Year 6 measurement

Prior Knowledge
Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres (Y4)
Convert between different units of measure (Y4/5)
Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres (Y4/5)
Calculate and compare the area of rectangles (including squares) including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes (Y5)
Estimate volume and capacity (Y5)
Use all four operations to solve problems involving measure using decimal notation including scaling (Y5)
Solve problems involving converting between units of time (Y2-5)

measurement		Working Towards	Within	Expected	Above
	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 2 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 3 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 (cm^3) and cubic metres (m^3), and extending to other units				

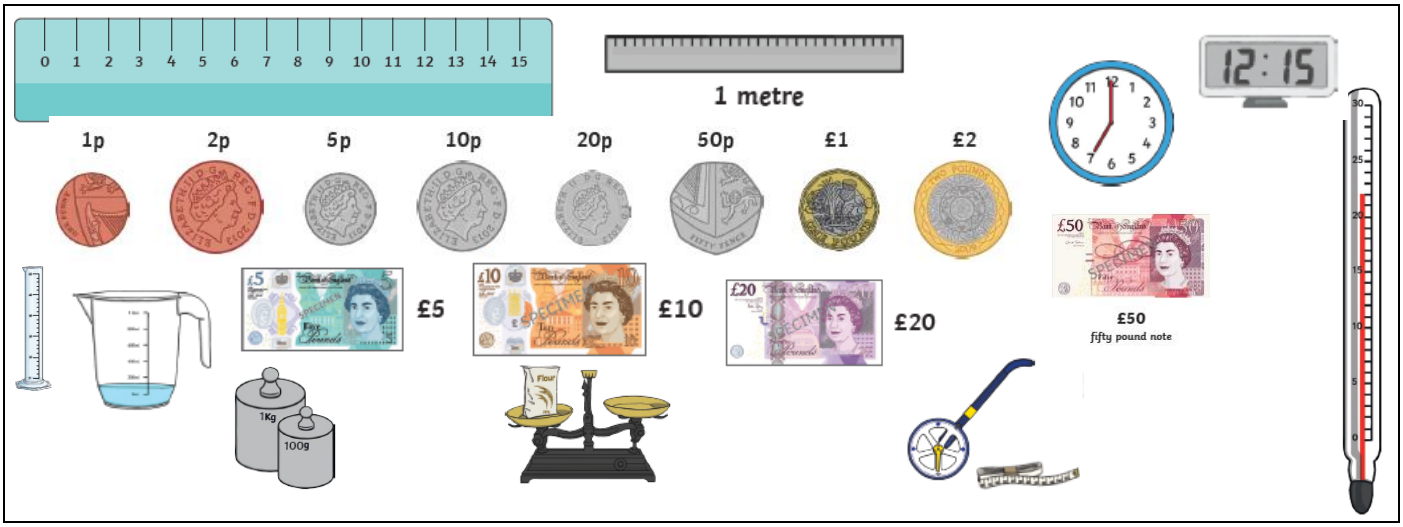
Highlights: _____

_____

Glossary

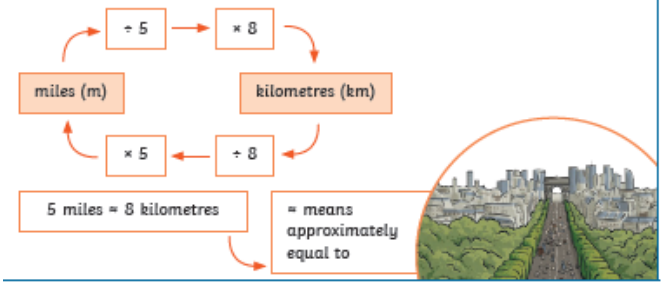
vocabulary	word class	definition
length	noun	the measurement or extent of something from end to end; or the greatest of three dimensions of an object
height	noun	the measurement of someone or something from head to foot or from base to top
mass	noun	(in general use) weight
weight	noun	a body's relative mass or the quantity of matter contained by it; the heaviness of a person or thing
capacity	noun	the maximum amount that something can contain
volume	noun	the amount of space that a substance or object occupies, or that is enclosed within a container
time	noun	a point of time as measured in hours and minutes past midnight or noon
day	noun	each of the twenty-four-hour periods, reckoned from one midnight to the next, into which a week, month, or year is divided, and corresponding to a rotation of the earth on its axis
week	noun	a period of seven days
month	noun	each of the twelve named periods into which a year is divided
year	noun	the period of 365 days starting from the first of January
temperature	noun	the degree or intensity of heat present in a substance or object
pound	noun	a unit of weight equal to 16 oz. / the basic monetary unit of the UK, equal to 100 pence
perimeter	noun	the continuous line forming the boundary of a closed geometrical figure
analogue	adjective	showing the time by means of hands or a pointer rather than displayed digits
o'clock	adverb	used to specify the hour when telling the time (abbreviation of 'of the clock'
noon	noun	twelve o'clock in the day; midday
midnight	noun	twelve o'clock at night
leap year	noun	a year, occurring once every four years, which has 366 days including 29 February as an intercalary day
rectilinear	adjective	contained by, consisting of, or moving in a straight line or lines
digital	adjective	showing the time by means of displayed digits rather than hands or a pointer
month	noun	a period of 28 days or four weeks
metric	adjective	relating to or based on the metre as a unit of length
imperial units	adjective	relating to or denoting the system of non-metric weights and measures (the ounce, pound, stone, inch, foot, yard, mile, acre, pint, gallon, etc.) formerly used for all measures in the UK, and still used for some
irregular	adjective	not even or balanced in shape or arrangement
mile	*noun*	*a unit of linear measure equal to 1,760 yards (approximately 1.609 kilometres)*

Resources



Miles to Kilometres

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



Time

Minute 1 minute = 60 seconds

Hour 1 hour = 60 minutes

Day 1 day = 24 hours

Week 1 week = 7 days

Year 1 year = 12 months = 52 weeks = 365 days

Imperial Measures

Things that could be measured using imperial units:

- Someone's height in feet and inches
- The mass of a bag of sugar in ounces
- The mass of a sack of potatoes in pounds
- A person's mass in stones
- A carton of milk in pints
- The amount of water in a bath in gallons

1 foot = 12 inches

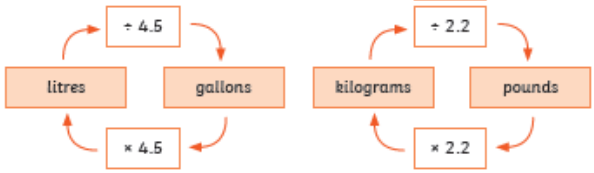
1 pound = 16 ounces

1 stone = 14 pounds

1 gallon = 8 pints

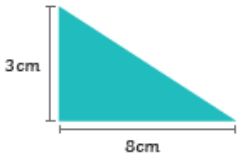
Metric to Imperial Conversions

metric (new)	imperial (old)
2.5 centimetres	1 inch
1 kilogram	2.2 pounds
4.5 litres	1 gallon



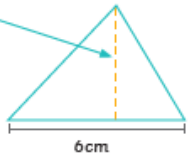
Area of Triangles

base × perpendicular height ÷ 2 = area of a triangle

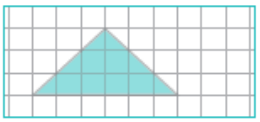


8cm × 3cm ÷ 2
area = 12cm²

perpendicular height = 5cm



6cm × 5cm ÷ 2
area = 15cm²

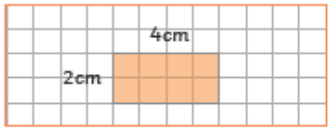


Counting squares:
6 whole squares = 6cm²
6 half squares = 3cm²
6cm² + 3cm² = 9cm²
area = 9cm²

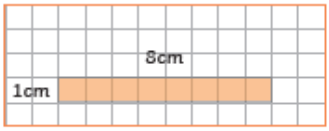
Using formula:
6cm × 3cm
÷ 2 = 9cm²

Perimeter and Area

Shapes with the same area can have different perimeters.

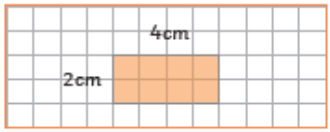


area = 8cm² perimeter = 12cm

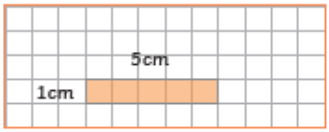


area = 8cm² perimeter = 18cm

Shapes with the same perimeter can have different areas.

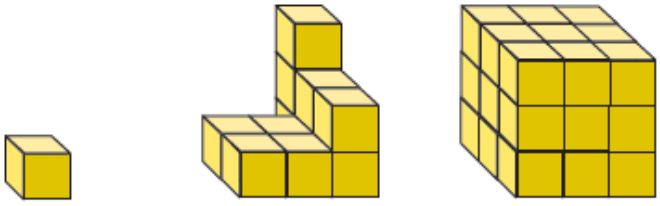


area = 8cm² perimeter = 12cm



area = 5cm² perimeter = 12cm

Volume - Counting Cubes

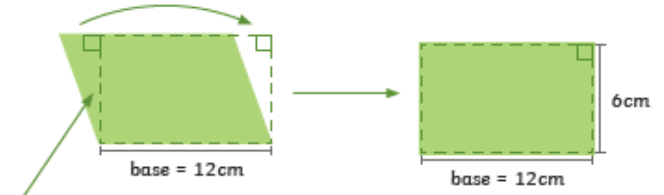


= 1cm³ 11cm³ 27cm³

Area of Parallelograms

base × perpendicular height = area of a parallelogram

A parallelogram can be transformed into a rectangle.

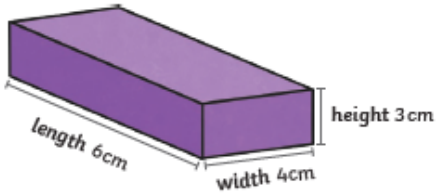


perpendicular height = 6cm

12cm × 6cm = 72cm²

Volume of Cuboids

length × width × height = volume of a cuboid



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

Future Learning

Key Stage 3
• change freely between related standard units [for example time, length, area, volume/capacity, mass] • use scale factors, scale diagrams and maps • use compound units such as speed, unit pricing and density to solve problems

Key Stage 4
• compare lengths, areas and volumes using ratio notation and/or scale factors; make links to similarity (including trigonometric ratios) • convert between related compound units (speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts • interpret and use fractional {**and negative**} scale factors for enlargements • calculate surface areas and volumes of spheres, pyramids, cones and composite solids • apply the concepts of congruence and similarity, including the relationships between lengths, {**areas and volumes**} in similar figures