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Maths: Spring Y6 Number: Decimals

Fractions to Decimals

$\frac{7}{20} = \frac{35}{100}$ or 0.35 (×5)

$\frac{7}{25} = \frac{28}{100}$ or 0.28 (×4)

$\frac{7}{50} = \frac{14}{100}$ or 0.14 (×2)

$\frac{8}{200} = \frac{4}{100}$ or 0.04 (÷2)

When the denominator is not a factor or multiple of 100

$\frac{7}{8} = 7 \div 8$

	0	.	8	7	5
8	7	.	7 0	6 0	4 0

Place Value

Tens	Ones	.	tenths	hundredths	thousandths
	1 1 1		0.1 0.1 0.1 0.1	0.01 0.01	0.001 0.001 0.001 0.001 0.001 0.001

$3 + \frac{4}{10} + \frac{2}{100} + \frac{6}{1000}$ ← 3.426 → $3 + 0.4 + 0.02 + 0.006$

1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009

Dividing Decimals by Integers

8.12 ÷ 4

	2	. 0	3
4	8	. 1	1 2

6.93 ÷ 3 = 2.31

Ones	.	tenths	hundredths
1 1 / 1 1 / 1 1		0.1 0.1 0.1 / 0.1 0.1 0.1 / 0.1 0.1 0.1	0.01 / 0.01 / 0.01

Key Vocabulary

		✓
Decimal place	The position of a digit to the right of the decimal point.	
Decimal fraction	A fraction whose denominator is 10 or a multiple of 10 like 100, 1,000, 10,000, etc.	
Recurring Decimal	A recurring decimal **exists when decimal numbers repeat forever**.	
Equivalent Fraction	Fractions which have the same value, even though they may look different.	
Rounding to 3d.p.	When you round to the third decimal place, you're **rounding to the nearest thousandth**	
Hundredth	The hundredth place is **two places to the right of the decimal point**.	
Thousandth	The third decimal digit from the decimal point is the thousandths digit. For example, **0.008** is eight thousandths.	

Fractions as Decimals

$\frac{1}{3} = 0.33$ $\frac{1}{8} = 0.125$ $\frac{1}{1000} = 0.001$

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Maths: Spring Y6 Number: Decimals

Multiplying and Dividing by 10, 100 and 1000

Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths
			2	0	8	
		2	0	8		
			2	0	8	

× 10 ÷ 10

Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths
		4	3	5		
4	3	5	0			
		4	3	5		

× 100 ÷ 100

Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths
			1	3	5	1
1	3	5	1			
			1	3	5	1

× 1000 ÷ 1000

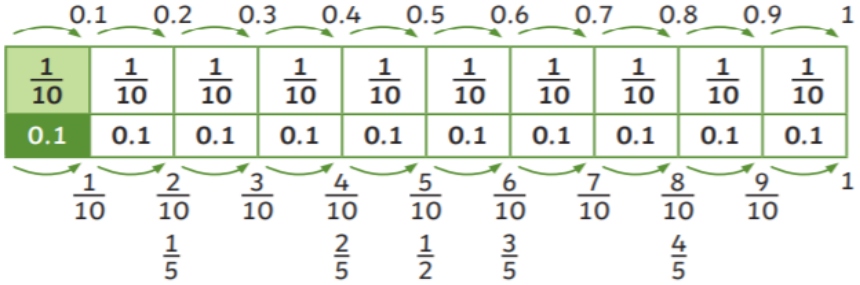
Multiplying Decimals by an Integer

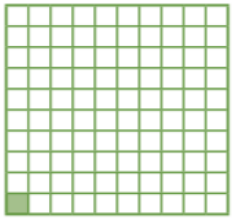
3.21 × 3 = 9.63

Ones	tenths	hundredths
1 1 1	0.1 0.1	0.01
1 1 1	0.1 0.1	0.01
1 1 1	0.1 0.1	0.01

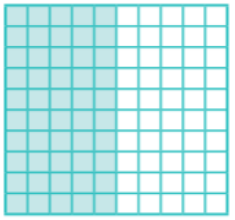
	3	. 4	5
×			3
1	0	. 3	5
	1		1

Decimal Numbers as Fractions

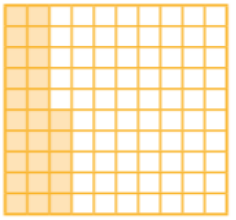




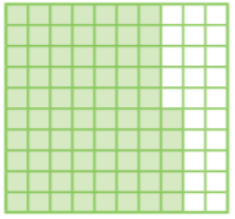
$\frac{1}{100} = 0.01$



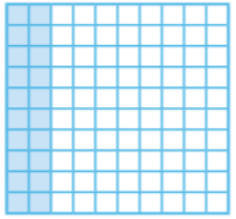
$\frac{50}{100} = \frac{1}{2} = 0.5$



$\frac{25}{100} = \frac{1}{4} = 0.25$



$\frac{75}{100} = \frac{3}{4} = 0.75$



$\frac{20}{100} = \frac{1}{5} = 0.2$

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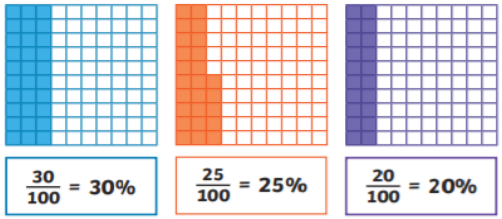
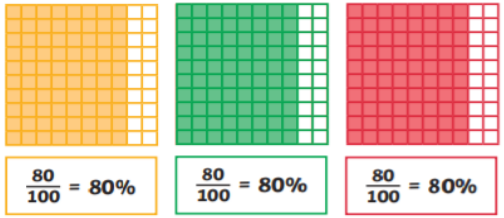
Maths: Spring Y6 Number: Percentages

Order Fractions, Decimals and Percentage

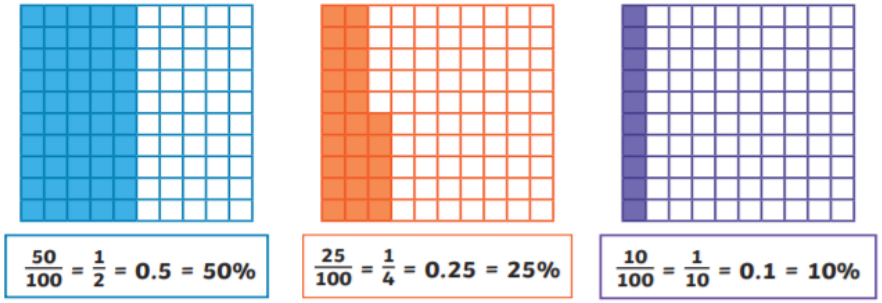
$\frac{3}{10}$ > 25% > 0.2

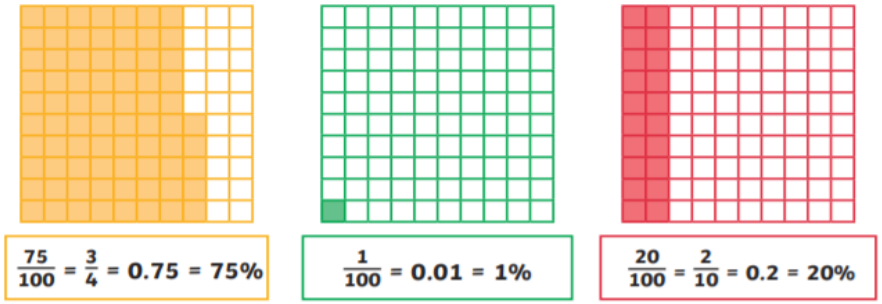


80% = 0.8 = $\frac{4}{5}$

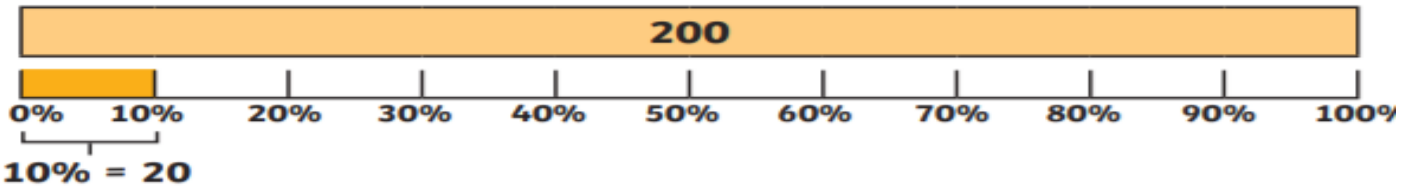


Equivalent Fractions, Decimals and Percentalges





Finding the Percentage of an Amount



50% = $\frac{1}{2}$ so we can divide by 2	10% = $\frac{1}{10}$ so we can divide by 10	25% = $\frac{1}{4}$ so we can divide by 4	1% = $\frac{1}{100}$ so we can divide by 100

Key Vocabulary

		✓
Percent (%)	One part in every hundred.	
Percentage	A number, or amount in each hundred.	
Discount	Discounts are taking an amount off a price and that discounts are a percentage of the price that you do not have to pay	
Equivalent Fraction	Two or more fractions that are equal.	
Equivalent Decimal	Decimal numbers with the same value.	
Convert	To change from one unit into another.	
Compare	Examine the difference between numbers.	
Order	Putting things in the correct place according to a rule.	

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Maths: Spring Y6 Number: Algebra

Forming Expressions

An expression is a group of numbers, letters and operation symbols.

Add 14 to a	$a + 14$
Subtract 20 from b	$b - 20$
Multiply c by 4	$4c$
12 more than d	$d + 12$
Multiply e by 3 and subtract 5	$3e - 5$
Add 12 to f and then multiply by 2	$2(f + 12)$

Forming Equations

$a + 14 = 20$

$b - 20 = 15$

$4c = 28$

$d + 12 = 30$

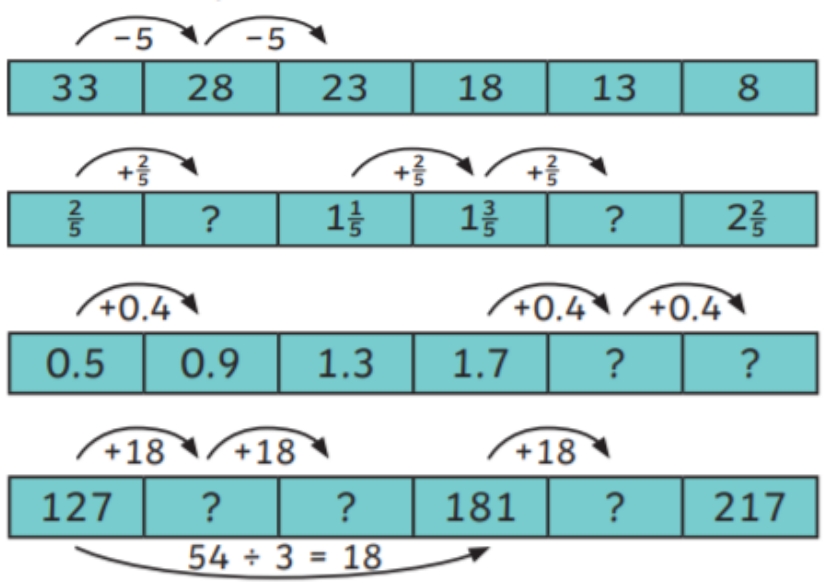
$3e - 5 = 10$

$2(f + 12) = 44$

An equation is a number statement with an equal sign (=). Expressions on either side of the equal sign are of equal value.

Linear Number Sequences

A linear number sequence is a sequence where each value increases or decreases by the same amount each time. Each number in a linear number sequence is called a term. The constant change between each number is called the term to term rule. To identify the term to term rule, find the difference between two adjacent terms. When you know the rule, you can use it to find the next number in the sequence. It can also be used to find a missing number within a sequence.

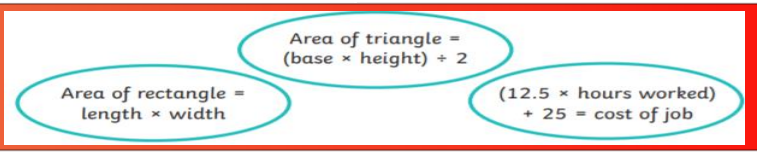


Key Vocabulary

		✓
Variable	A symbol for a value we don't know yet. It is usually a letter like x or y. ... Example: in x + 2 = 6, x is the variable	
Expression	An expression is a set of terms combined using the operations +, – , x or ÷	
Equation	An expression that contains an equals symbol.	
One/two step equation	An equation that takes you one or two steps to solve.	
Pairs of unknowns	An unknown is a number we do not know.	
Enumerate	A complete, ordered listing of all the items in a collection.	

Formulas/Formulae

(The word formula has two possible plural forms, formulae and formulas.) A formula is a special type of equation that shows the relationship between different substituted variables. Formulas are often used in geometry to find area and volume.



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Maths: Spring Y6 Number: Algebra

Equations with Pairs of Unknowns

In an equation with two unknown numbers, there may be **several** possible values for the unknowns that will balance the equation.

$ab = 18$

a	b
1	18
2	9
3	6
6	3
9	2
18	1

$2a + b = 10$

a	b
2	6
3	4
4	2
5	0

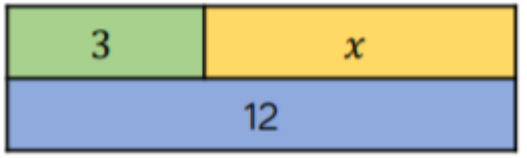
Enumerating Possibilities

Enumerating means making a complete list of answers to a problem. • Use a system for finding the possibilities. • Organise your findings in an ordered list or table. • Have a way of deciding when all possibilities have been found.

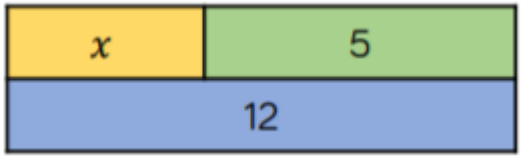
Two scoops of two different flavours give six possible combinations.
• chocolate and strawberry • chocolate and vanilla
• chocolate and mint
• strawberry and vanilla
• strawberry and mint
• vanilla and mint

There are four ice cream flavours.

$3x = 12$



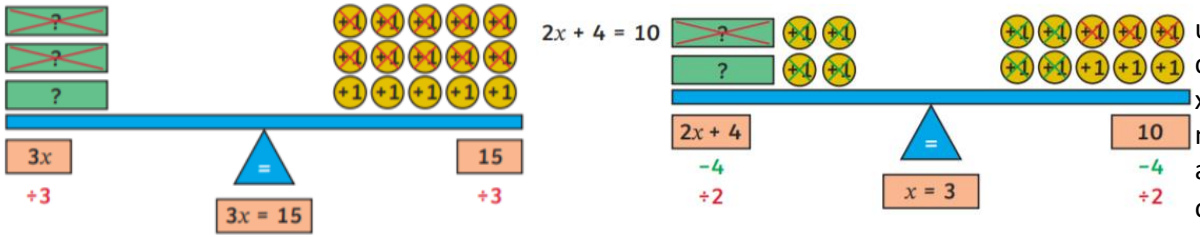
$12 = 3 + x$



$x + 5 = 12$

Solving One-Step and Two-Step Equations

In algebra, missing numbers in equations are represented by letters. Any letter can be used but often the letter x is used. An algebraic x $x$is written to look different to a normal letter 'x' to avoid confusion.



The multiplication sign is not used in algebra to avoid confusing it with the algebraic x used to show a missing number. Inverse operations are used to isolate the letter on one side of the equation.

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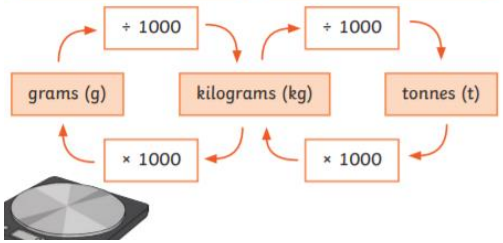
Maths: Spring Y6 Measurement: Converting Units

Converting Mass

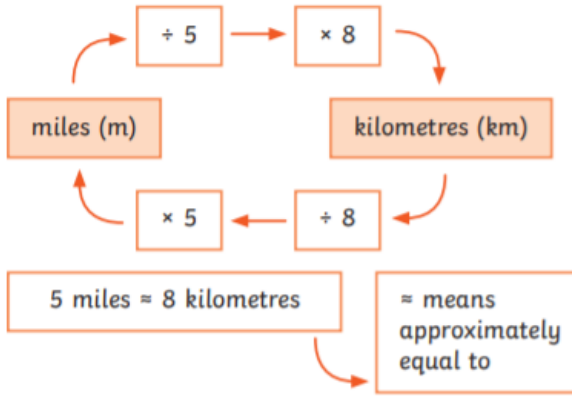
1 tonne = 1000kg
1000g = 1kg
$\frac{1}{10}$ kg = 0.1kg = 100g

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



Miles to Kilometres

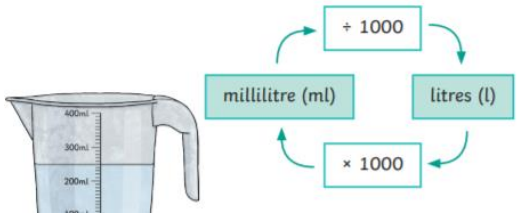
You might measure the length of a road or the distance between two cities in miles or kilometres.



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

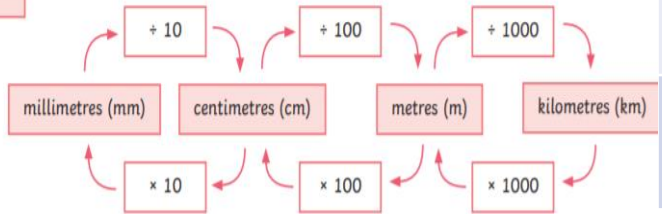


Converting Lengths

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

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.

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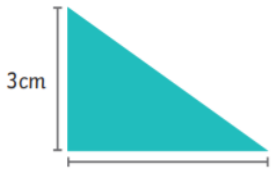
Maths: Spring Y6 Measurement: Perimeter, Area and Volume

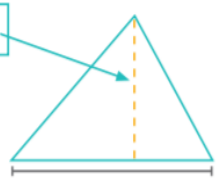
Area of Triangles

base × perpendicular height ÷ 2 = area of a triangle

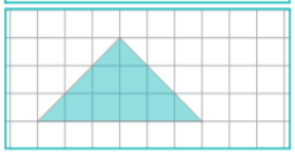


8cm × 3cm ÷ 2
area = 12cm²

perpendicular height = 5cm



6cm × 5cm ÷ 2
area = 15cm²



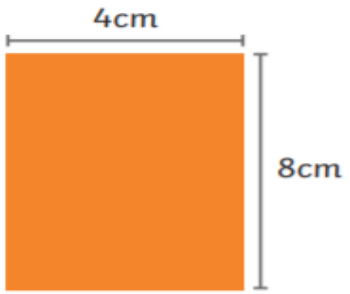
Counting squares:
6 whole squares = 6cm²
6 half squares = 3cm²
6cm² + 3cm² = 9cm²
area = 9cm²

Using formula:
6cm × 3cm
÷ 2 = 9cm²

Area of Rectangles

length × width = area of a rectangle

Counting squares:
area = 18cm²
Use formula:
6cm × 3cm
area = 18cm²

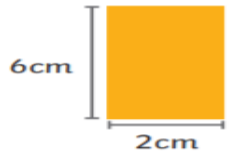


8cm × 4cm area = 32cm²

Perimeter of Rectangles

perimeter = length + width + length + width or (length + width) × 2

5cm + 4cm + 5cm + 4cm
perimeter = 18cm



(6 + 2) × 2
perimeter = 16cm

Key Vocabulary

		✓
Perimeter	The measurement around the edge.	
Area	The amount of space taken up by a 2D shape.	
Volume	Volume is the amount of space a 3D shape takes up.	
Cubic units	The units used to measure volume. The volume of a unit cube whose length, width and height are 1 unit each is 1 cubic unit.	
Rectilinear	A shape that has straight sides and right angles.	
Parallelogram	A flat shape with 4 straight sides where opposite sides are parallel.	
Perpendicular Height	The perpendicular height (h) is the height of the pyramid measured at a right angle from the base.	

Perimeter

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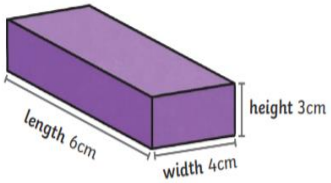
Maths: Spring Y6 Measurement: Perimeter, Area and Volume

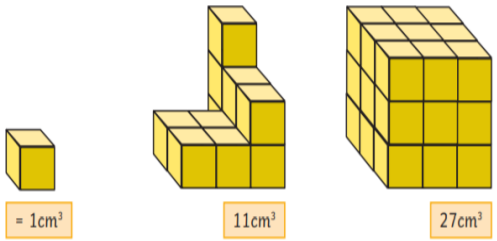
Volume of Cuboids

length × width × height = volume of a cuboid



Multiply dimensions in **any** order:
3cm × 6cm × 4cm
volume = 72cm³

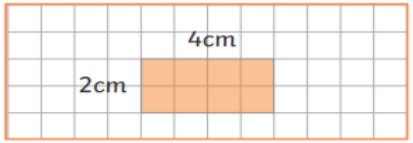
Volume – Counting Cubes



Volume of a cube is length x width x height. Remember multiplication is commutative so the values can be multiplied in any order.

Perimeter and Area

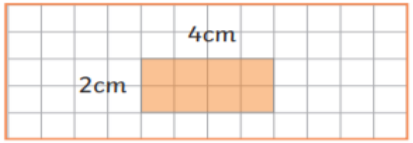
Shapes with the same area can have different perimeters.



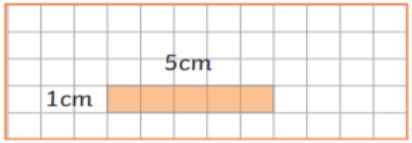
area = 8cm² perimeter = 12cm

area = 8cm² perimeter =18cm

Shapes with the same perimeter can have different areas.



area = 8cm² perimeter = 12cm

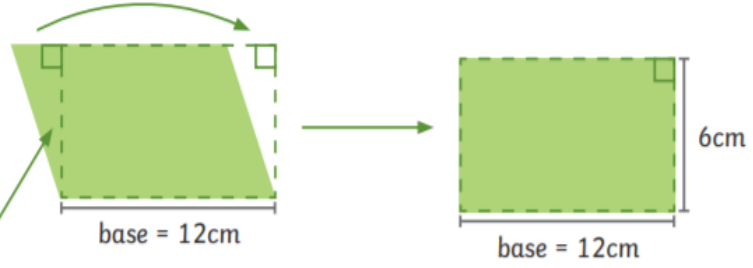


area = 5cm² perimeter = 12cm

Area of Parallelogram

base × perpendicular height = area of a parallelogram

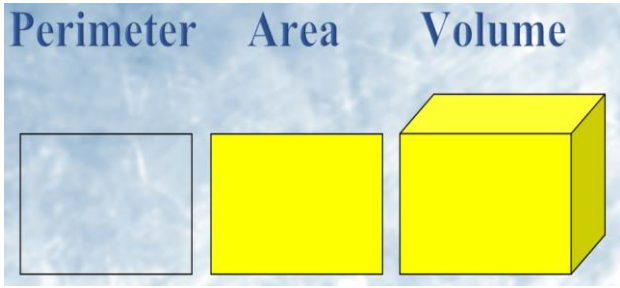
A parallelogram can be transformed into a rectangle.



perpendicular height = 6cm

12cm × 6cm =72cm²

You need to be able to:	✓
Calculate the perimeter of a shape.	
Calculate the area of a square, rectangle, triangle, parallelogram and trapezium.	
Calculate the area of a compound shape.	
Calculate the surface area of a cube and cuboid.	
Calculate the surface area of a triangular prism.	
Identify the number of faces, edges and vertices of a 3D solid.	
Calculate the volume of a cube or cuboid.	
Calculate the volume of a triangular prism.	



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Maths: Spring Y6 Number: Ratio

Ratio Symbol

The ratio of footballs to rugby balls: 1:4

The ratio of rugby balls to footballs: 4:1

The ratio of circles to triangles: 2:3

The ratio of triangles to circles: 3:2

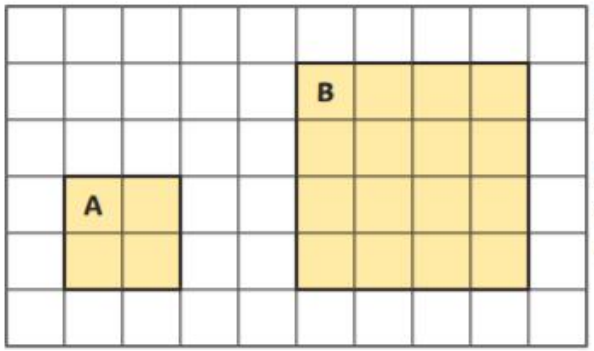
The ratio of apples to bananas: 1:2

The ratio of bananas to oranges: 2:3

The ratio of apples to bananas to oranges: 1:2:3

The ratio of oranges to bananas to apples: 3:2:1

Scale Factors

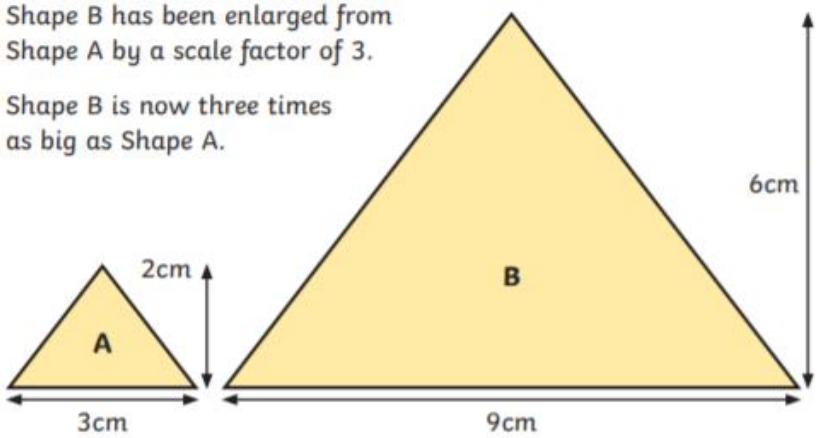


Shape A has been enlarged by a scale factor of 2 to make Shape B.

Shape B is now two times as big as Shape A.

Shape B has been enlarged from Shape A by a scale factor of 3.

Shape B is now three times as big as Shape A.



Ratio Language

For every 1 circle, there are 2 triangles.

For every 2 bananas, there are 3 apples.

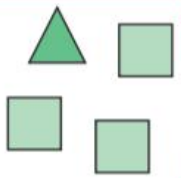
For every 1 football, there are 3 rugby balls.

Ratio and Fractions

For every 1 rugby ball, there are 2 footballs.

Ratio of rugby balls to footballs: 1:2

$\frac{1}{3}$ of the balls are rugby balls.



For every 1 triangle, there are 3 squares.

Ratio of triangles to squares: 1:3

$\frac{1}{4}$ of the shapes are triangles.

Key Concepts - An amount can be divided into a given ratio.

Red : Green 1 : 3

For every 1 red there are 3 greens. A ratio can be converted into fractions. Red : Green 1 : 3 ¼ are red and ¾ are green.

Somerset Bridge Primary School
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Maths: Spring Y6 Number: Ratio

Ratio Symbol

The ratio of footballs to rugby balls: 1:4

The ratio of rugby balls to footballs: 4:1

The ratio of circles to triangles: 2:3

The ratio of triangles to circles: 3:2

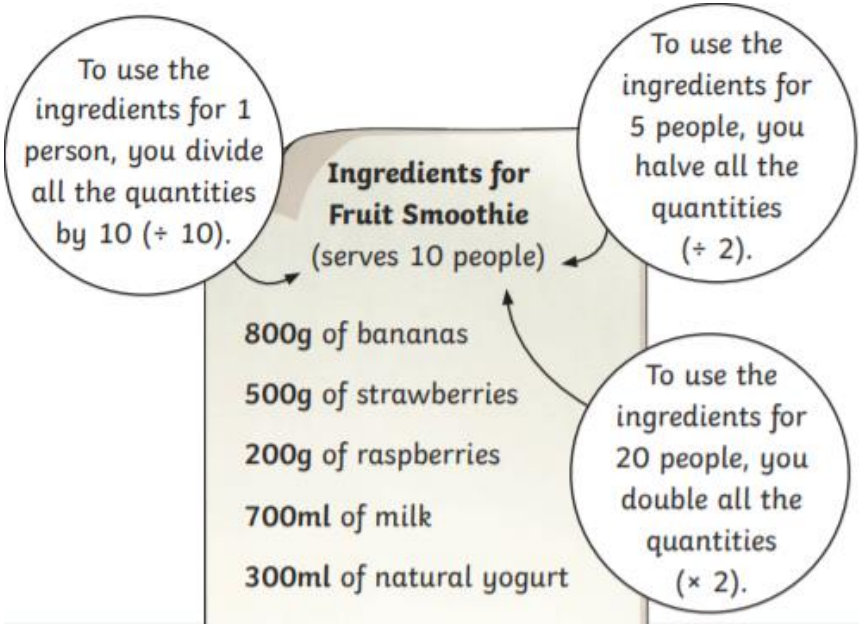
The ratio of apples to bananas: 1:2

The ratio of bananas to oranges: 2:3

The ratio of apples to bananas to oranges: 1:2:3

The ratio of oranges to bananas to apples: 3:2:1

Ratio and Proportion Scaling



In a bag of 15 sweets, there is 1 smiley face sweet for every 4 love heart sweets. Therefore, there will be 3 smiley face sweets and 12 love heart sweets in the bag.

Key Vocabulary		✓
Ratio	A ratio says how much of one thing there is compared to another thing.	
Proportion	Proportion is a mathematical comparison between two numbers.	
Scale factor	An enlargement. This is called the scale factor. For example, a scale factor of 2 means that the new shape is double the size of the original shape.	
Enlargement	Enlarging a shape changes its size	
Length	How far from end to end.	
Width	The distance from side to side.	
Perimeter	The perimeter of a shape is the measurement around its edge (the perimeter of a circle is called the circumference).	
Part and whole	Part-Whole is a ratio or a fraction that represents a relationship between a part and its whole.	