Learning Objective:	To: Use Pythagoras to Find Longest Side	Name:	
		Date:	

Do NOW Activity:

1 **Work out** $\frac{1}{3} \div \frac{3}{4}$

2 **Work out** 4.5×3.5

3 **Evaluate** 1^6

4 **Expand** $x(2x - 1)$

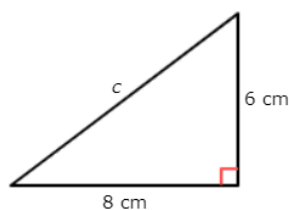5 **Express** the speed 5 m per second as km per hour

PRIOR KNOWLEDGE CHECK:
1. I can work with square and root numbers
2. I can round decimals

THE MAIN EVENT

WORKED EXAMPLE #1:

question

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.

What is the length of the hypotenuse?

$c = \boxed{}$ centimetres

solution

Use Pythagoras' theorem, with $a = 6$ and $b = 8$.

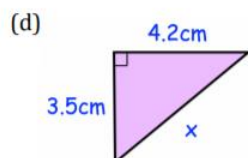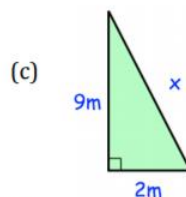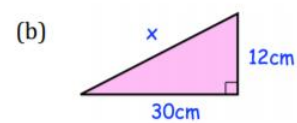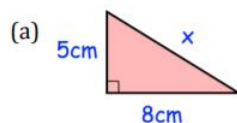|	
$a^2 + b^2 = c^2$	*Pythagoras' theorem*
$6^2 + 8^2 = c^2$	*Plug in a = 6 and b = 8*
$36 + 64 = c^2$	*Square*
$100 = c^2$	*Add*
$\sqrt{100} = \sqrt{c^2}$	*Take the square root of both sides*
$10 = c$	*Simplify*

The length of the hypotenuse is 10 centimetres.

PRACTICE #1:

Question 1: For each right angle triangle below, work out x

(a) 3cm, x, 4cm

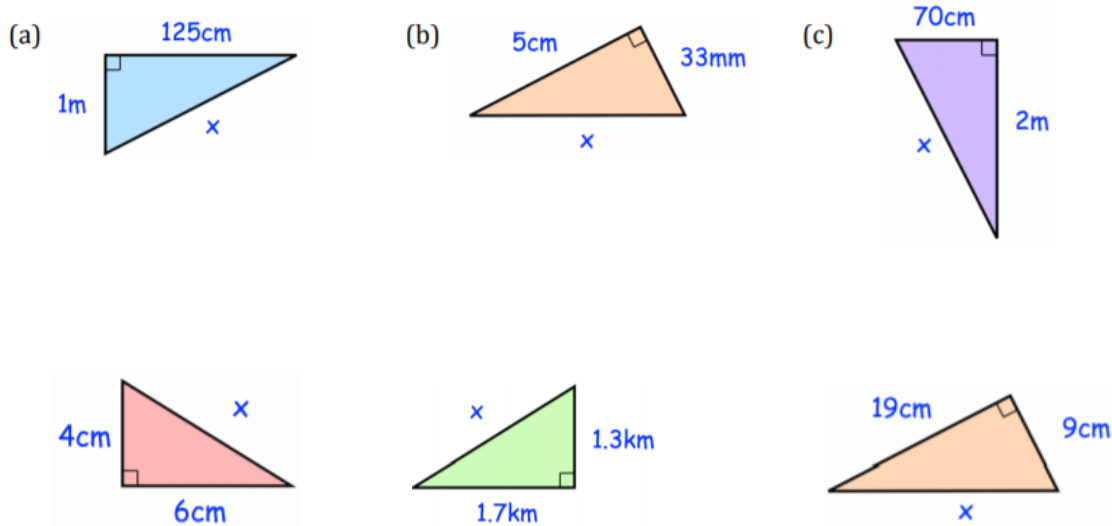(b) x, 8cm, 6cm

(c) 5cm, 12cm, x
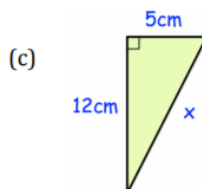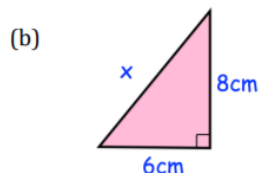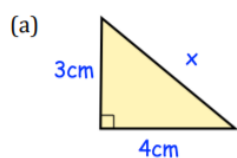
Question 2: Calculate x
Give each answer to 2 decimal places.

(a) 5cm, x, 8cm

(b) x, 12cm, 30cm

(c) 9m, x, 2m

(d) 4.2cm, 3.5cm, x

(e) 22mm, 37mm, x

(f) x, 8 yards, 11.5 yards
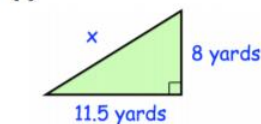
PRACTICE #2:

Question 3:   Calculate x
              Include suitable units and give each answer to 1 decimal place.

(a)   125cm
      1m
      x

(b)   5cm   33mm
      x

(c)   70cm
      2m
      x

      4cm   x   6cm

      x   1.3km   1.7km

      19cm   9cm   x

PRACTICE #3:

1)   Shown is a square with side length 5cm.
   Find the length of the diagonal, x.

     5cm
     x
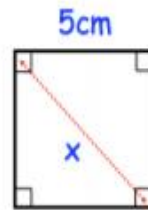
2)   A rectangle is 20cm long and 8cm wide.
     Find the length of the diagonal of the rectangle.

3)   An airplane is flying from Redville to Leek.
     The airplane flies 50 miles East and then 180 miles South.
     How far is Leek from Redville directly?

4)   A frame is made from wire.
     The frame is a trapezium
     Calculate the total amount of wire needed to make
     the frame.
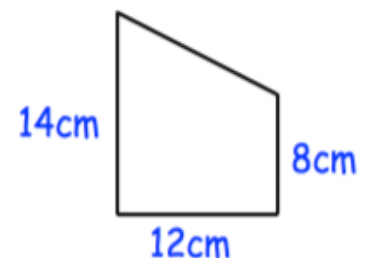
     Give your answer to 1 decimal place.

     14cm
     8cm
     12cm