

Learning Objective:	To: Solve worded problems Using Pythagoras	Name:	
		Date:	

Do NOW Activity:

- 1 **Work out** $\frac{5}{6} \div \frac{2}{3}$
- 2 **Work out** 8.8^2
- 3 **Evaluate** 3^0
- 4 **Expand** $x(5 - x)$
- 5 **Express** the speed 72 km per hour as m per second

PRIOR KNOWLEDGE CHECK:

1. I can find the Longest and shorter sides using Pythagoras
2. I can draw a triangular diagram explaining an event

THE MAIN EVENT

WORKED EXAMPLE #1:

question

A flying squirrel lives in a nest that is 8 metres high in a tree. To reach a fallen acorn that is 15 metres from the base of the tree, how far will the flying squirrel have to glide?

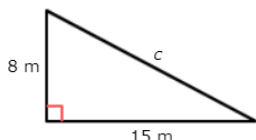
metres

key idea

In a right triangle, $a^2 + b^2 = c^2$, where a and b are the lengths of the legs and c is the length of the hypotenuse. This is called Pythagoras' theorem.

solution

Draw a diagram.



Use Pythagoras' theorem, with $a = 8$ and $b = 15$.

$$a^2 + b^2 = c^2 \quad \text{Pythagoras' theorem}$$

$$8^2 + 15^2 = c^2 \quad \text{Plug in } a = 8 \text{ and } b = 15$$

$$64 + 225 = c^2 \quad \text{Square}$$

$$289 = c^2 \quad \text{Add}$$

$$\sqrt{289} = \sqrt{c^2} \quad \text{Take the square root of both sides}$$

$$17 = c \quad \text{Simplify}$$

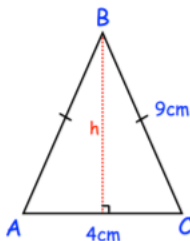
The squirrel will have to fly 17 metres.

PRACTICE #1:

ABC is an isosceles triangle.

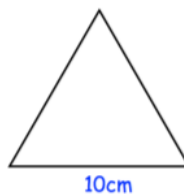
(a) Find h .

(b) Find the area of the triangle.



Shown is an equilateral triangle.

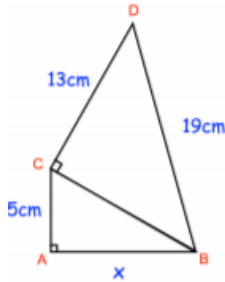
Find the area of the equilateral triangle.



PRACTICE #2:

Stanley has drawn a right angle triangle.
One side is 14cm and another is 18cm.
There are two possible lengths for the third side.
What are they?

ABC and BCD are right angle triangles.
Find the length of AB



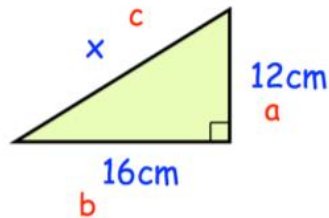
A wooden flagpole is 25 foot tall.
In a storm, the flagpole is broken and its top
touches the ground 5 foot from the base.

Find the lengths of the segments of the flagpole.



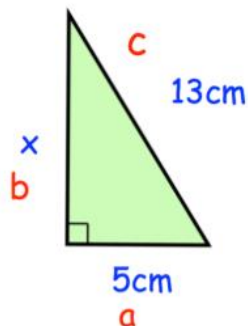
PRACTICE #3:

Benjamin has completed this question.
Can you spot any mistakes?



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 12^2 + 16^2 &= x^2 \\ 144 + 256 &= x^2 \\ 400 &= x^2 \\ x^2 &= 400 \\ x &= 200\text{cm} \end{aligned}$$

Chantelle has completed this question.
Can you spot any mistakes?



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 5^2 + x^2 &= 13^2 \\ 10 + x^2 &= 26 \\ x^2 &= 16 \\ x &= 4\text{cm} \end{aligned}$$