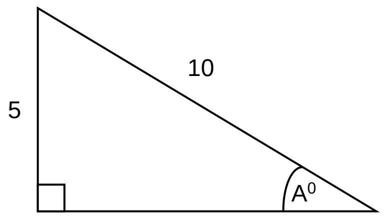
SIMILAR TRIANGLES

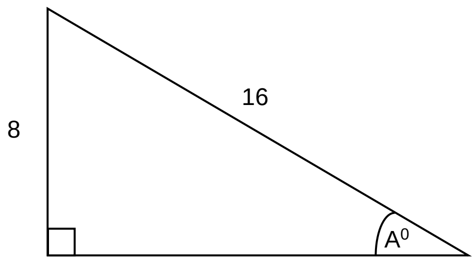
Here is a right-angled triangle

i)



Here is another triangle, it is **similar** to the one above

ii)



Remember that similar means that the angles are of the same set and the sides are in the same ratio.

Here in (i) the vertical side (10) is twice the hypotenuse (5)

Again in (ii) the vertical side (16) is twice the hypotenuse (8)

They are both right-angled triangles and the angles marked *A* would be equal.

The size of angle *A* is 30º and you will find out how to show this later in the pack.

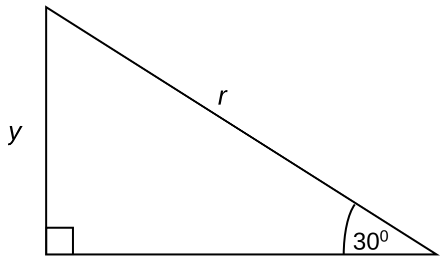
Here is a third right-angled triangle:

Its angles are the same as the other triangles in (i) and (ii). It follows from the idea of similar triangles that the side *y* and *r* will be in the same proportion as in the first pair of triangles.

So you can write $\frac{y}{r} = \frac{8}{16} = \frac{5}{10}$

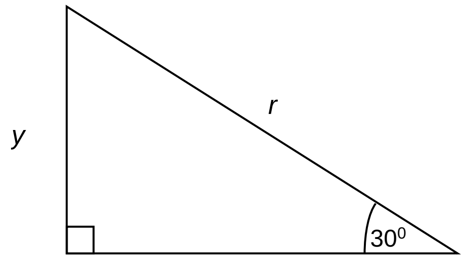
or $\frac{y}{r} = 0.5$

This is called the **ratio** for an angle of 30º



Exercise

The diagram shows a triangle similar to the ones you have just met.



Use the ratio 0.5 to calculate the length of the side marked *y* where *r* is the value given in the table.

r	*Y*
18	
14	
5	
4	
2	
1	

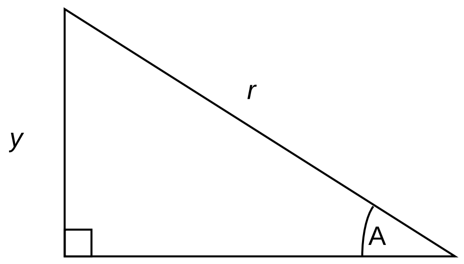
REMEMBER the ratio of 0.5 applies to all triangles where the angles are 30º and 90º as shown.

Now check your answer.

ANSWERS

Exercise

The diagram shows a triangle similar to the ones met in the first section.



The ratio is y:r = 1:2 or $\frac{1}{2}$

r	Y
18	9
14	7
5	2.5
4	2
2	1
1	0.5

The ratio you have just used is called the **SINE** of the angle.