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Geometry – Pythagoras' theorem – Pythagoras' theorem

Recap

1. The three sides of potential triangles are shown below. Determine whether they do, indeed, form a triangle.

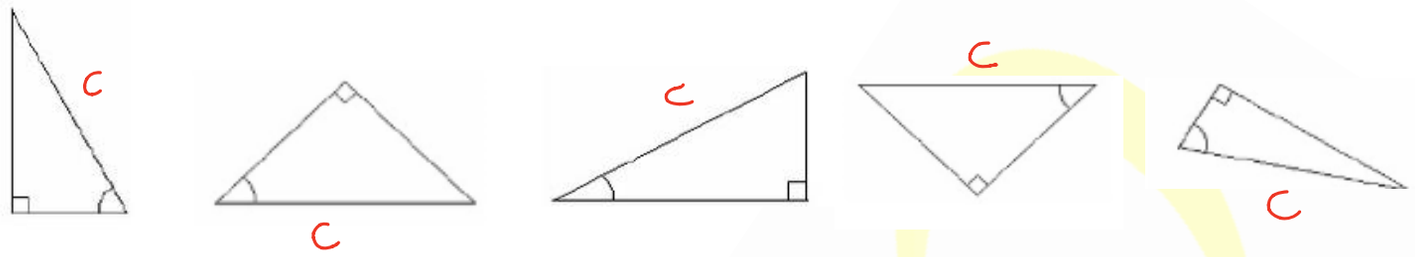
Side One (cm)	Side Two (cm)	Side Three (cm)	✓ or X
6	8	20	×
5	4	7	✓
18	6	11	×
28	29	50	✓

Core

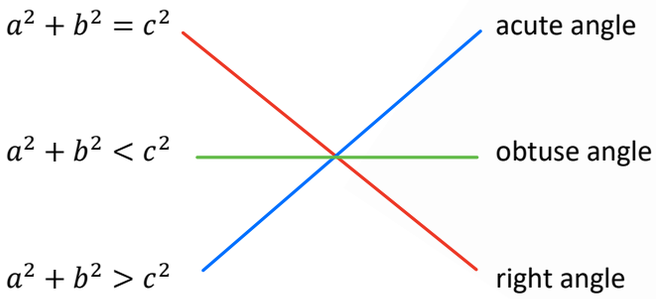
1. Define Pythagoras' theorem

A triangle is right-angled if and only if $a^2+b^2=c^2$ where c is the hypotenuse.

2. One each of the following triangles, label the hypotenuse as c:



3. Match the equation to the description:



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4. A triangle has sides of length 5cm, 6cm and 7cm. Determine, with full working, whether the largest angle is acute, obtuse or 90°.

$a^2+b^2 = 5^2+6^2 = 61$

$c^2 = 7^2 = 49$

As $a^2+b^2 > c^2$ the largest angle is acute.

5. A triangle has sides of length 4cm, 8cm and 11cm. Determine, with full working, whether the largest angle is acute, obtuse or 90°.

$a^2+b^2 = 4^2+8^2 = 80$

$c^2 = 11^2 = 121$

As $a^2+b^2 < c^2$ the largest angle is obtuse.

6. A triangle has sides of length 5cm, 12cm and 13cm. Determine, with full working, whether the largest angle is acute, obtuse or 90°.

$a^2+b^2 = 5^2+12^2 = 169$

$c^2 = 169$

As $a^2+b^2 = c^2$ the largest angle is 90°

7. Prove that a triangle with sides of length 9cm, 12cm and 15cm is right-angled.

$a^2+b^2 = 9^2+12^2 = 225$

$c^2 = 15^2 = 225$

As $a^2+b^2 = c^2$ the largest angle is 90°