Est. 1841 YORK ST JOHN UNIVERSITY

Library & Learning Services

Perimeter and circumference

Study Development Factsheet

The perimeter (or circumference) of a shape is the total distance around the outside edges. Real-life examples include calculating the length of fencing you'd need to put around the edges of your garden, buying the right amount of carpet runners for a room, measuring the right amount of ribbon to go around the edge of a skirt etc.

In general, the perimeter is calculated by adding up the lengths of the outside edges. Sometimes we may not be given all the side-lengths, in which case we need to find them.

Rectangles

For a rectangle, the perimeter is calculated as: (2 x length) + (2 x width).

For example: a garden is a rectangle shape with side-lengths 6m and 10m. Calculate the amount of fencing needed to go around the edge of the garden.

The perimeter here is (2 x 6m) + (2 x 10m) = 12m + 20m = 32m.

This would be the length of the fencing needed to fit around the edge.

Special cases: this formula also works for a square, since a square is a rectangle. If we wanted to find the perimeter of a 3cm square, we'd calculate: (2 x 3cm) + (2 x 3cm) = 6cm + 6cm = 12cm.

Triangles

- Scalene (a triangle with all different side lengths): on some curriculums, you are expected to be able to calculate side lengths of triangles using things like Pythagoras' theorem, or the sine/cosine rules. There are factsheets about this available on the Maths and Statistics Success page. If this is not on your curriculum, then all the side-lengths should be given to you and you just need to add them together.

- Isosceles (a triangle with two equal length sides, and one different): In this case, one of the equal side-lengths may be omitted, so you just need to remember to add two of them into the perimeter.
- Equilateral (a triangle with three equal sides): For this type, usually just one side-length will be given. E.g. “Calculate the perimeter of an equilateral triangle with side-length 8mm”. The answer here would be 8mm + 8mm + 8mm = 24mm.

Circles

Circle perimeters are a special case. The perimeter of a circle is often called its “circumference”. This can represent many things, like the distance a bike tire covers in one revolution. The formula for circumference is:

$$\text{Circumference} = \pi \times \text{diameter} = \pi \times 2 \times \text{radius}$$

For example: Calculate the circumference of a circle that has a radius of 5m.

Answer: circumference = $\pi \times 2 \times$ radius = $\pi \times 2 \times 5$m = 31.42m (rounded to 2dp)

Support: Study Development offers workshops, short courses, 1 to 1 and small group tutorials.

- Book a tutorial or join a workshop on the Study Development tutorial and workshop webpage or search ‘YSJ study development tutorials.’
- Access our Study Success resources on the Study Success webpage or search ‘YSJ study success.’