



higher education
& training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA



SUBJECT: FOUNDATIONAL ENGLISH

MODULE NAME: 3

UNIT NUMBUER : 2

UNIT NAME : THE PERIMETERS AND AREAS OF TWO-DIMENSIONAL FIGURES

THE PERIMETERS AND AREAS OF TWO-DIMENSIONAL FIGURES




After completing this topic, you will be able to:

Calculate the perimeter of a


1. Rectangle
2. Square
3. Triangle
4. Circle (circumference)
5. Trapezium
6. Parallelogram

THE PERIMETERS AND AREAS OF TWO-DIMENSIONAL FIGURES

The Perimeters of Two-Dimensional Shapes

Name	Characteristic	Drawing
square	All 4 sides have the same length All 4 angles are 90°	
rectangle	Two sides are longer and 2 sides are shorter. All 4 angles are 90°	
Trapezium	Sides have different lengths. Two sides are parallel. Angles are not 90°	

THE PERIMETERS AND AREAS OF TWO-DIMENSIONAL FIGURES

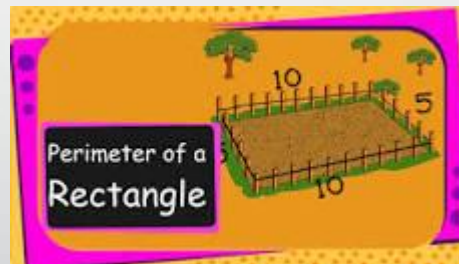
Parallelogram	Opposite sides are parallel and have the same lengths. Angles are not 90°	
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THE PERIMETERS AND AREAS OF TWO-DIMENSIONAL FIGURES

What is a Perimeter ?

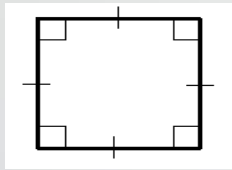
The **perimeter** is the length of the outline of a shape.

To find the **perimeter** of a rectangle or square you have to add the lengths of all the four sides.



THE PERIMETERS AND AREAS OF TWO-DIMENSIONAL FIGURES

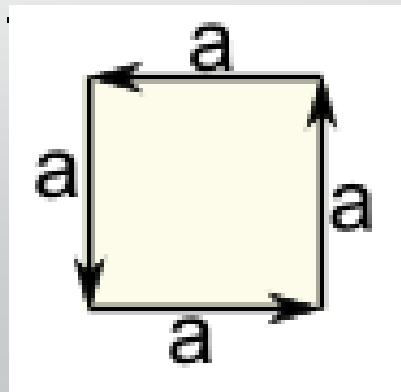
1. The Square



- All sides are equal in length
- Each internal angle is 90°

Perimeter of a Square

- The perimeter is the distance around the edge.
- The perimeter is 4 times the side length:
- Perimeter = $4a$



Perimeter of Square

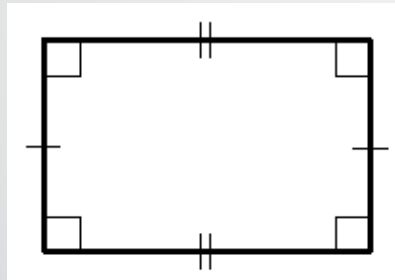
- **Example**


A square has a side length of 12 cm , what is its perimeter?

Perimeter = $4 \times 12 = 48\text{ cm}$.

The Rectangle

A rectangle is a four-sided flat shape where every angle is a right angle (90°).



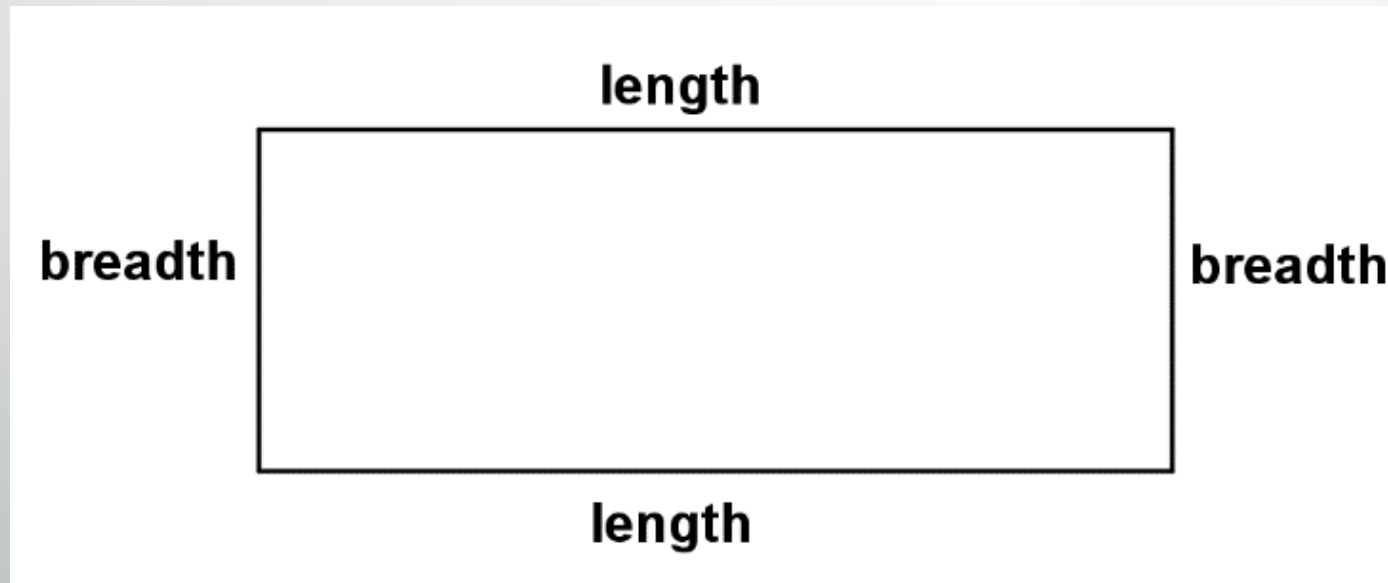
 means "right angle"
| and || show equal sides

Perimeter of a Rectangle

The perimeter is the distance around the edges.

The perimeter is **2 times the (*length* + *breadth*)**:

$$\text{Perimeter} = 2 \times (l + b)$$



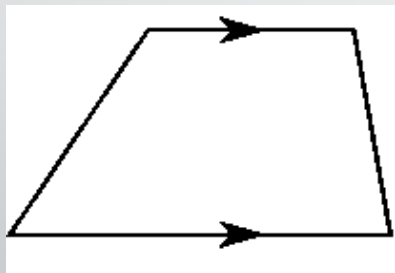
Perimeter of a Rectangle

- **Example**
- A rectangle has a length of 12cm, and a breadth of 5 cm, what is its perimeter?
- **Perimeter = $2 \times (l + b)$**
$$= 2(5 + 12)$$
$$= 37 \text{ cm}$$

The Trapezium

A trapezium is a 4-sided flat shape with straight sides that has **a pair of opposite sides parallel** (marked with arrows):

- The trapezium:
- □ Has a pair of parallel sides
- □ Has four angles that make up 360

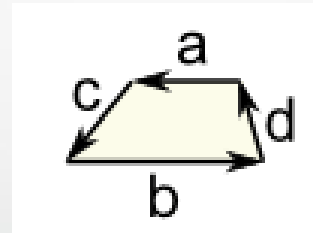


Perimeter of Trapezium

The perimeter is the distance around the edges.

The perimeter is the sum of all side lengths:

$$\text{Perimeter} = a + b + c + d$$



Perimeter of Trapezium

- **Example**
- A trapezium has side lengths of 5 cm, 12 cm, 4 cm and 15 cm, what is its perimeter?
- Perimeter = $5 + 12 + 4 + 15 = 36$ *cm*

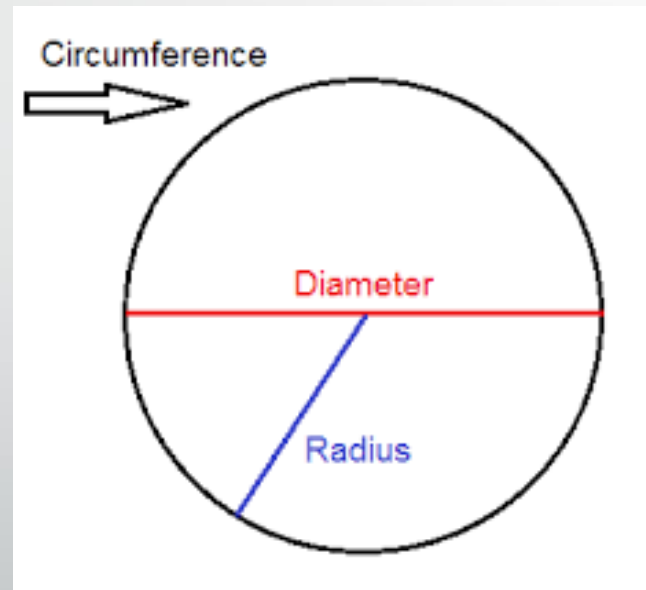
The Circle

Radius, Diameter and Circumference

The **Radius** is the distance from the centre outwards.

The **Diameter** goes straight across the circle, through the centre.

The **Circumference** is the distance once around the circle.



The Circle

- **The Circumference of a Circle**
- We can use π to find a circumference when we know the diameter of a circle.
- Circumference = $\pi \times \textit{diameter}$

The Circle

You walk around a circle that has a diameter of 100 m , how far have you walked?

Distance walked = Circumference

$$\begin{aligned}\text{Circumference} &= \pi \times \text{diameter} \\ &= \pi \times 100 = 314,159\text{ m}\end{aligned}$$

- We can also use π to find a diameter when we know the circumference:

The Circle

- We can also use π to find a diameter when we know the circumference:
- **Example:**
- Dumi measured 94 mm around the outside of a pipe, what is its diameter?
- Diameter = $\frac{\text{circumference}}{\pi}$

$$\begin{aligned} &= \frac{94}{\pi} \\ &= 29,921 \text{ mm} \end{aligned}$$

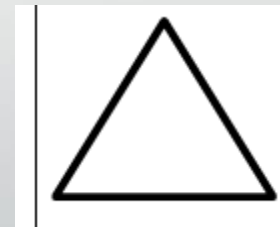
The Perimeter of the Triangle

- **What is a triangle?**

There are many different kinds of triangles that you will learn about in a later unit. For now you need to know how to calculate the perimeter and the area of a triangle.

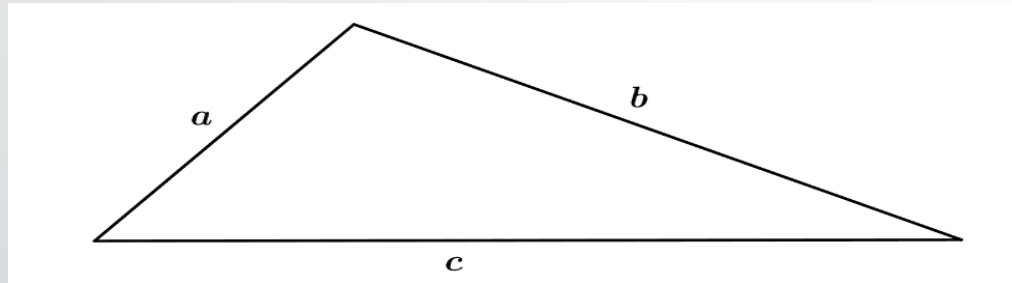
A triangle has three sides and **three angles**

The three angles always add up to 180°



Perimeter of a Triangle

- The perimeter is the distance around the edge of the triangle: just add up the three sides:



- **Perimeter = $a + b + c$**

Perimeter of a Triangle

Example:

$$\text{Perimeter} = 203 + 160 + 168 = 531$$

go and do Exercise 2.1 -2.3

