# Maths Level 1 – Perimeters

1 of 19 – Welcome

Welcome to this session on perimeters.

By the end of this session you should be able to:

* Work out the perimeters of regular and irregular polygons
* Work out perimeters in practical situations

2 of 19 – Perimeter

The perimeter is the distance around the edge of a shape.

Let’s consider at an example. To find out how much skirting board you need for a room, you need to know its perimeter. The room is rectangular in shape, the width of the room is 6 metres long and the height of the room is 4 metres.

To work out the perimeter, add together the length of each wall.

4 + 4 + 6 + 6 = 20

Answer: The perimeter of the room is 20 metres.

3 of 19 – Question 1

A vegetable plot needs a new wooden border around the perimeter. It is 2 meters wide and 3 meters long. You need to know how much wood to buy.

What is the perimeter of the plot?

1. 6 meters
2. 10 meters
3. 4 meters
4. 12 meters

The correct answer is B, 10 meters.

4 of 19 – Units of measurement

There are many different units of measurement that can be used to measure perimeter.

For example, you can measure perimeter in:

* Millimetres – There are 10 millimetres in a centimetre.
* Centimetres – There are 100 centimetres in a metre.
* Metres – There are 1,000 metres in a kilometre.
* Kilometre – A kilometre is 1,000 metres.

Take note:

Although the unit of measurement used may change, the method for working out perimeter does not.

5 of 19 – Question 2

When writing measurements down we often use their shortened form. Match these metric units of measurement; **metre**, **kilometre**, **centimetre** and **millimetre**, to their shortened forms below:

1. The letters c and m
2. The letters k and m
3. The letter m
4. The letters m and m

The correct answers are:

The shortened form for **metre** is the letter m.

The shortened form for **kilometre** are the letters k and m.

The shortened form for **centimetre** are the letters c and m.

The shortened form for **millimetre** are the letters m and m.

6 of 19 – Perimeter of different shapes

You need to know how to work out the perimeter of a range of different shapes. Remember, perimeter is the distance around the edge of any shape.

**Example**

Consider an L-shaped room. The walls measure as 8 metres, 6 metres, 3 metres, 3 metres, 5 metres and 3 metres. To find out how much skirting board you need for this room, you need to know its perimeter.

To work out the perimeter, add together the length of each wall: 6 + 3 + 3 + 5 + 3 + 8 = 28.

The perimeter of the room is 28 metres.

7 of 19 – Question 3

What is the perimeter of a triangle which has two 9mm sides and a 7mm base?

1. 16mm
2. 24mm
3. 18mm
4. 25mm

The correct answer is D, 25mm.

8 of 19 – Question 4

What is the perimeter of a shape which has the following side lengths: 10cm, 6cm, 3cm, 5cm, 4cm and 7cm?

1. 38cm
2. 35cm
3. 25cm
4. 31cm

The correct answer is B, 35cm.

9 of 19 – Missing values

Sometimes you will be asked to work out the perimeter of a shape with some values missing. You will need to work these values out.

**Example**

Consider an L-shaped garden. The left-side wall (A) of the garden measures at 3 meters and the top wall (B) which connects horizontally from the left wall measures at 2 meters. The next wall (C) is connected vertically from the top wall, this measurement is unknown. The next wall (D) is connected horizontally from the unknown wall and spans to the very right-side of the garden, measuring at 3 meters. The next wall (E) is connected vertically from the top of wall D and spans to the very bottom of the garden, measuring at 2 meters. The bottom wall (F) measures at 5 meters, and connects from wall E to A.

To work out how much fencing you need for this garden you need to work out the perimeter.

All the measurements are given except for one.

Side A is equal to sides C + E, or C = A subtract E.

Put in the values you have to work out the value of C:

C = 3 minus 2, so C = 1.

Now you know the value of C, you can work out the perimeter:

3 + 2 + 1 + 3 + 2 + 5 = 16.

Answer: The perimeter of the garden is 16 meters.

10 of 19 – Question 5

Freddie wants to put a wooden border around the perimeter of his flower bed. The shape of the flower bed is a rectangle, with an inverted square along the top-side edge. The left-side edge of the flower bed measures at 3 meters. The right-side edge is the same length as the left. The bottom edge of the flower bed measures at 4 meters. The inverted square of the flower bed measures at 2 meters for each length. Finally, the top two edges which connect from the two outer edges to the inverted square are also the same size in length. The measurement of the top-left edge is 1 meter.

How much wood will he need?

1. 12 meters
2. 18 meters
3. 14 meters
4. 15 meters

The correct answer is B, 18 meters.

11 of 19 – Perimeter of rectangles

Because the opposite sides of a rectangle are equal we can use 3 different methods for working out the perimeter. Let’s learn about these three methods using an example rectangle with a width of 9cm and a height of 5cm.

**Method 1**

You can find the perimeter by adding up the measurements as you go around the outside:

9 + 5 + 9 + 5 = 28

We were given two measurements for the rectangle, but we know that the opposite sides of a rectangle are equal. So we know there are two 9cm lengths, and two 5cm lengths.

The perimeter is 28 cm.

**Method 2**

Since the opposite sides are equal, you can double the two sides and add the total:

2 times by 9 is 18. 2 times by 5 is 10. So, 18 add 10 equals 28.

The perimeter is 28 cm.

**Method 3**

You can also add the length and width together first and then double the answer:

9 + 5 = 14. 14 multiplied by 2 is 28.

The perimeter is 28 cm.

12 of 19 – Question 6

Luke wants to add a border to a rectangular cushion, so he needs to work out its perimeter. The height of the cushion is 16cm and the width is 14cm. How much border will he need?

1. 60cm
2. 30cm
3. 28cm
4. 32cm

The correct answer is A, 60cm.

13 of 19 – Units of measurement

If the length and width **use different units of measurement**, we must change them so they are the same before we can calculate the perimeter.

Consider a rectangle which is 200 mm long and 5 cm wide. This rectangle uses two different units of measurement: millimetres and centimetres. You must change the units, so they are both the same. Choose either millimetres or centimetres.

Don’t forget that 10 millimetres = 1 centimetre and 100 centimetres = 1 metre.

In millimetres the measurements would be 50 mm and 200 mm.

In centimetres the measurements would be 5 cm and 2 cm.

Perimeter of rectangle = 5 cm + 5 cm + 2 cm + 2 cm = 14 cm.

14 of 19 – Question 7

Which two rectangles are exactly the same size?

Choose the two that apply:

1. A rectangle that is 800 centimetres long and 20 meters wide
2. A rectangle that is 800 centimetres long and 200 meters wide
3. A rectangle that is 800 centimetres long and 2000 centimetres wide
4. A rectangle that is 80 centimetres long and 20 metres wide

The correct answers are A and C, a rectangle that is 800 centimetres long and 20 meters wide and a rectangle that is 800 centimetres long and 2000 centimetres wide.

15 of 19 – Question 8

What is the perimeter of a rectangle that is 14cm wide and 80mm long?

1. 160mm
2. 28cm
3. 188mm
4. 44cm

The correct answer is D, 44cm.

16 of 19 – Question 9

What is the perimeter of a hexagon which has six equal sides measuring at 10cm?

1. 65cm
2. 60cm
3. 70cm
4. 75cm

The correct answer is B, 60cm.

17 of 19 – Video

Watch the following video to learn more about perimeters:

[Maths Antics – Perimeter](https://www.youtube.com/embed/AAY1bsazcgM?autoplay=1&rel=0&start=0&modestbranding=1&showinfo=0&theme=light&fs=0&probably_logged_in=0)

18 of 19 – Task

Download the accompanying **Perimeters PDF** and answer all of the questions.

Remember to complete and save your work on the PDF document.

19 of 19 – End

Well done. You have completed this session on perimeters.

You should now be able to:

* Work out the perimeters of regular and irregular polygons
* Work out perimeters in practical situations

If you are unsure or have any questions about any of these topics, make a note and speak to your tutor for more help.