

Right Angled Triangles

Aim

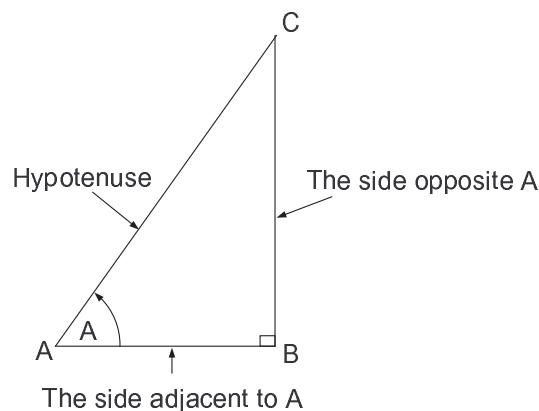
To review right angled triangles.

Learning Outcomes

At the end of this section you will be able to:

- Understand the notation of right angled triangles,
- Calculate the length of a missing side in a right angled triangle.

Consider the right angled triangle ABC shown below.



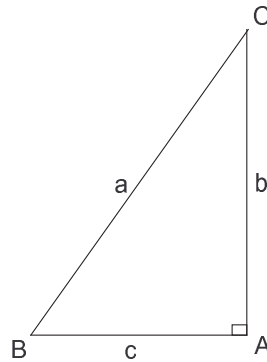
The side joining vertex A to vertex B is referred to as AB . The side joining vertex A to vertex C is referred to as AC . The angle A , made by the sides AB and AC is written $\angle BAC$, $\angle A$, or simply A .

The side opposite the right angle is always called the **hypotenuse**. So, in the figure above, AC is the hypotenuse. The side **opposite** A is BC . The remaining side, AB , is said to be **adjacent** to A .

Pythagoras' Theorem

In a right angled triangle, the square of the hypotenuse is equal to the sum of the square of the other two sides.

$$a^2 = b^2 + c^2$$



Example

If ABC is a triangle which is right angled at A and $AB = 3\text{cm}$, $BC = 4\text{cm}$, calculate the length of AC.

By Pythagoras's theorem,

$$\begin{aligned}(BC)^2 &= (AB)^2 + (AC)^2, \\ \Rightarrow 4^2 &= 3^2 + (AC)^2 \\ \Rightarrow 16 - 9 &= (AC)^2 \\ \Rightarrow \sqrt{7} \text{ cm} &= AC.\end{aligned}$$

Related Reading

Booth, D.J. 1998. *Foundation Mathematics*. 3rd Edition. Pearson Education Limited.

Croft, A., R. Davison. 2003. *Foundation Mathematics*. 3rd Edition. Pearson Education Limited.

Morris, O.D. 1987. *Text & Tests 1*. The Celtic Press.