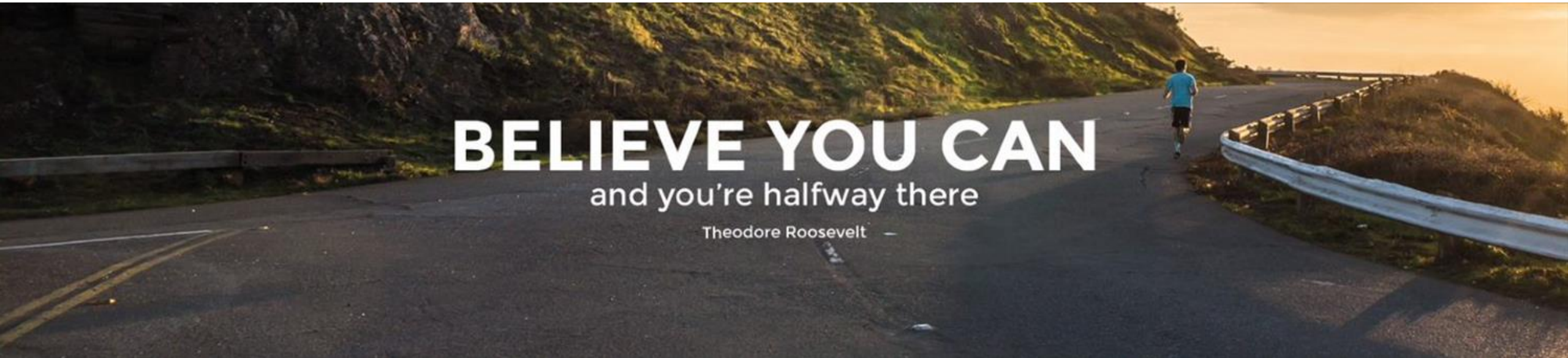


EB Education Revision Guide



How to work with Pythagoras

Pythagoras' Theorem

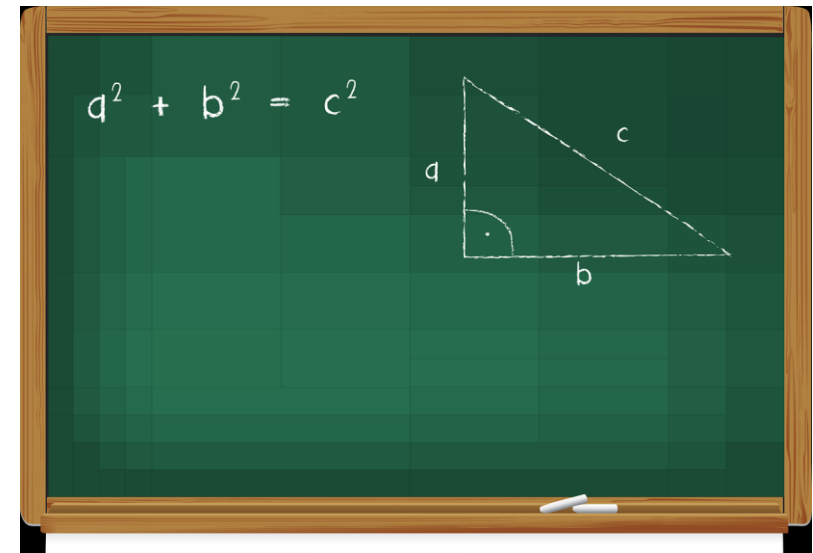
What is it?

Pythagoras' theorem can only be used with right-angled triangles.

It is used to find the length of a missing side, when provided with the other two sides.

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

Diagram



c is the hypotenuse
(the longest side, the side
opposite the right angle)

Using Pythagoras' Theorem

Steps

The easiest way to use Pythagoras' Theorem is to follow these steps.

1. Square the two numbers that you are given.
2. Add or subtract.

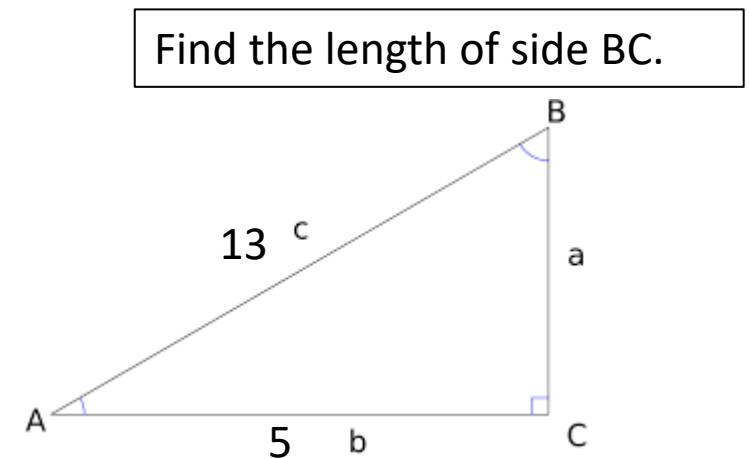
If you are finding the longest side you ADD the two squared numbers.

If you are finding a shorter side, SUBTRACT the smaller squared number from the larger squared number.

3. Square root your answer.

Example 1:

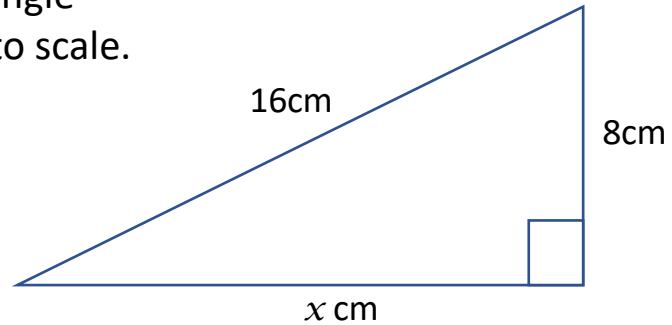
This is the longest side (c)



1. Square them: $5^2 = 25$ $13^2 = 169$
2. You are finding a shorter side, so SUBTRACT
 $c^2 - b^2 = a^2$
 $169 - 25 = 144$
3. Square root $\sqrt{144} = 12$

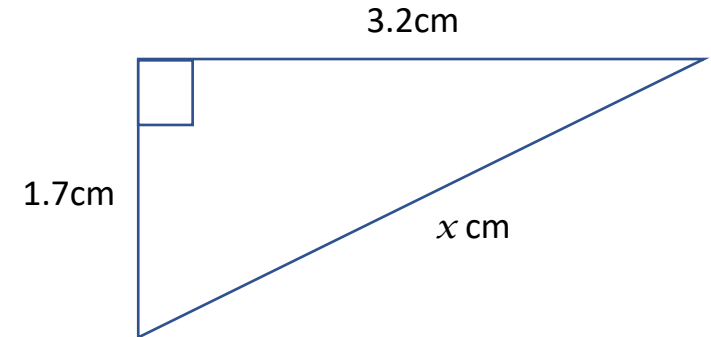


1. The right-angled triangle below is not drawn to scale.



Calculate x .
Give your answer correct to 2 decimal places.

Your turn:



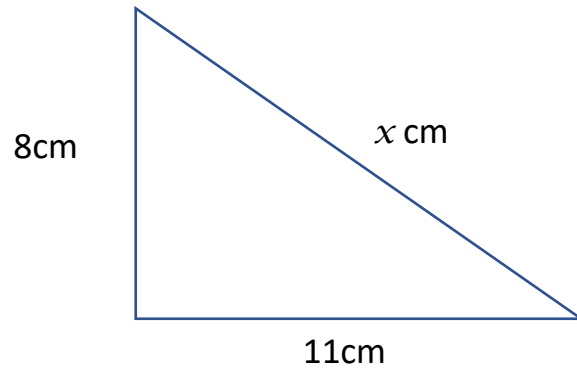
2. The right-angled triangle above is not drawn to scale.

Calculate x .
Give your answer correct to 3 significant figures.

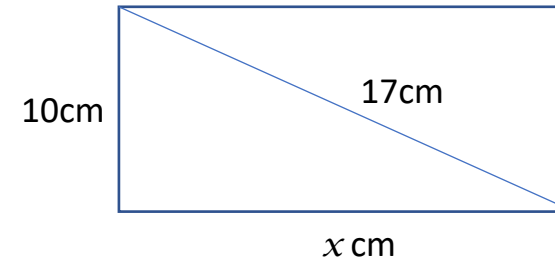


Your turn:

3. The right-angled triangle below is not drawn to scale. Calculate x .
Give your answer correct to 3 significant figures.

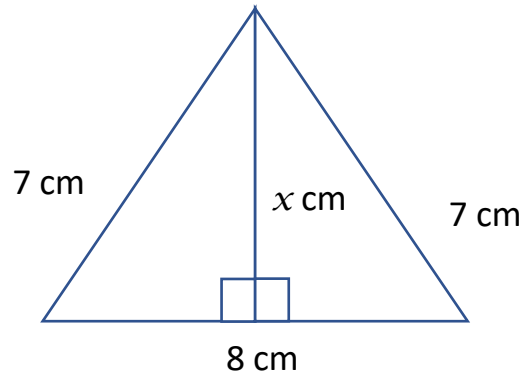


4. The rectangle below is not drawn to scale.
Calculate x .
Give your answer correct to 1 decimal place.





5. The diagram below is not drawn accurately.

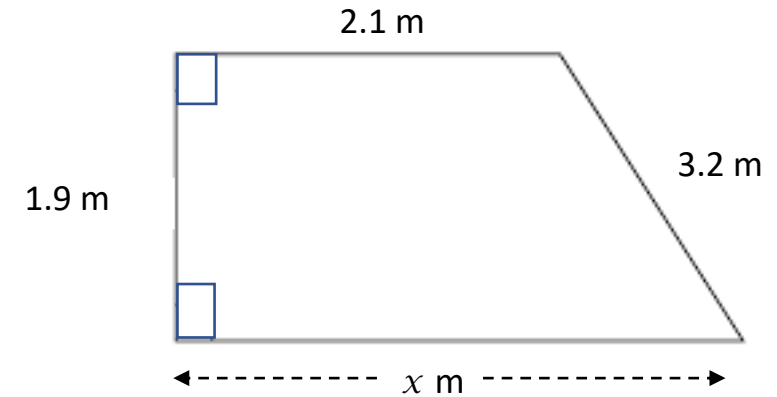


Calculate x .

Give your answer correct to 2 decimal places.

Your turn:

6. The trapezium below is not drawn accurately.



Calculate x .

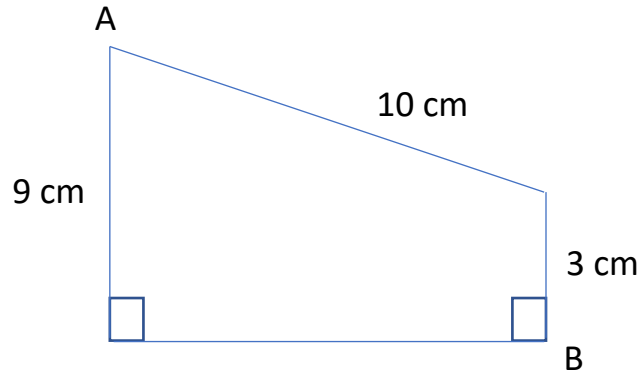
Give your answer correct to 3 significant figures.



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Your turn:

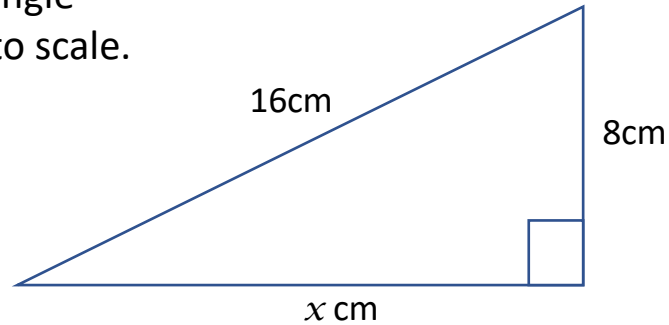
7. The trapezium below is not drawn to scale.



Calculate the length of AB.
Give your answer correct to 3 significant figures.



1. The right-angled triangle below is not drawn to scale.



Calculate x .
Give your answer correct to 2 decimal places.

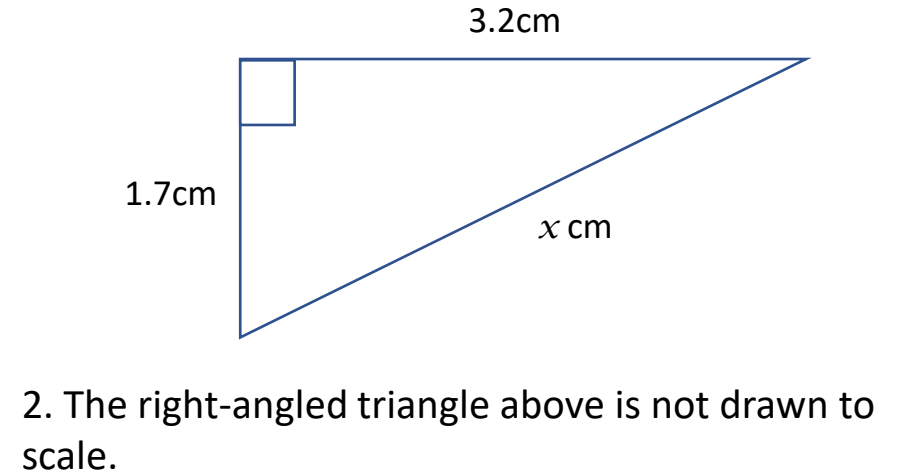
$$16^2 - 8^2 = a^2$$

$$256 - 64 = 192$$

$$a = \sqrt{192}$$

$$a = 13.86$$

Answers:



2. The right-angled triangle above is not drawn to scale.

Calculate x .
Give your answer correct to 3 significant figures.

$$3.2^2 + 1.7^2 = c^2$$

$$10.24 + 2.89 = 13.13$$

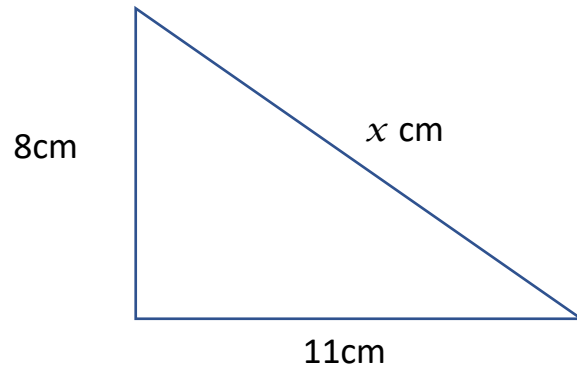
$$c = \sqrt{13.13}$$

$$c = 3.62$$



Answers:

3. The right-angled triangle below is not drawn to scale. Calculate x .
Give your answer correct to 3 significant figures.



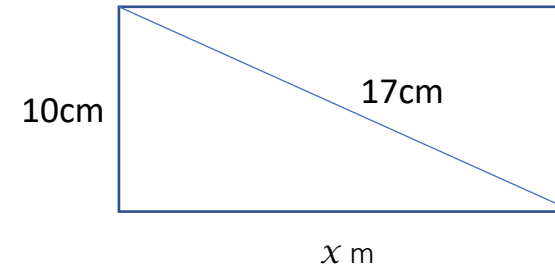
$$8^2 + 11^2 = c^2$$

$$64 + 121 = 185$$

$$c = \sqrt{185}$$

$$c = 13.6$$

4. The rectangle below is not drawn to scale.
Calculate x .
Give your answer correct to 1 decimal place.



$$17^2 - 10^2 = a^2$$

$$289 - 100 = 189$$

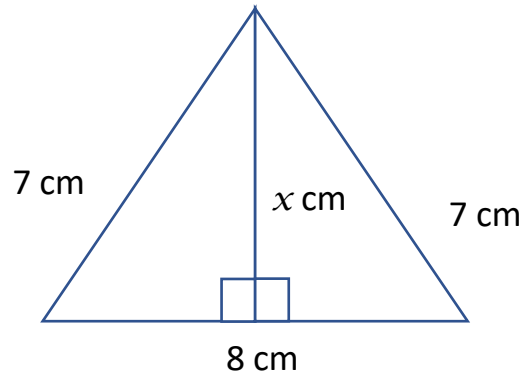
$$a = \sqrt{189}$$

$$a = 13.7$$



Answers:

5. The diagram below is not drawn accurately.



Calculate x .

Give your answer correct to 2 decimal places.

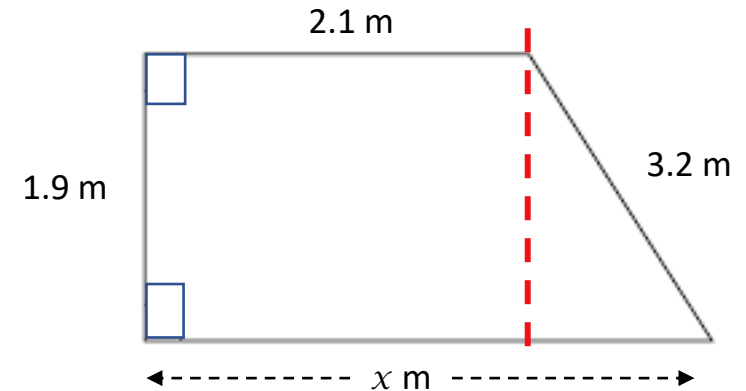
$$7^2 - 4^2 = a^2$$

$$49 - 16 = 33$$

$$a = \sqrt{33}$$

$$a = 5.74$$

6. The trapezium below is not drawn accurately.



Calculate x .

Give your answer correct to 3 significant figures.

$$3.2^2 - 1.9^2 = a^2$$

$$10.24 - 3.61 = 6.63$$

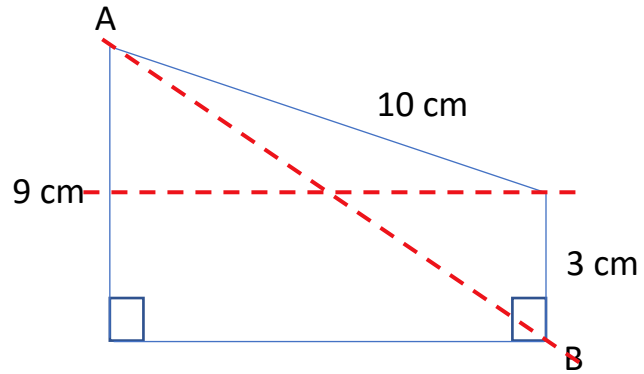
$$a = \sqrt{6.63}$$

$$a = 2.57$$

$$2.1 + 2.57 = 4.67$$



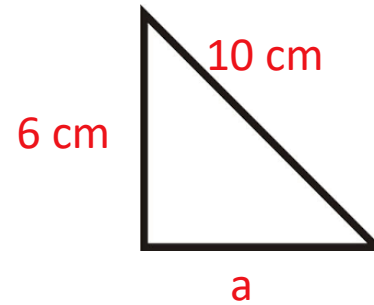
7. The trapezium below is not drawn to scale.



Calculate the length of AB.
Give your answer correct to 3 significant figures.

12.0 cm

Answers:

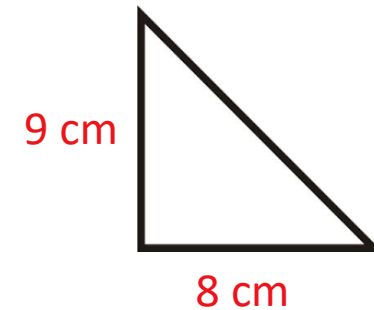


$$10^2 - 6^2 = a^2$$

$$100 - 36 = 64$$

$$a = \sqrt{64}$$

$$a = 8$$



$$8^2 + 9^2 = c^2$$

$$64 + 81 = 145$$

$$c = \sqrt{145}$$

$$c = 12.0$$

For more help and resources, or
to work with us as a tutor, please
contact us

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