

Unit overview: Measurement – Year 1

National Curriculum requirements

By the end of the year, the children will be able to:

- compare, describe and solve practical problems for:
 - lengths and heights [e.g., long/short, longer/shorter, tall/short, double/half]
 - mass/weight [e.g., heavy/light, heavier than, lighter than]
 - capacity and volume [e.g., full/empty, more than, less than, half, half full, quarter]
- measure and begin to record the following:
 - lengths and heights
 - mass/weight
 - capacity and volume

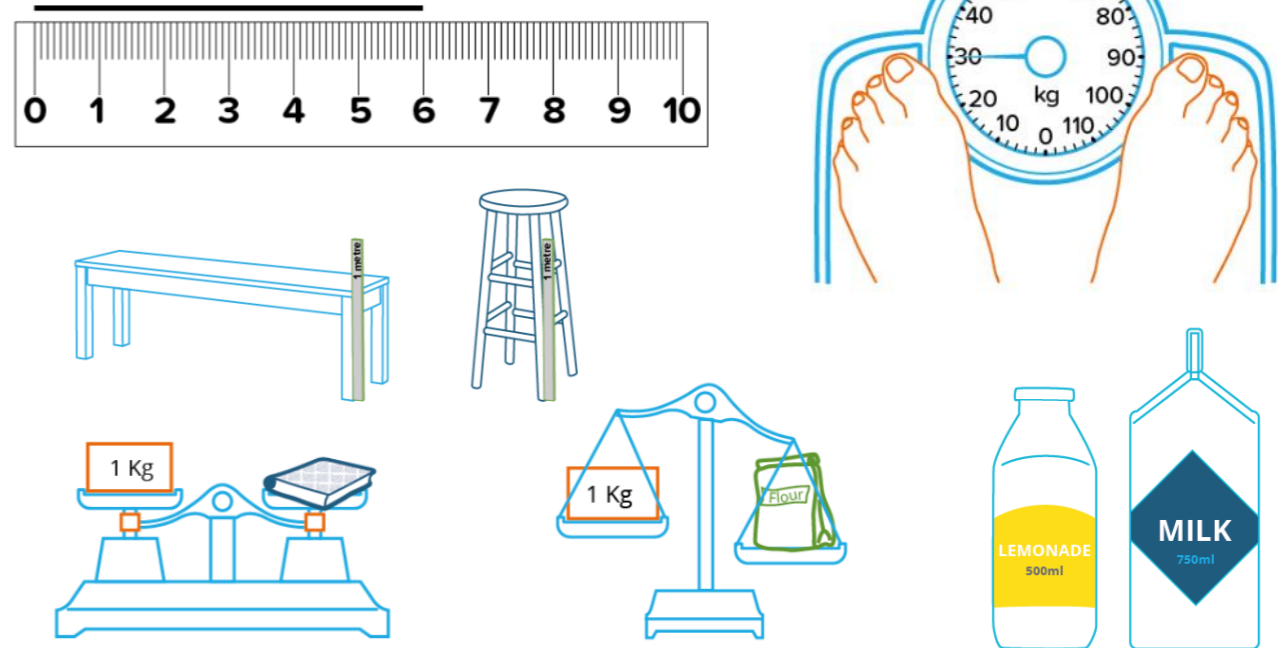
Vocabulary

- length / height / width / distance
- long / longer
- short / shorter
- tall
- double / half
- mass
- heavy / heavier
- light / lighter
- capacity / volume
- full / half full / quarter full / empty
- more than / less than

Manipulatives

- rulers
- tape measures
- measuring jugs
- scales
- bottles / jars / containers

Visual representations



Sentence stems

Length is measured in _____

To measure length I can use _____

_____ is longer than _____

_____ is shorter than _____

Mass is measured in _____

_____ is heavier than _____

Capacity is measured in _____

The jug contains _____

The container with the largest capacity is _____

Height is measured in _____

To measure height I can use _____

_____ is taller than _____

To measure mass I can use _____

_____ is lighter than _____

To measure capacity I can use _____

The bottle contains _____

Learning sequence

- measuring length and height
 - learn the words length, height, width and distance
 - name pieces of equipment used for measuring distance; ruler, metre rule, tape measure
 - learn that units of distance are called centimetres and metres
 - use a ruler, metre rule or tape measure to make an approximate measurement
 - compare and order lengths and heights of different objects
- measuring mass
 - learn the word mass
 - name equipment for measuring mass; set of scales, and recognise different types of scales including balance scales and weighing scales
 - learn that the units for measuring mass are called grams and kilograms
 - use balance scales to compare the mass of two items
 - use weighing scales to approximately measure mass
 - compare and order mass of different objects
- measuring capacity
 - name equipment that can be used to measure capacity; jugs and measuring cylinders
 - know that the units used to measure capacity are litres and millilitres
 - use measuring cylinders or jugs to approximately measure capacity
 - compare and order capacities of different objects

Unit overview: Measurement – Year 2

National Curriculum requirements

By the end of the year, the children will be able to:

- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$

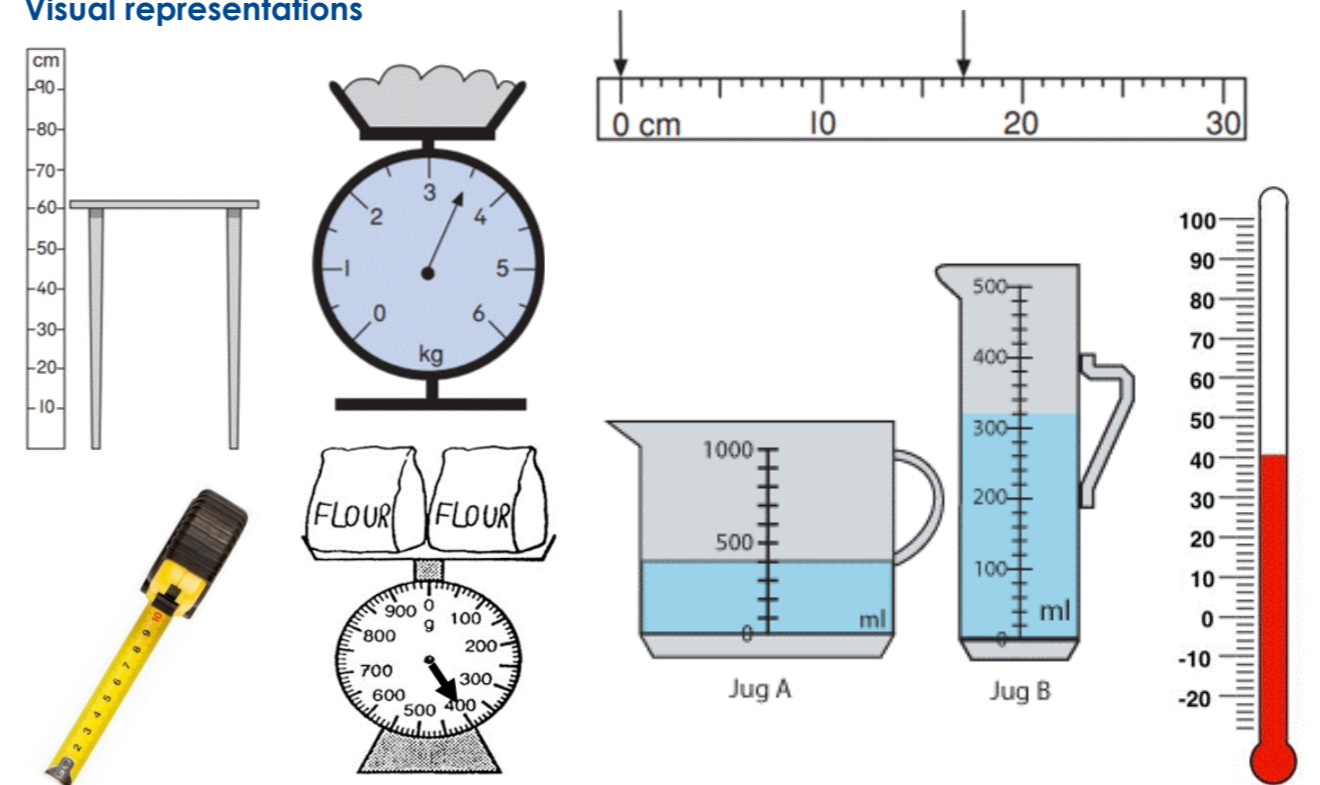
Vocabulary

- measure
- estimate
- greater than / less than / equal to
- mass
- unit
- scale

Manipulatives

- rulers
- tape measures
- measuring jugs
- scales
- bottles / jars / containers

Visual representations



Sentence stems

Length is measured in _____

To measure length I can use _____

_____ is longer than _____

_____ is shorter than _____

Mass is measured in _____

_____ is heavier than _____

Capacity is measured in _____

The jug contains _____

The container with the largest capacity is _____

Height is measured in _____

To measure height I can use _____

_____ is taller than _____

To measure mass I can use _____

_____ is lighter than _____

To measure capacity I can use _____

The bottle contains _____

Learning sequence

- name equipment suitable for measuring length, mass, capacity and temperature
- understand that length is a measure of distance and can be interpreted as height or width and measured in the same way
- use equipment including a ruler, metre rule and tape measure to measure lengths
- draw lines of specified lengths using a ruler
- write down measurements of length using metres, centimetres and a combination of the two
- read measures of mass on scales shown in pictures or diagrams
- use scales to measure mass
- write down measurements of mass using grams, kilograms and a combination of the two
- talk about changes or differences between measures of mass
- read measures of capacity on measuring cylinders shown in pictures or diagrams
- use measuring cylinders or jugs to measure capacity
- write down measures of capacity in litres and millilitres
- talk about differences or changes to capacity
- describe what temperature is and know that it is measured using degrees
- compare measurements using these symbols; $<$, $>$ and $=$

Unit overview: Measurement – Year 3

National Curriculum requirements

By the end of the year, the children will be able to:

- measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
- measure the perimeter of simple 2-D shapes

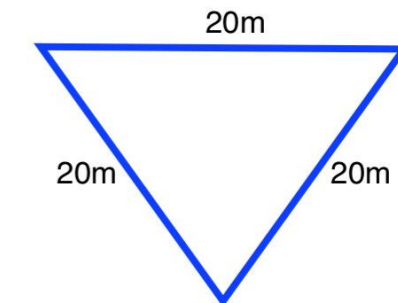
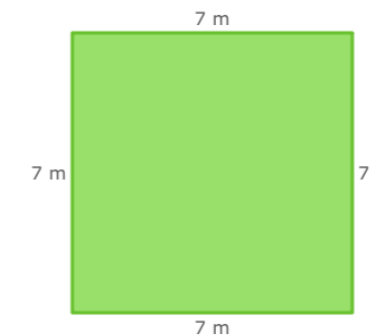
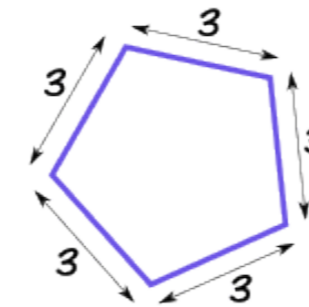
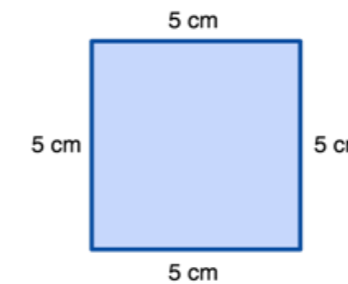
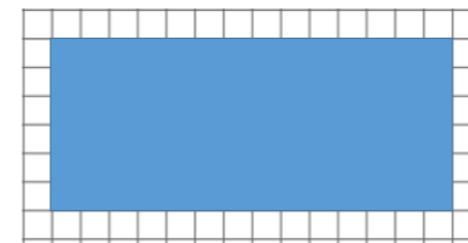
Vocabulary

- measure
- compare
- mass
- volume / capacity
- metre / centimetre / millimetre
- kilogram / gram
- litre / millilitre
- perimeter

Manipulatives

- rulers
- tape measures
- measuring jugs
- scales
- bottles / jars / containers

Visual representations



Sentence stems

Length is measured in _____

Height is measured in _____

To measure length I can use _____

To measure height I can use _____

Mass is measured in _____

To measure mass I can use _____

Capacity is measured in _____

To measure capacity I can use _____

The most appropriate unit of measure is _____ because _____

The perimeter of a shape is _____

To find the perimeter of a shape, I _____

Learning sequence

- know that:
 - lengths are measured in metres (m), centimetres (cm) and millimetres (mm)
 - mass is measured in kilograms (kg) and grams (g)
 - capacity is measured in litres (l) and millilitres (ml)
 - there are 1000ml in one litre and that 500ml is half of one litre
- choose the most sensible unit of measure for different purposes
- estimate lengths (choosing the appropriate unit of measure) and use equipment to check
- estimate mass (choosing the appropriate unit of measure) and use equipment to check
- compare the capacity of different containers and estimate if a given amount of water will or will not fit into another container
- add and subtract measurements to solve problems
- know what a perimeter is
- measure the individual sides of a rectangle
- add up the measurements of the sides of a rectangle to find its perimeter
- measure the lengths of sides of regular polygons using a ruler and then find the perimeter by adding the lengths of the sides (or by using multiplication)

Unit overview: Measurement – Year 4

National Curriculum requirements

By the end of the year, the children will be able to:

- convert between different units of measure [e.g., kilometre to metre]
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- find the area of rectilinear shapes by counting squares
- estimate, compare and calculate different measures

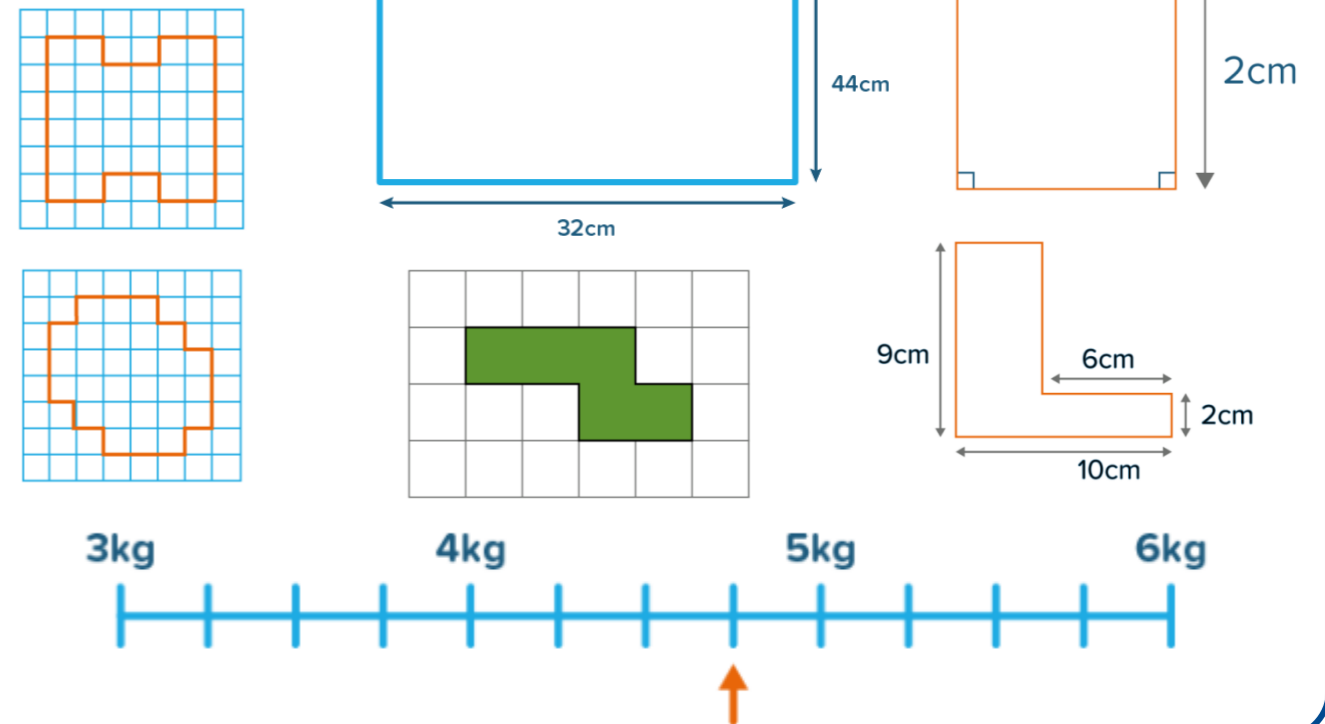
Vocabulary

- measure
- compare
- mass
- volume / capacity
- metre / centimetre / millimetre
- kilogram / gram
- litre / millilitre
- perimeter
- area
- compare

Manipulatives

- rulers
- tape measures
- measuring jugs
- scales
- bottles / jars / containers

Visual representations



Sentence stems

There are ____ millimetres in 1 centimetre

There are ____ centimetres in 1 metre

There are ____ millimetres in 1 metre

There are ____ grams in 1 kilogram

There are ____ grams in half a kilogram

There are ____ millilitres in 1 litre

There are ____ millilitres in half a litre

The perimeter of the shape is _____

To find the perimeter of a shape, I _____

The area of the shape is _____

To find the area of a shape, I _____

Learning sequence

- convert between millimetres (mm), centimetres (cm) and metres (m)
- convert between grams (g) and kilograms (kg)
- convert between millilitres (ml) and litres (l)
- find the perimeter of squares and rectangles by measuring all around the outside and adding together the lengths
- find the perimeter of a square given the length of one side
- find the perimeter of a rectangle given the length and width of the shape
- find the missing length of a square or rectangle given the perimeter of the shape
- find the perimeter of an irregular shape by measuring and adding up all the lengths of the lines
- find the area of a square given the length of one side
- find the area of a rectangle given the length and width of the shape
- find the missing length of a square or rectangle given the area of the shape
- find the area of an irregular shape made up from rectangles and squares
- find the area of an irregular shape by counting the number of squares inside the shape

Unit overview: Measurement – Year 5

National Curriculum requirements

By the end of the year, the children will be able to:

- convert between different units of metric measure (e.g., kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
- understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints
- measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres
- calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes
- estimate volume [e.g., using 1 cm³ blocks to build cuboids (including cubes)] and capacity [e.g., using water]
- use all four operations to solve problems involving measure [e.g., length, mass, volume, money] using decimal notation, including scaling.

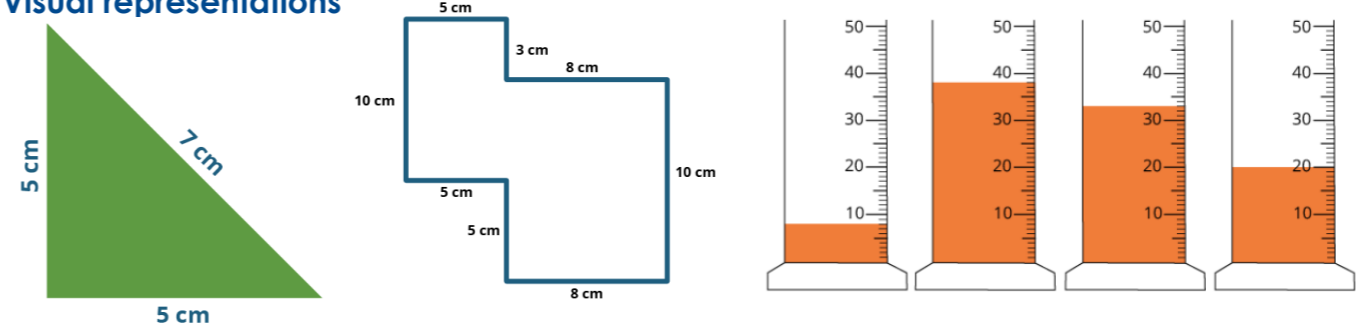
Vocabulary

- kilo-, centi- and milli-
- compare
- equivalent
- metric / imperial
- convert
- measure
- area
- volume

Manipulatives

- rulers
- tape measures
- measuring jugs
- measuring cylinders
- scales
- bottles / jars / containers

Visual representations



Sentence stems

The prefix _____ means _____

To convert _____ into _____ I need to _____

_____ is approximately equal to _____

To find the missing length of a shape I _____

I know that _____ shape has a larger area because _____

To calculate the perimeter of a shape I need to _____

To calculate the area of a shape I need to _____

To calculate the volume of a shape I need to _____

Learning sequence

- understand the prefixes kilo-, centi- and milli-
- know that:
 - 1 km = 1000m; 1m = 100cm; 1cm = 10 mm
 - 1 kg = 1000 g
 - 1l = 1000ml; 1l = 100cl; 1ml = 1cm³; 1cl = 10cm³
- understand that centimetres can be written as a decimal fraction of a metre, for example 35cm = 0.35m
- know that metric units can be converted to other metric units by multiplying or dividing by 10, 100 or 1000
- solve word problems using the conversion of metric units of length, mass and capacity
- understand that Imperial units do not have conversion factors of 10, 100 and 1000
- know that:
 - 1 inch is approximately 2.5cm
 - 1 foot is approximately 30cm
 - 1 yard is approximately equal to 1 metre
 - 1 mile is approximately 1.5 km
 - 1 litre is approximately 1.5 pints, or 1 pint is approximately 0.75 litres
 - 1 kilogram is approximately equal to 2 pounds (lb)
 - 1 stone (st) is approximately equal to 7 kilograms
- measure and calculate the perimeter of composite rectilinear shapes in cm and m
- know the meaning of the term 'area' and be able to find the area of a shape drawn on a grid
- find the area of a rectangle by multiplying the length by the width
- calculate a missing length of the rectangle when given the area
- compare the area of two shapes and decide which shape has the largest area
- find the area of irregular shapes
- know the meaning of the term 'volume' and know that it is measured in cubic units. For example cubic centimetres (cm³)
- calculate the volume of cubes and cuboids by using the rule that
Volume = Length × Width × Height

Unit overview: Measurement – Year 6

National Curriculum requirements

By the end of the year, the children will be able to:

- solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
- use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
- convert between miles and kilometres
- recognise that shapes with the same areas can have different perimeters and vice versa
- recognise when it is possible to use formulae for area and volume of shapes
- calculate the area of parallelograms and triangles
- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [e.g., mm³ and km³].

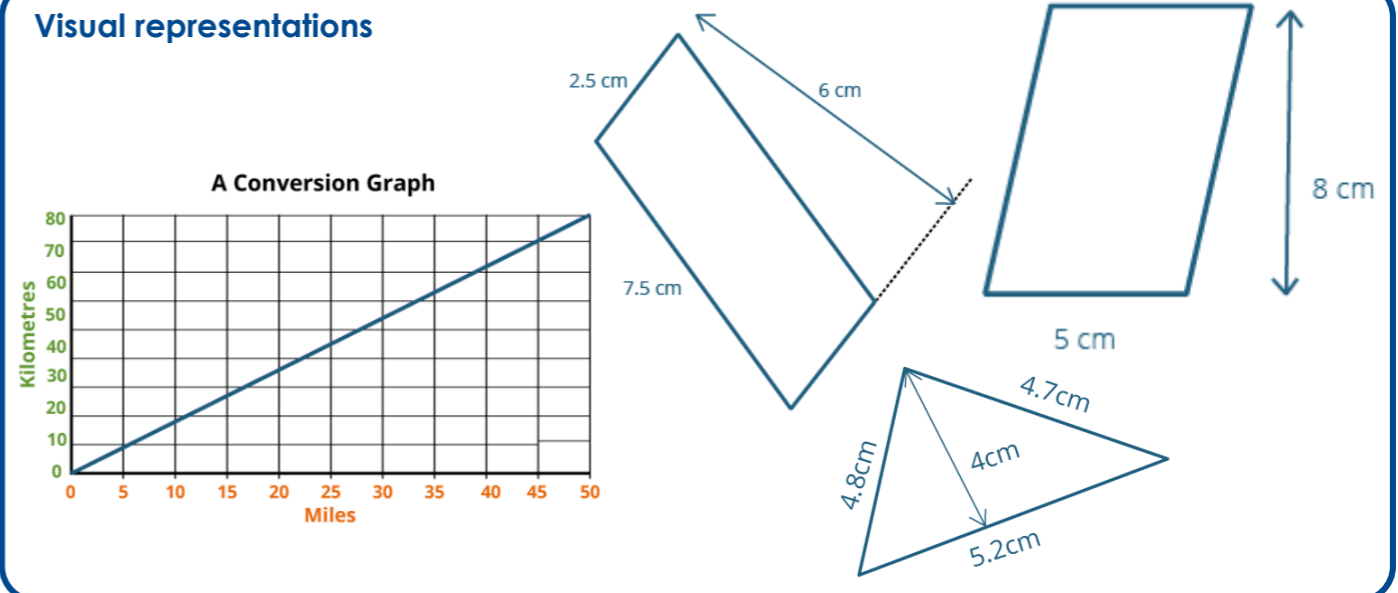
Vocabulary

- compare
- equivalent
- metric / imperial
- convert
- measure
- estimate
- area
- volume
- formula

Manipulatives

- rulers
- tape measures
- measuring jugs
- scales
- bottles / jars / containers

Visual representations



Sentence stems

To convert _____ into _____ I need to _____
 _____ is approximately equal to _____

To find the missing length of a shape I _____
 I know that _____ shape has a larger areas because _____

To calculate the perimeter of a shape I need to _____

To calculate the areas of a shape I need to _____

To calculate the volume of a shape I need to _____

I can use the formula _____ to _____

I estimate that _____

Learning sequence

- understand that a fixed area does not result in a fixed perimeter and that as a shape becomes more 'compact', the perimeter decreases
- understand what a formula is and that it can be written in lots of different ways, using letters to represent values
- know that any letters or symbols can be used to represent a value, e.g. area (a) = length (p) x width (q), so $a = p \times q$
- know to check that units are consistent before substituting into a formula, e.g. do not mix cm and m
- understand that all parallelograms can be re-drawn as rectangles, therefore $\text{area} = \text{base length} \times \text{perpendicular height}$
- know that the area of a triangle can be expressed as:
 - $(\text{base} \times \text{height}) \div 2$
 - $\frac{1}{2} \text{ base} \times \text{height}$
 - $\text{base} \times \frac{1}{2} \text{ height}$
- understand that when calculating the area of a triangle, the height must be perpendicular to the base
- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [e.g., mm³ and km³]
- convert between metric units of distance including millimetres, centimetres, metres and kilometres
- convert between units of mass including grams, kilograms and tonnes
- convert between units of capacity including millilitres and litres
- convert a distance in kilometres to a distance in miles
- make an approximation for a conversion and know if it is sensible