

Quicker than a calculator

Carl the calculator wizz-kid used a calculator to solve the sums below; it took him 6 minutes and 17 seconds.

Can you beat him **without** a calculator?

$6 \times 3 = \square \quad 64 \div 4 = \square$

$8 \times 7 = \square \quad 2^5 = \square$

$6 \times \square = 54 \quad 12 \times 12 = \square$

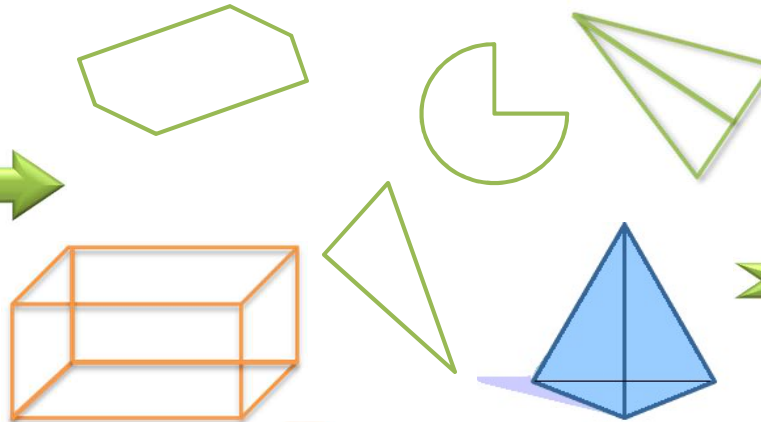
$5 \times 5 = 5\square \quad \sqrt{36} = \square$

$7^2 = \square \quad \sqrt{121} - \sqrt{81} = \square$

Pythagoras' Theorem

Foundational Finesse

Mark all the right angles that can be found in the shapes below:



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Poetic Pythagoras

Pythagoras' Theorem deals only with types of triangle.

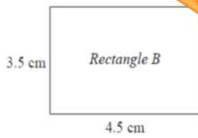
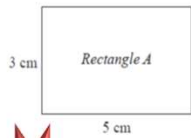
To use Pythagoras' we need to know that the longest side of the triangle is called a

Questions involving Pythagoras' Theorem are easy to spot as they usually involve a right-angled triangle or an triangle split in two.

We must remember the following saying:

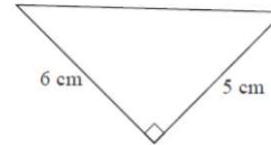
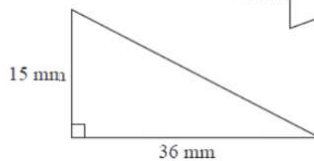
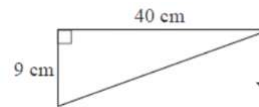
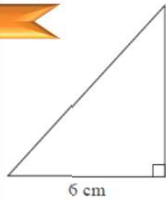
Short side,

Which of the rectangles below has the longer diagonal?



Hi Pot n Yous!

Calculate the length of the hypotenuse in each of the diagrams:



@scarimaths

Show me the method 1

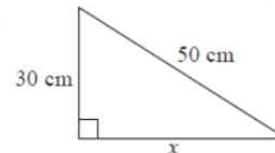
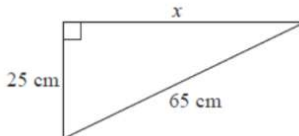
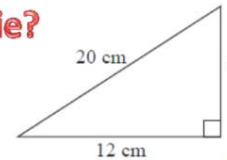
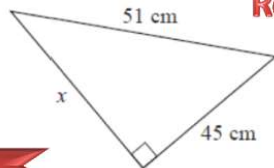
Example 1

Complex Corner

1. A hiker walks 300 m due north and then 400 m due east. How far is the hiker now from her starting position?
2. A ladder of length 4 m leans against a wall so that the top of the ladder is 3 m above ground level. How far is the bottom of the ladder from the wall?
3. Two remote-controlled cars set off from the same position. After a short time one has travelled 20 m due north and the other 15 m due east. How far apart are the two cars?

Remember Shortie?

Calculate the value of x in each of the diagrams



Show me the method 2

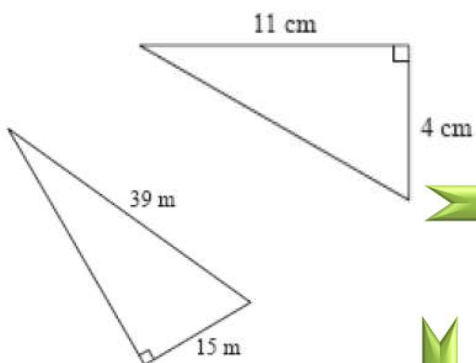
Example 2



Advanced Pythagoras' Theorem

Rapid Recall

Calculate the missing side on each of the triangles below:



Sketchy Maths

The base of a ladder is 7 metres from a wall. The height of the wall is 9 metres. What is the minimum height the ladder must be to reach the top of the wall? (give your answer to 3 significant figures)

Wicked Words

A right-angled triangle has two short sides of length 12 cm and 16 cm. Find the length of the hypotenuse.

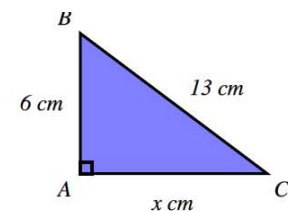
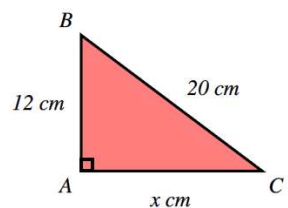
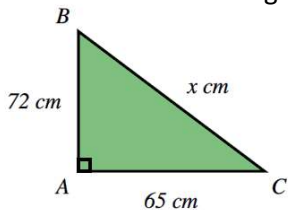
A right-angled triangle has a hypotenuse of length 117 cm and one short side of length 45 cm. Find the length of the other short side.

Find the distance between the coordinates $(-2, 1)$ and $(4, -5)$, giving your answer to 3 significant figures.

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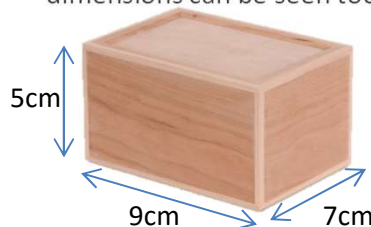
Practice make Perfect

Calculate the missing lengths below:



You'll need a pencil for this one!

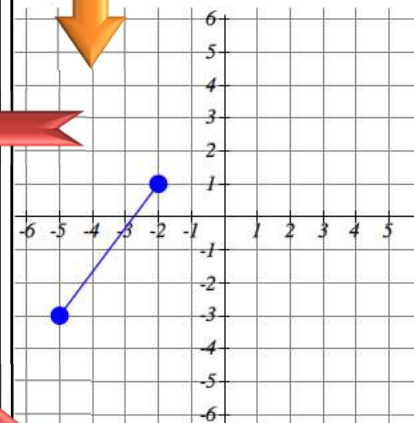
Here is a picture of my pencil case (box). The dimensions can be seen too.



What is the largest pencil that could fit in this case(box)?

Crazy Coordinates

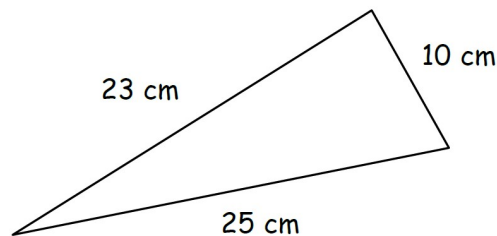
Here is a line, between two coordinates.



Can you, using Pythagoras' Theorem Calculate the length of the line to 3 significant figures?

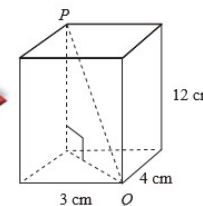
Convince Me!

Convince me that this is a right-angled triangle.



Exam Practice

A cuboid has length 3 cm, width 4 cm and height 12 cm.



Work out the length of PQ .

Diagram NOT accurately drawn