

Level 6 Maths facts to memorise

Children are expected to be able to find the area, diameter, radius and circumference of a circle and to apply this knowledge to a variety of problems.

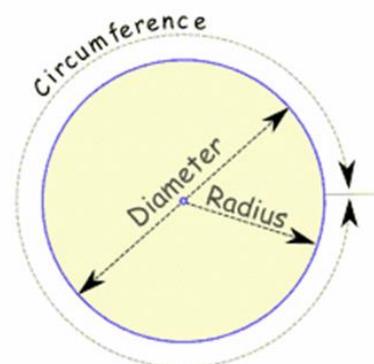
Circumference (c) = perimeter of a circle

Diameter (d) = distance across a circle going in a straight line through the centre connecting two points on the circumference

Radius (r) = distance from centre of a circle to its perimeter

Area (a)

π = circumference \div diameter (3.14 to 2 decimal places)



$$\frac{\text{Circumference}}{\text{Diameter}} = \pi = 3.14159\dots$$

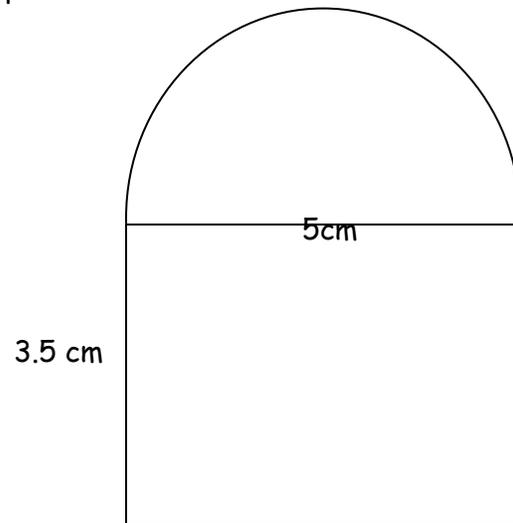
Formulae for finding circumference, diameter, radius and area of circles:

- $c = \pi d$ -- to find the circumference multiply the diameter of a circle by π
- $c = 2 \pi r$ -- to find the circumference, double the radius then multiply by π
- $d = c \div \pi$ -- to find the diameter, divide the circumference by π
- $r = \frac{1}{2} d$ (the radius is half the diameter)
- $d = 2r$ (the diameter is twice the radius)
- $a = \pi r^2$ -- to find the area, FIRST square the radius (multiply it by itself) THEN multiply by π

For π either use a scientific calculator or a figure of 3.14 for π .

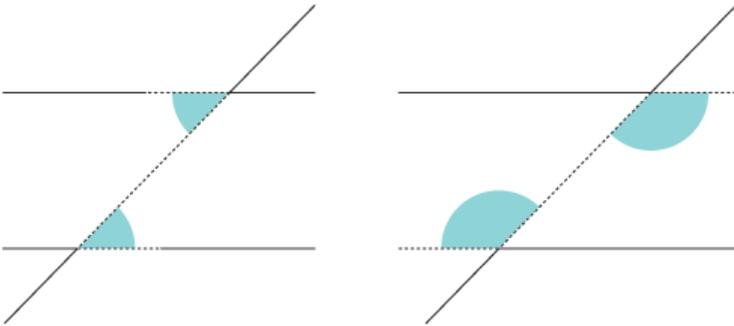
Example questions:

- What is the diameter of a circle with a circumference of 15cm?
- A circle has a radius of 16cm. What is its circumference?
- Find the area of a circle with a diameter of 12cm.
- What is the area of the shape below?

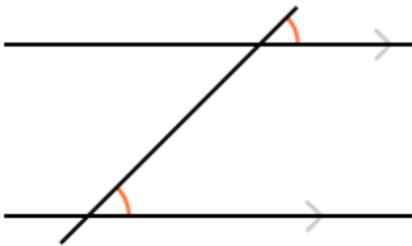


Children need to be able to find angles on parallel lines:

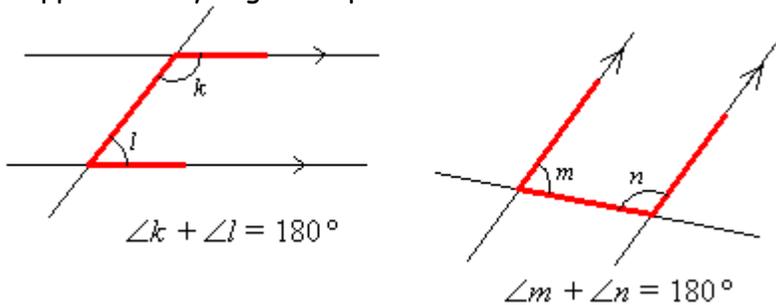
Alternate angles on parallel lines are **equal**:



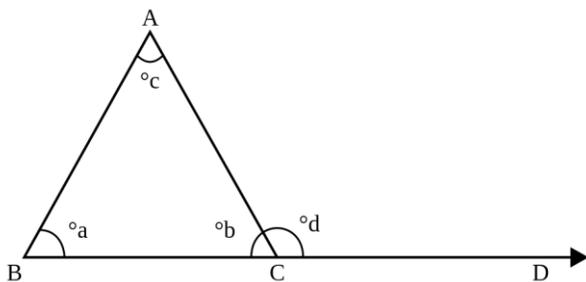
Corresponding angles on parallel lines are **equal**:



Supplementary angles on parallel lines **total 180°**



The exterior angle of a triangle = the sum of the opposite two angles:



e.g. if angle a was 55° and angle c was 47° then angle d would be $55^\circ + 47^\circ = 102^\circ$

Children need to be able to find the exterior and interior angles of regular polygons using the following:

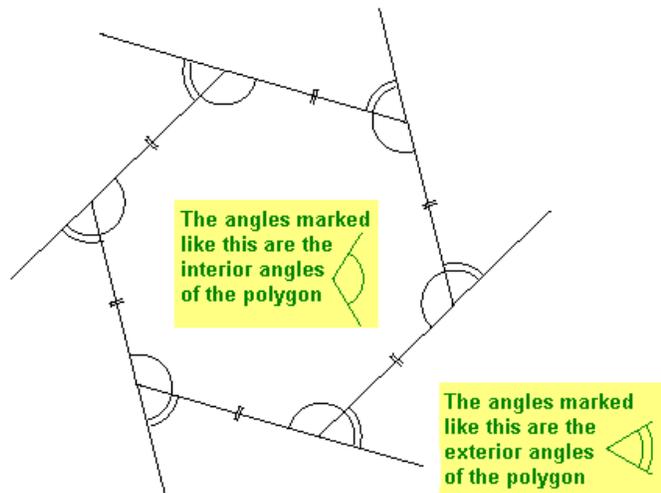
The external angles of **any** polygon total 360° .

Each external angle can be found by dividing 360° by the number of sides/angles:

$$360^\circ \div n \text{ (number of sides)} = \text{external angle}$$

Each **internal** angle can be found by subtracting the external angle from 180° :

$$180^\circ - e \text{ (external angle)} = i \text{ (internal angle)}$$



e.g. Each external angle of a regular hexagon is $360^\circ \div 6 = 60^\circ$
therefore the internal angles are $180^\circ - 60^\circ = 120^\circ$

Children need to be able to find the area of a trapezium.

To do this, add the lengths of the parallel sides, divide the answer by 2, then multiply by the height of the trapezium (**NOT** the length of either of the other two sides).

The formula is:

$$\frac{(a+b) \times h}{2}$$

For instance: to find the area of a trapezium with parallel sides of 6cm and 8cm and a height of 5 cm would be:

$$(6 + 8) \div 2 = 7\text{cm}$$

$$7\text{cm} \times 5\text{cm} = 35\text{cm}^2$$

