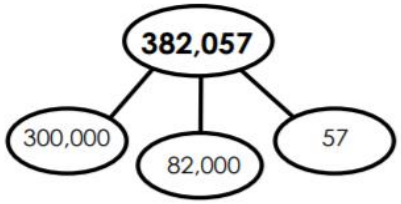
Somerset Bridge Primary School
Aspire - Brave - Care - Collaborate

Maths: Place Value
Autumn: Year 6

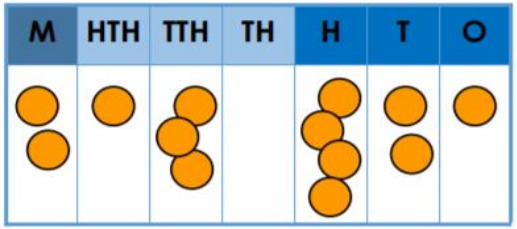
Representing Numbers

Numbers can be represented in a variety of ways:



4,812,300	
4,000,000	812,300

The above representations are often called part, part, whole diagrams. They can show different ways to partition a number.



The counters on this place value chart show the number 2,130,421. This is written as two million, one hundred and thirty thousand, four hundred and twenty-one.

Compare and Order ✓

equals

26 + 38 = 8 × 8

Both calculations have the value 64.

greater than

223 873 > 98 256

The number on the left has 2 hundred thousands and the number on the right has 0 hundred thousands.

less than

901 198 < 1 091 098

The number on the right has 1 million and the number on the left has 0 millions.

smallest | 81 782 | 127 352 | 127 835 | 137 019 | 200 002 | greatest

Key Vocabulary ✓

Rounded	Making a number simpler but keeping it value close to what it was.
Negative number	Numbers below zero.
Partition	A way of splitting numbers into smaller parts to make them easier to work with.
Digit	A single symbol to make numbers.
Interval	The difference between two numbers.
Sequence	A list of numbers or objects in a special order. Example: 3, 5, 7, 9, ... is a sequence starting at 3 and increasing by 2 each time.
Linear sequence	A number pattern which increases (or decreases) by the same amount each time.

Round Any Number

Rounding to the nearest 1000

2000 ←	2499	2500 →	3000
round down		round up	

Rounding to the nearest 10 000

20 000 ←	24 999	25 000 →	30 000
round down		round up	

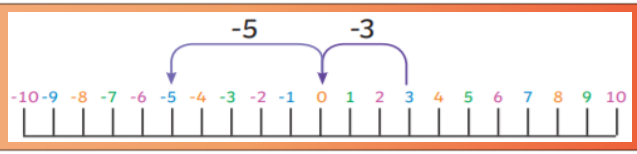
Rounding to the nearest 100 000

200 000 ←	249 999	250 000 →	300 000
round down		round up	

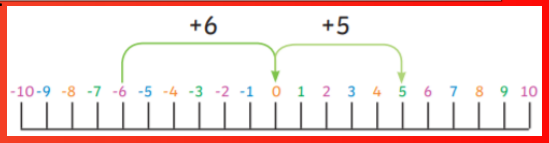
Rounding to the nearest 1 000 000

2 000 000 ←	2 499 999	2 500 000 →	3 000 000
round down		round up	

Negative Numbers 3-8= -5



-6 + 11 = 5



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Maths: Four Operations
Autumn: Year 6

Column Addition

	4	5	8	6	4
+	2	3	4	9	7
	6	9	3	6	1
		1	1	1	

Starting with the ones, add each column in turn. Regroup tens, hundreds, thousands, ten thousands as required.

Column Subtraction

	3	5	$^{6}\not{7}$	$^{13}\not{4}$	$^{1}2$
-		3	4	7	6
	3	2	2	6	6

Starting with the ones, subtract each column in turn. Exchange tens, hundreds, thousands and/or ten thousands as required.

Order of Operations

B	Brackets	$10 \times (4 + 2) = 10 \times 6 = 60$
O	Order	$5 + 2^2 = 5 + 4 = 9$
D	Division	$10 + 6 \div 2 = 10 + 3 = 13$
M	Multiplication	$10 - 4 \times 2 = 10 - 8 = 2$
A	Addition	$10 \times 4 + 7 = 40 + 7 = 47$
S	Subtraction	$10 \div 2 - 3 = 5 - 3 = 2$

Primes

A prime number has only 1 and itself as factors: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 33, 37, 41, 43

A composite number has factors other than 1 and itself.

Squares and Cubes

Square numbers result from a number being multiplied by itself (e.g. 5 × 5 = 25):

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

Cube numbers result from a number being multiplied by itself twice (2 × 2 × 2 = 8):
1, 8, 27, 64, 125

Key Vocabulary

		✓
Addend	The numbers added together to form the sum.	
Sum	The result of an addition, the answer.	
Subtract	To subtract means to take away from a group or a number of things.	
Subtrahend	A quantity which is subtracted from another.	
Minuend	A number from which the subtrahend is to be subtracted. E.g. 53247 - 823, where 53247 is the minuend.	
Quotient	The answer when dividing. Dividing 10 by 5 is 2, 2 is the quotient.	
Divisor	The number we divide by. E.g 12 ÷ 3 = 4, 3 is the divisor.	

Short Division

Start from the left.

		4	4	0	· 5	
12	5	$^{5}2$	$^{4}8$	6	$^{6}0$	

5 ÷ 12 = 0 r5
52 ÷ 12 = 4 r4
48 ÷ 12 = 4
6 ÷ 12 = 0 r6

Common Factors

Factors of 48

1	2	3	4	6	8	12	16	24	48

Factors of 30

1	2	3	5	6	10	15	30

Common factors: 1, 2, 3, 6

Common Multiples

Multiples of 3

3	...	18	21	24	...	39	42

Multiples of 7

7	14	21	28	35	42

Common multiples: 21, 42...

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Maths: Fractions
Autumn: Year 6

Simplifying Fractions

$\frac{9}{12}$

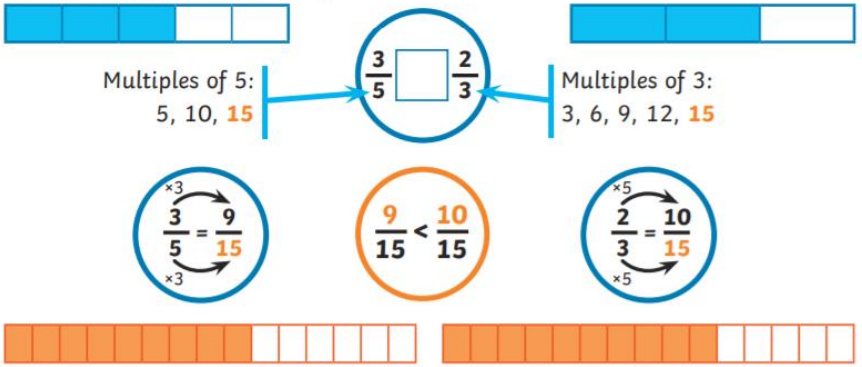
Factors of 9:
1, 3, 9

Factors of 12:
1, 2, 3, 4, 6, 12

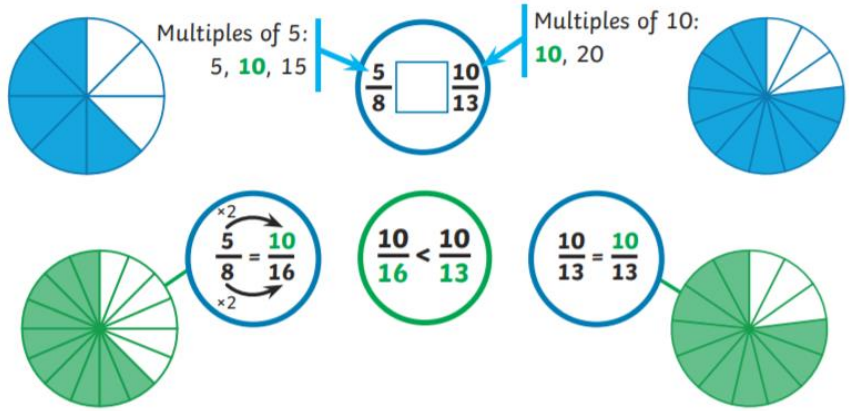
$\frac{9}{12} \overset{\div 3}{=} \frac{3}{4}$

Compare and Order Fractions

Use the Common Denominator



Use the Common Numerator



Key Vocabulary

		✓
Proper fraction	A fraction where the numerator (the top number) is less than the denominator (the bottom number).	
Improper fraction	a fraction in which the numerator (top number) is greater than or equal to the denominator (bottom number).	
Highest common factor	The Highest Common Factor (HCF) of two or more given numbers is the largest number which divides each of the given numbers without leaving any remainder.	
Lowest common factor	The Lowest Common Multiple (LCM) of two or more numbers is the smallest of the common multiples of those numbers.	
simplify	to make less complicated, clearer, or easier. maths to reduce (an equation, fraction, etc) to a simpler form by cancellation of common factors.	
Simplest form	A fraction is in simplest form when the top and bottom cannot be any smaller, while still being whole numbers.	
Mixed number	A mixed number is a whole number, and a proper fraction represented together.	

Dividing fractions by whole numbers.

$\frac{2}{5} \div 2 = \frac{1}{5}$ Multiplication and division are the inverse of one another so: $\frac{2}{5} \times \frac{1}{2} = \frac{2}{10}$

÷ 2 is the same as × $\frac{1}{2}$

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Maths: Fractions
Autumn: Year 6

Simplifying Fractions

Add or subtract the whole numbers and fractions separately.

$2\frac{2}{5}+1\frac{3}{10}$

$2+1=3$

$\frac{2}{5}+\frac{3}{10}=\frac{4}{10}+\frac{3}{10}=\frac{7}{10}$

$3+\frac{7}{10}=3\frac{7}{10}$

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

$2-1=1$

$\frac{1}{2}-\frac{1}{4}=\frac{2}{4}-\frac{1}{4}=\frac{1}{4}$

$1+\frac{1}{4}=1\frac{1}{4}$

Convert the mixed numbers to improper fractions.

$2\frac{2}{5}+1\frac{3}{10}$

$2\frac{2}{5}=\frac{12}{5}$ $\quad 1\frac{3}{10}=\frac{13}{10}$

$\frac{12}{5}+\frac{13}{10}=\frac{24}{10}+\frac{13}{10}=\frac{37}{10}$

$\frac{37}{10}=3\frac{7}{10}$

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

$2\frac{1}{2}=\frac{5}{2}$ $\quad 1\frac{1}{4}=\frac{5}{4}$

$\frac{5}{2}-\frac{5}{4}=\frac{10}{4}-\frac{5}{4}=\frac{5}{4}$

$\frac{5}{4}=1\frac{1}{4}$

Adding and Subtracting Proper

Same Denominators

$\frac{4}{7}+\frac{2}{7}=\frac{6}{7}$

$\frac{8}{11}-\frac{3}{11}=\frac{5}{11}$

Different Denominators

$\frac{2}{7}+\frac{3}{5}$

Multiples of 7: 7, 14, 21, 28, **35**
Multiples of 5: 5, 10, 15, 20, 25, 30, **35**

$\frac{2}{7}=\frac{10}{35}, \frac{3}{5}=\frac{21}{35}$

$\frac{10}{35}+\frac{21}{35}=\frac{31}{35}$

$\frac{9}{10}-\frac{1}{4}$

Multiples of 10: 10, **20**
Multiples of 4: 4, 8, 12, 16, **20**

$\frac{9}{10}=\frac{18}{20}, \frac{1}{4}=\frac{5}{20}$

$\frac{18}{20}-\frac{5}{20}=\frac{13}{20}$

Multiplying Proper Fractions

Multiplying Fractions by Fractions

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

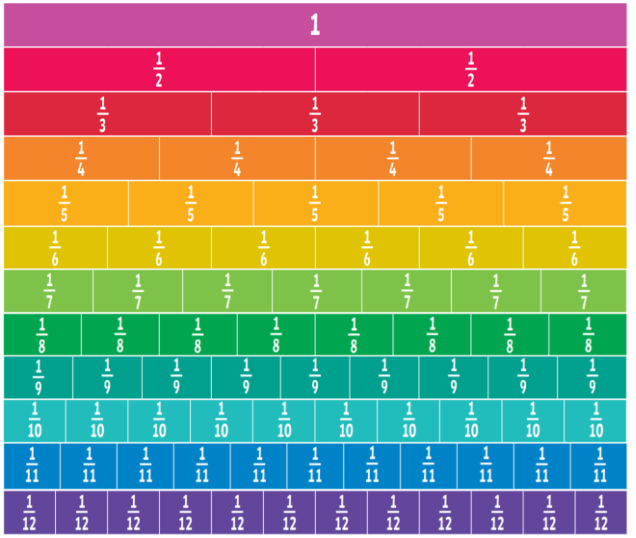
Multiplying Fractions by Whole Numbers

$\frac{2}{5}\times 3 \rightarrow$ 

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

$\frac{2}{5}\times\frac{3}{1}=\frac{6}{5}=1\frac{1}{5}$

Fraction Wall



Fraction/Decimal Equivalence

$\frac{1}{8}$	0.125	12.5%	$\frac{1}{10}$	0.1	10%	$\frac{1}{100}$	0.01	1%
$\frac{2}{8}=\frac{1}{4}$	0.25	25%	$\frac{2}{10}=\frac{1}{5}$	0.2	20%	$\frac{2}{100}$	0.02	2%
$\frac{3}{8}$	0.375	37.5%	$\frac{3}{10}$	0.3	30%	$\frac{3}{100}$	0.03	3%
$\frac{4}{8}=\frac{2}{4}$	0.5	50%	$\frac{4}{10}=\frac{2}{5}$	0.4	40%	$\frac{4}{100}$	0.04	4%
$\frac{5}{8}$	0.625	62.5%	$\frac{5}{10}$	0.5	50%	$\frac{5}{100}$	0.05	5%
$\frac{6}{8}=\frac{3}{4}$	0.75	75%	$\frac{6}{10}=\frac{3}{5}$	0.6	60%	$\frac{10}{100}$	0.10	10%
$\frac{7}{8}$	0.875	87.5%	$\frac{7}{10}$	0.7	70%	$\frac{25}{100}$	0.25	25%
$\frac{8}{8}=\frac{4}{4}$	1	100%	$\frac{8}{10}=\frac{4}{5}$	0.8	80%	$\frac{50}{100}$	0.50	50%
			$\frac{9}{10}$	0.9	90%	$\frac{75}{100}$	0.75	75%
			$\frac{10}{10}=\frac{5}{5}$	1	100%	$\frac{100}{100}$	1	100%

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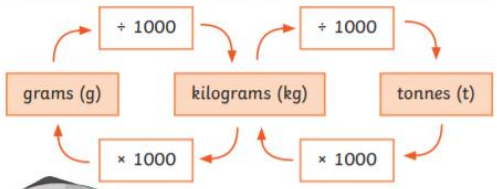
Maths: Measurement- Converting Units
Autumn: Year 6

Converting Mass

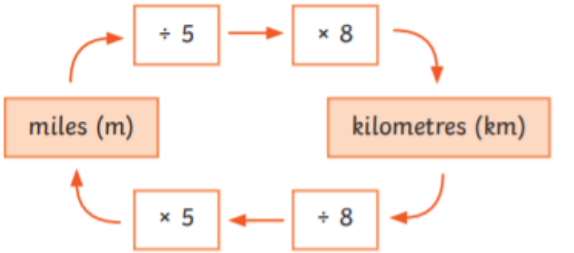
1 tonne = 1000kg
1000g = 1kg
$\frac{1}{10}$ kg = 0.1kg = 100g

$\frac{1}{4}$ kg = 0.25kg = 250g
$\frac{1}{2}$ kg = 0.5kg = 500g
$\frac{3}{4}$ kg = 0.75 = 750g



Miles to Kilometres

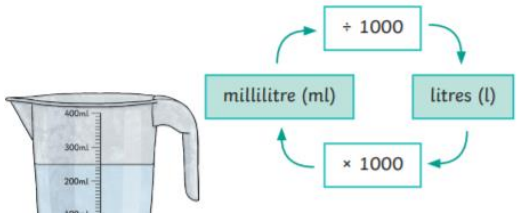
You might measure the length of a road or the distance between two cities in miles or kilometres.



Converting Capacity

1000ml = 1l
$\frac{1}{10}$ l = 0.1l = 100ml
$\frac{1}{4}$ l = 0.25l = 250ml

$\frac{1}{2}$ l = 0.5l = 500ml
$\frac{3}{4}$ l = 0.75l = 750ml
$\frac{1}{100}$ l = 0.01l = 10ml

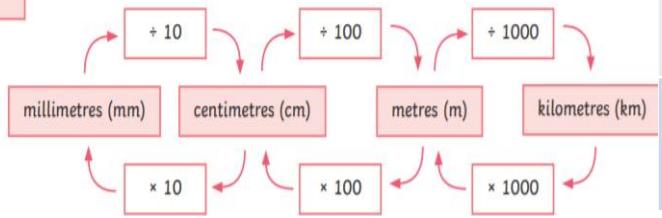


Converting Lengths

1000m = 1km
100cm = 1m
10mm = 1cm

$\frac{1}{2}$ m = 0.5m = 50cm
$\frac{1}{4}$ m = 0.25m = 25cm

$\frac{3}{4}$ m = 0.75m = 75cm
$\frac{1}{10}$ m = 0.1m = 10cm



Key Vocabulary

		✓
Mass	A measure of how much matter is in an object.	
Gram	A measure of mass. which we feel as weight.	
Kilogram	A unit of weight. Kg	
Capacity	The maximum amount that something can contain.	
Volume	The amount of space a 3D shape takes up.	
Millilitre	A unit used to measure capacity.	
Litre	A unit of volume mostly used to measure liquids.	
Millimetre	A measure of distance used for small lengths.	
Centimetre	A unit of length which is equal 1/100 of 1 meter.	

1 minute = 60 seconds. 1 hour = 60 minutes. 1 Day = 24 hours. 1 week = 7 days. 1 year = 12 months = 52 weeks = 365 days.