Learning Objective:	To: Use Pythagoras to Find Shorter Side Of Right-angle triangle	Name:	
		Date:	

Do NOW Activity:

1 **Work out** $\frac{2}{3} \div \frac{2}{5}$

2 **Work out** 20.5×3.5

3 **Evaluate** 2^6

4 **Expand** $x(3x + 1)$
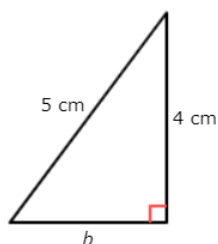
5 **Express** the speed 10 m per second as km per hour

PRIOR KNOWLEDGE CHECK:
1. I can find the longest side of a right-angle triangle using Pythagoras theorem
2. I can round decimals

THE MAIN EVENT

WORKED EXAMPLE #1:

question

What is the length of the missing leg?

b = [　　　] centimetres

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

Use Pythagoras' theorem, with $a = 4$ and $c = 5$.

$a^2 + b^2 = c^2$ *Pythagoras' theorem*

$4^2 + b^2 = 5^2$ *Plug in a = 4 and c = 5*

$16 + b^2 = 25$ *Square*

$b^2 = 9$ *Subtract 16 from both sides*
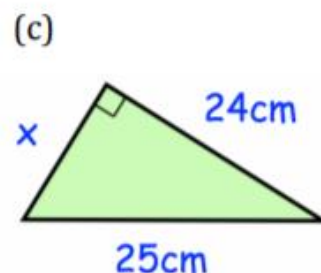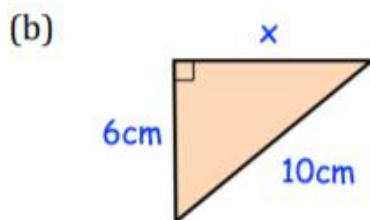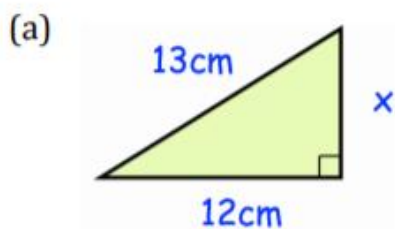
$\sqrt{b^2} = \sqrt{9}$ *Take the square root of both sides*

$b = 3$ *Simplify*

The length of the missing leg is 3 centimetres.

PRACTICE #1:

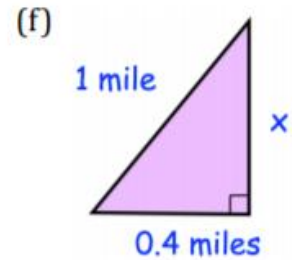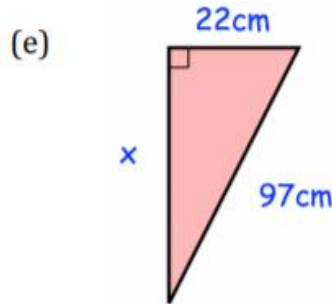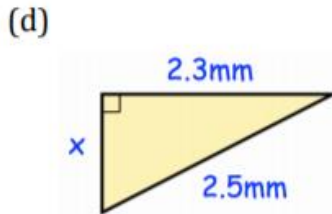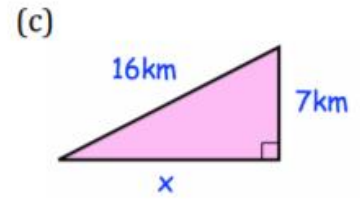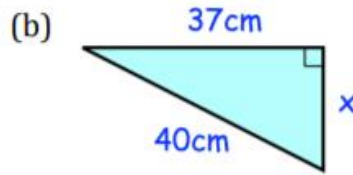For each right angle triangle below, work out x

(a)

(b)

(c)

PRACTICE #2:

Calculate x
Give each answer to 2 decimal places.

(a)
8cm
x
5cm

(b)
37cm
x
40cm

(c)
16km
7km
x

(d)
2.3mm
x
2.5mm

(e)
22cm
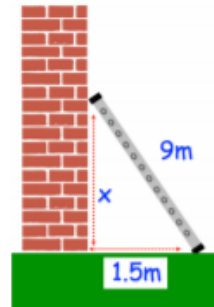x
97cm

(f)
1 mile
x
0.4 miles
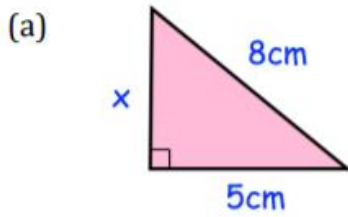
PRACTICE #3:

1)   Shown is a right angle triangle.
     Calculate:

     (a) the perimeter of the triangle.
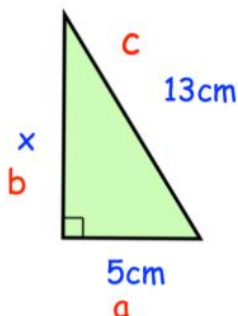   (b) the area of the triangle.

25cm
7cm
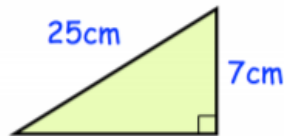
2)   A 9m ladder is placed against a wall.
     The foot of the ladder is 1.5m from the foot of the wall.
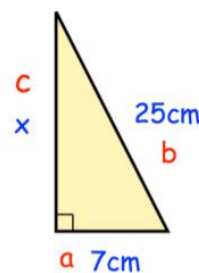   How far up the wall does the ladder reach?

9m
x
1.5m

PRACTICE #4:

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

c
13cm
x
b
5cm
a

$a^2 + b^2 = c^2$
$5^2 + x^2 = 13^2$
$10 + x^2 = 26$
$x^2 = 16$
$x = 4cm$

: Victor has completed this question.
  Can you spot any mistakes?

c
x
b
25cm
a   7cm

$a^2 + b^2 = c^2$
$7^2 + 25^2 = x^2$
$49 + 625 = x^2$
$674 = x^2$
$x^2 = 674$
$x = 25.96cm$