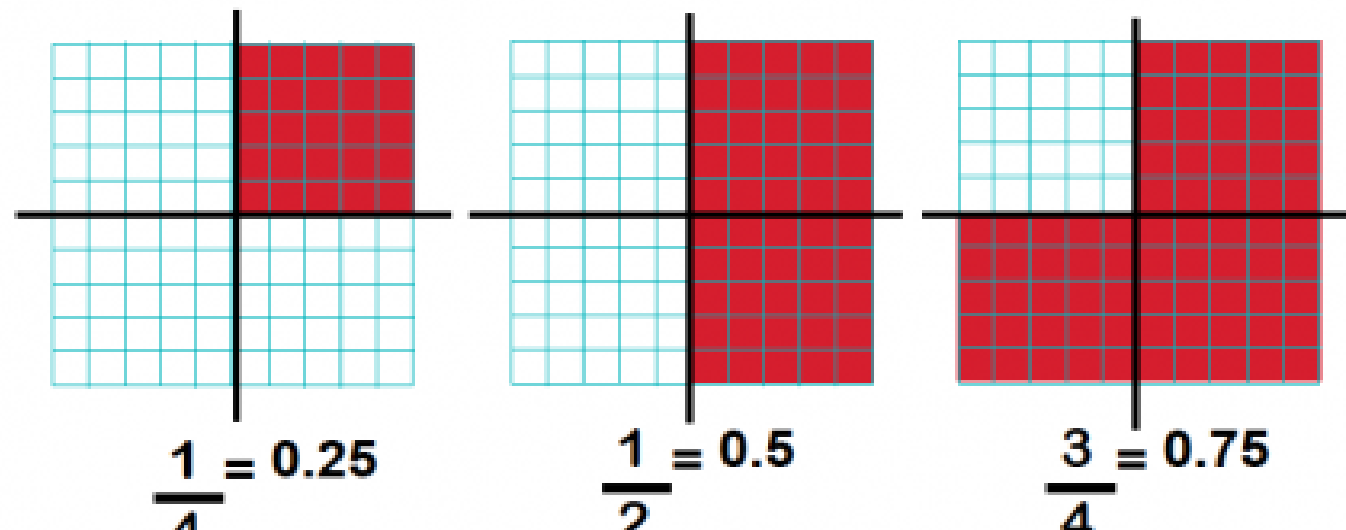
Dolls are on special offer, they normally cost £10 each but have been reduced to half price. How much will one doll cost now?

Fraction wall on display



Children learn about **equivalence in Years 3 and 4**, understanding that $\frac{1}{2}$ is the same as $\frac{3}{6}$, or $\frac{8}{10}$ is the same as $\frac{4}{5}$. They start to learn about equivalence with the help of diagrams, but then need to move onto recognising equivalent fractions without having to see or draw a pictorial representation. You can help your child with equivalence by using a fraction wall (see above). You can ask your child questions such as: What fractions are the same as $\frac{1}{4}$? By looking at the wall, they should be able to tell you that $\frac{2}{8}$ and $\frac{4}{16}$ are the same as $\frac{1}{4}$.

In **Years 5 and 6**, they will start to **relate fractions to decimals and percentages**. An empty hundred number square really helps with this. Ask your child to colour half the squares. Explain to them that they have coloured $\frac{1}{2}$, but they have also coloured $\frac{50}{100}$. We write this in decimal form as 0.5. Encourage them to colour $\frac{1}{4}$ and explain that this is $\frac{25}{100}$ or 0.25. You can then go onto explain to them that 25% is the same as one quarter, 50% is the same as one half and 75% is the same as three quarters.



End of Lower KS2

Pupils should be taught to:

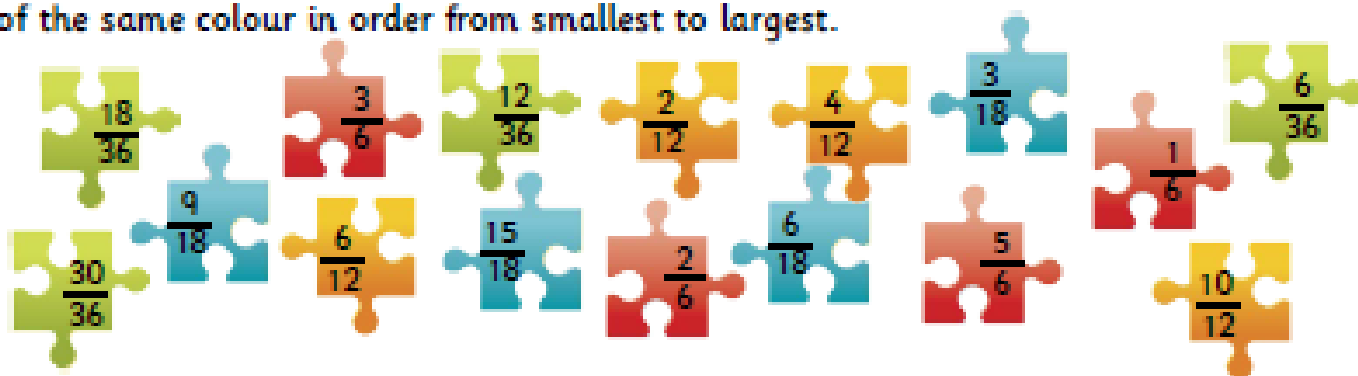
- recognise and show, using diagrams, families of common equivalent fractions
- solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
- add and subtract fractions with the same denominator
- recognise and write decimal equivalents of any number of tenths or hundredths
- recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$
- round decimals with one decimal place to the nearest whole number
- compare numbers with the same number of decimal places up to two decimal places
- solve simple measure and money problems involving fractions and decimals to two decimal places

Families of equivalent fractions

How many more equivalent fractions can you find with 18 being the largest denominator?

$$\frac{\boxed{}}{18} = \frac{\boxed{}}{} = \frac{\boxed{}}{} = \frac{\boxed{}}{} = \frac{\boxed{}}{} = \frac{\boxed{}}{3}$$

3. Help the children put the pieces into (a) families of equivalent pieces then (b) pieces of the same colour in order from smallest to largest.



End of upper KS2

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- use factors to simplify fractions; use common multiples to express fractions in the same denominator
- compare and order fractions, including fractions > 1
- add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
- multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]
- divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$]
- multiply 1-digit numbers with up to two decimal places by whole numbers
- and use equivalences between simple fractions, decimals and percentages, including in different contexts

Sam added two fractions together and got $\frac{7}{8}$ as the answer.

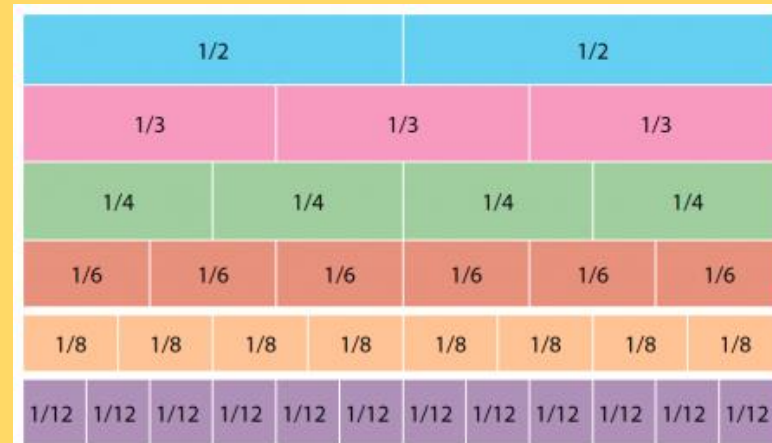
Write down two fractions that Sam could have added.

Tom wrote down two fractions. He subtracted the smaller fraction from the larger and got $\frac{1}{5}$ as the answer.

Write down two fractions that Tom could have subtracted.

Tom and Sam shared equally one third of a chocolate bar.

What fraction of the chocolate bar did each child get?



5. The carpet layer has sent his bill, he spent $2\frac{5}{10}$ hours cutting the carpet and laying the grippers and $4\frac{2}{3}$ hours laying the carpet.

He has charged the school for 7 hours 15 mins is the charge correct?

Explain your answer.



School Improvement Areas

Times Tables

- The new on-screen check will last no longer than five minutes and is similar to the checks many schools use already. It will enable teachers to monitor a child's progress in a consistent and reliable way, but has been carefully designed to avoid causing additional stress for children and teachers.
- It will be sat by 8 and 9 year olds in Year 4, beginning in 2020 (current year 2 children)

Reasoning

- Reasoning out the answer requires a student to examine if the final solution is logical and practical. It is not enough just to know how to solve the problem. Students should also be able to articulate why they chose a particular strategy and the steps they followed to solve the problem.