Pythagoras' Theorem

Today we are learning...

How to solve problems using Pythagoras.

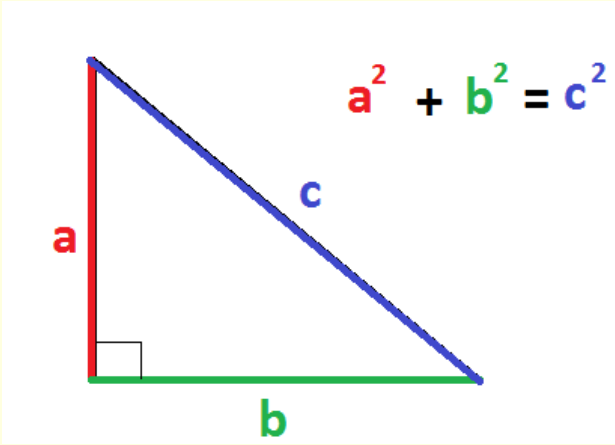
I will know if I have been successful if...

I can state Pythagoras' Theorem.

I can use Pythagoras in reverse to find another length.

I can answer problems involving Pythagoras' Theorem.

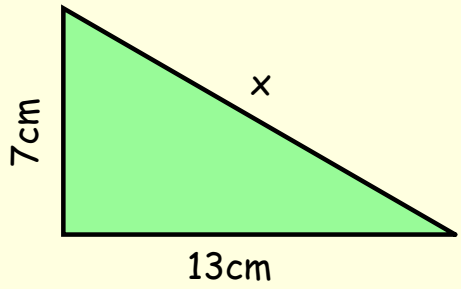
Pythagoras' Theorem



Pythagoras Theorem to find the Hypotenuse

Find the length of the hypotenuse, x.

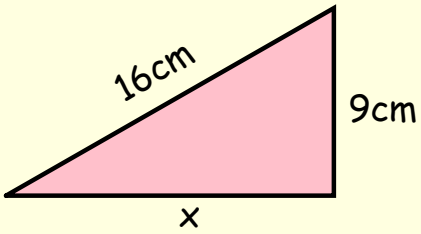
$a^2 + b^2 = c^2$



Pythagoras Theorem to find a Shorter Side

Find the length of the hypotenuse, x.

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



Using Pythagoras

To find the hypotenuse we add.

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

To find a shorter side we subtract.

$$b^2 - c^2 = a^2$$

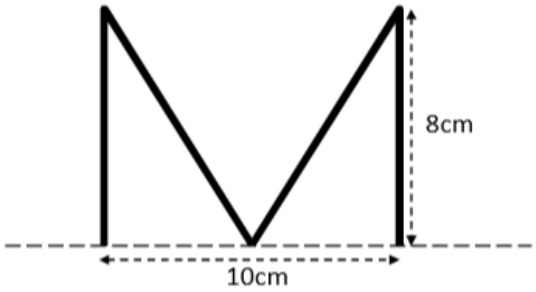
Answers

4. 40 cm
5. $x = 8$
6. a 48 cm b 960 cm^2
7. 11·4 boxes
8. 13·9 boxes
9. a 6 cm b 60 cm^3
10. x, being smaller side, should end up < 10
11. 228 mm 12. 31 cm.

Plenary

Exam Style Question

The capital letter 'M' can be formed using straight lines as shown below.



Calculate the total length of the lines forming the letter.

Starter

1) Find the roots of the equation $y = x^2 + 3x - 10$

2) Describe the nature of the roots of $y = 3x^2 - 5x + 7$

Converse of Pythagoras

Today we are learning...

How to apply the converse of Pythagoras to prove if a triangle is right angled or not.

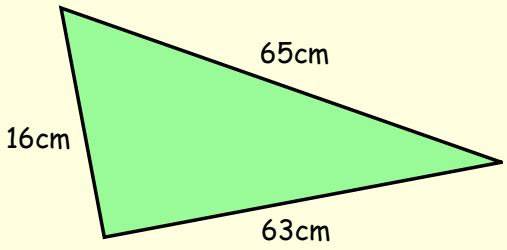
I will know if I have been successful if...

I can apply Pythagoras Theorem to any triangle.

I can evaluate in my calculator.

I remember to state if the triangle is or is not right angled.

Proving Triangles have a Right Angle



Is this a right angled triangle?

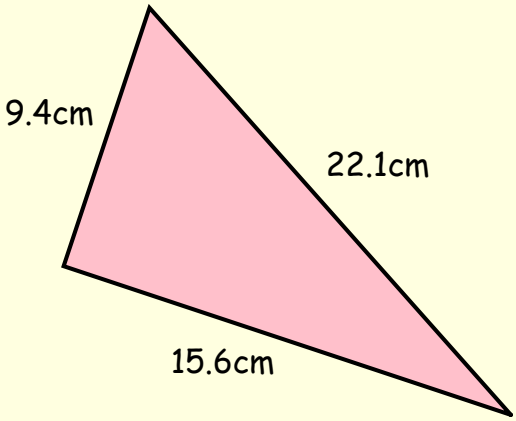
v

v

angled triangle

National 5 WB 10th September Pythagoras

Proving Triangles have a Right Angle



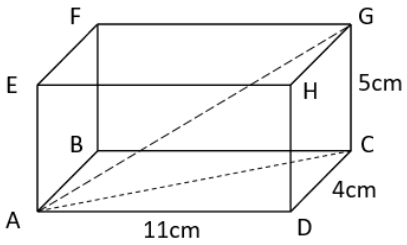
Is this a right angled triangle?

Problems in 3 Dimensions

Answer the following about the cuboid opposite.

(a) Calculate the length of the face diagonal AC.

(b) Hence calculate the length of the space diagonal AG.

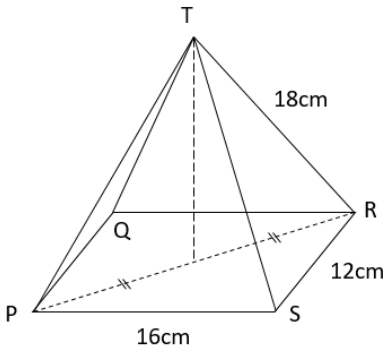


Problems in 3 Dimensions

The pyramid opposite has a rectangular base.

(a) Calculate the length of the base diagonal PR.

(b) Given that edge TR = 18cm, calculate the vertical height of the pyramid.



Page 24 Exam Questions

Remember that all of the questions are related to Pythagoras' Theorem.

Try and find right angles in the questions.

We have already done Q2!

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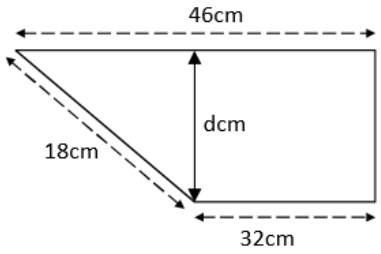
Plenary

Exam Style Question

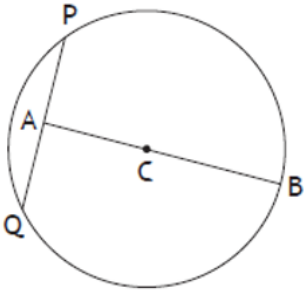
The side view of a water trough is as shown in the diagram. The depth of it must by at least 11cm.

Is this container acceptable? Show working and give a reason for your answer.



Plenary - Past Exam Question

2. The diagram below shows a circle, centre C.



The radius of the circle is 15 centimetres.

A is the mid-point of chord PQ.

The length of AB is 27 centimetres.

Calculate the length of PQ. (4 marks)