All Saints C of E Primary School

Year 6 Fractions, Decimals and Percentages

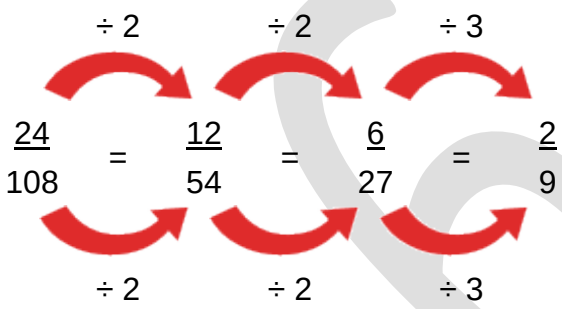
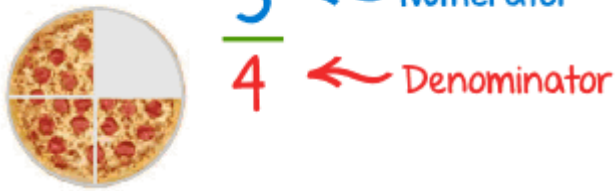
By the end of Year Six, children have been taught to:

<table>
<tr><th>Objective</th><th>Why is it important? Things to watch out for! Taught strategies</th></tr>
<tr><td>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</td><td>
Factors are numbers you can multiply together to get another number: Example: 2 and 3 are factors of 6, because 2 × 3 = 6. 3 and 4 are factors of 12, because 3 × 4 = 12. Also 2 × 6 = 12 so 2 and 6 are also factors of 12. When children are asked to simplify fractions the key piece of learning they have acquired throughout primary school is their times tables knowledge. If a child is able to recognise multiples and factors of number they can recognise common factors and therefore simplify fractions.

A simple example of this is:

<table>
<tr><td>$\frac{10}{20}$</td><td>A common factor of 10 and 20 is 10.</td></tr>
<tr><td>$10 \div 10 = 1$
$20 \div 10 = 2$</td><td>We divide both 10 and 20 by the common factor which is 10.</td></tr>
<tr><td>$\frac{10}{20} = \frac{1}{2}$</td><td></td></tr>
</table>

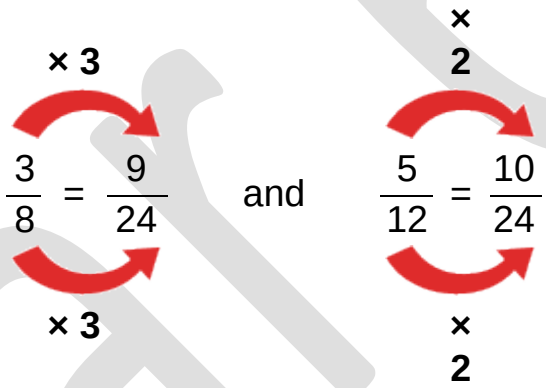
A more complex example: Simplify the fraction $\frac{24}{}$
</td></tr>
</table>

	108  That is as far as we can go. The fraction simplifies to 2 **9**
Maths has its own specialised language, the *numerator* and *denominator* being words that either we know or we don't. The words do not give children any clue as to what they mean or their orientation to each other in the fraction. The *denominator* is the amount of parts the whole has been cut into and the *numerator is the amount of parts you have. Through practical activities and other ways of making the words memorable, is the only way to* reinforce the meaning of the words. Using silly voices or creating images to make it memorable is a way that can work for some children. Darthvader (with the voice) splitting the whole in half with his light saber is one thing to try if we are feeling theatrical.  	
compare and order fractions, including fractions >1	When the denominators are not the same we need to make them the same (using equivalent fractions) . **Example: Which is larger: 3 or 5 ?**

8 **12**

Look at this:

- When we multiply 8 **×** 3 we get 24,
- and when we multiply 12 **×** 2 we **also** get 24 (*important: what we do to the bottom we must also do to the top*):



We can now see that ***9*** is smaller than **10** (because 9 is smaller than 10).

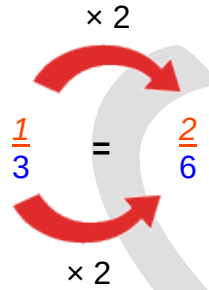
24 24

so $\frac{5}{12}$ is the larger fraction.

Year 6

	 is less than  $\frac{3}{8}$ $\frac{5}{12}$
add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions	$\frac{1}{3} + \frac{1}{6} =$ **Step 1**: The bottom numbers are different. See how the slices are different sizes?  We need to make them the same before we can continue, because we **can't** add them like that. The number "6" is twice as big as "3", so to make the bottom numbers the same we can multiply the top and bottom of the first fraction by **2**, like this:

Year 6



Important: you multiply **both top and bottom** by the same amount, to keep the value of the fraction the same. Now the fractions have the same bottom number ("6"), and our question looks like this:

$$\frac{2}{6} + \frac{1}{6}$$



Step 2: Add the top numbers and put them over the same denominator:

$$\frac{2}{6} + \frac{1}{6} = \frac{2+1}{6} = \frac{3}{6}$$

In picture form it looks like this:

Yego



Step 3: Simplify the fraction: ***3 = 1***

6 2

In picture form the whole answer looks like this:



multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $^{1}/_{4} \times {}^{1}/_{2} = {}^{1}/_{8}$)

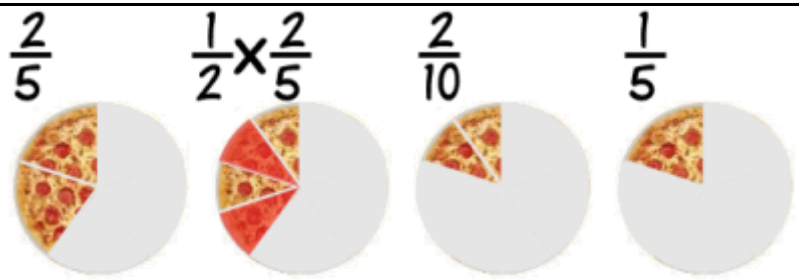
Step 1. Multiply the top numbers (numerators):

$\frac{1}{2} \times \frac{2}{5} = \frac{1 \times 2}{2 \quad 5}$

Step 2. Multiply the bottom numbers (denominators):

Here you can see it with pizza ...

Year 6

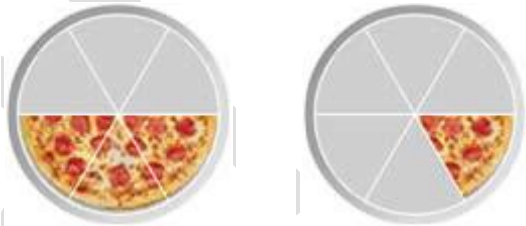
	$\frac{1}{2} \times \frac{2}{5} = \frac{1 \times 2}{2 \times 5} = \frac{2}{10}$ **Step 3**. Simplify the fraction: $\frac{2}{10} = \frac{1}{5}$	 ... and do you see how two-tenths is simpler as one-fifth?
	Here's a rhyme to help remember: ♫ *"Multiplying fractions: no big problem,* *Top times top over bottom times bottom.* *"And don't forget to simplify,* *Before it's time to say goodbye"* ♫	
Divide proper fractions by whole numbers	$\frac{1}{2} \div 3 =$ $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$	Multiply the bottom number of the fraction by the whole number:

Year 6

$\frac{1}{2} \div 3 = \frac{1}{6}$	Fraction is already as simple as possible, so no need for step 2. Answer:

Does $\frac{1}{2} \div 3$ really equal $\frac{1}{6}$? Well look at the pizzas below ...

When half a pizza is divided into 3 equal parts, each person gets one sixth of a whole pizza.



A half divided by 3

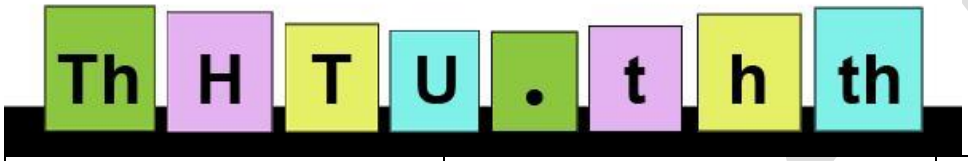
Another example

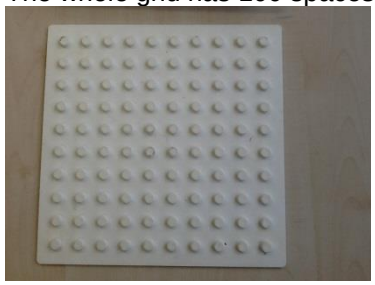
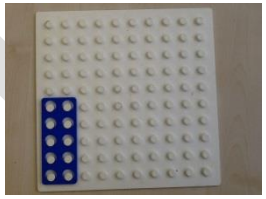
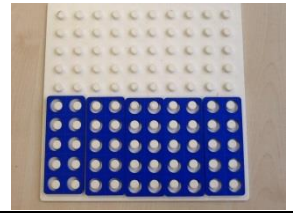
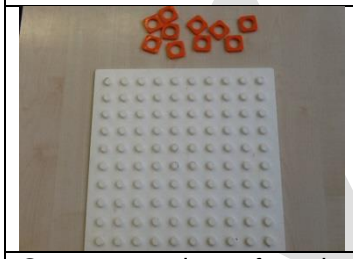
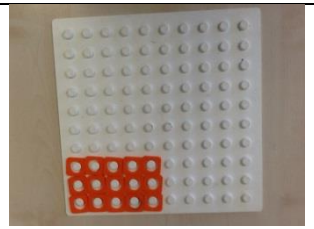
$\frac{2}{5} \div 4$

Step 1. Multiply the bottom number of the fraction by the whole number:

$\frac{2}{5} = \frac{2}{20}$

5 × 4 20

	Step 2. Simplify the fraction: $\frac{2}{20} = \frac{1}{10}$
identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places	

The whole grid has 100 spaces. 	Each blue piece of numicon will fill 10 spaces. 	One piece of blue numicon is worth one tenth and is covering ten out of 100 spaces. $\frac{1}{10} = 0.1$ 	Five blue pieces of numicon are cove five tenths of the whole grid. $\frac{5}{10} = 0.5$ - which is also equivalent to $\frac{1}{2}$ 
			
One orange piece of numicon has an individual value of 1.	One piece of numicon is covering one space out of 100. $\frac{1}{100} = 0.01$	Fifteen pieces of numicon are covering fifteen out of 100. $\frac{15}{100} = 0.15$ 0.15 partitioned is one tenth and five hundredths but together is called fifteen hundredths.	

solve problems involving the calculation of percentages (e.g. of measures) such as 15% of 360 and the use of percentages for comparison	 **250 000** people visited a theme park in one year. **15%** of the people visited in April and **40%** of the people visited in August. How many people visited the park in the rest of the year?	 Emily makes 250 grams of a snack mixture. 15% of the weight is raisins, 25% is banana chips and the rest is peanuts. How many grams of **peanuts** does she use?
	Undoing I think of a number and then reduce it by 15%. The number I end up with is 306. What was my original number?	In a sale where everything is reduced by 15% I paid the following prices for three items. £255, £850, £4.25 What was the original selling price?

year 6