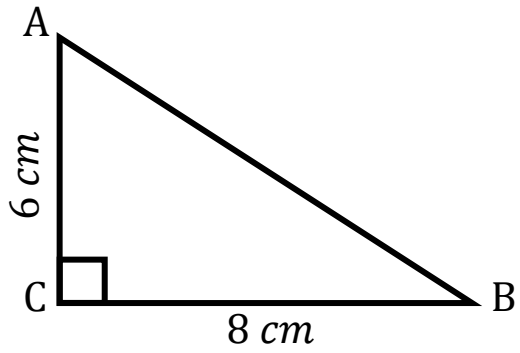
Pythagoras

1. ABC is a right angled triangle.
Find the length of AB.



$AB = \sqrt{AC^2 + BC^2}$

$AB = \sqrt{6^2 + 8^2}$

$AB = \sqrt{36 + 64}$

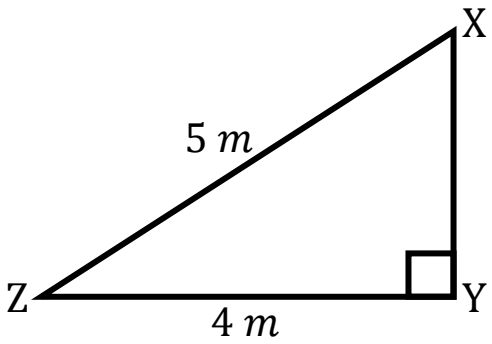
$AB = \sqrt{100}$

$AB = 10$

(3 marks)

Pythagoras

2. XYZ is a right angled triangle.
Find the length of YZ.



$XY = \sqrt{XZ^2 - YZ^2}$

$XY = \sqrt{5^2 - 4^2}$

$XY = \sqrt{25 - 16}$

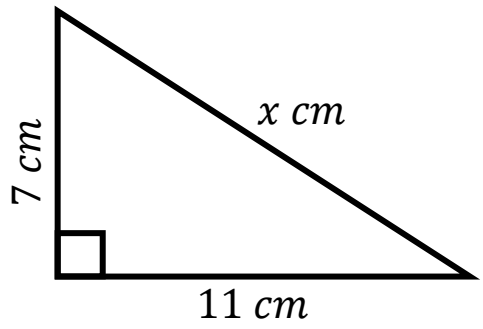
$XY = \sqrt{9}$

$XY = 3$

(3 marks)

Pythagoras

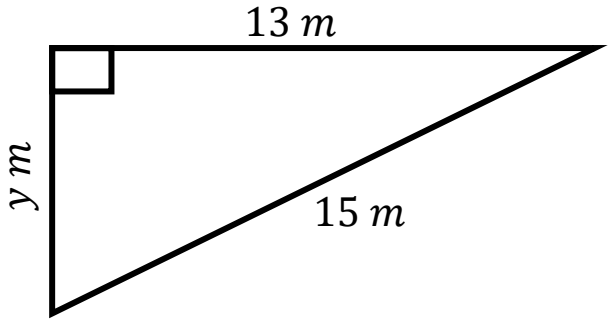
3. Find the length of x.



$X = \sqrt{7^2 + 11^2}$
$X = \sqrt{49 + 121}$
$X = \sqrt{170}$
$X = 13.0$ (1 d.p.)

(3 marks)

4. Find the length of y.

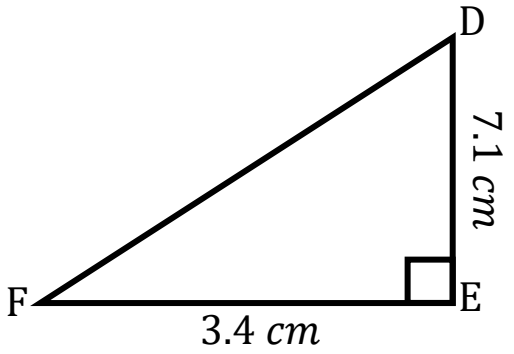


$y = \sqrt{15^2 - 13^2}$
$y = \sqrt{225 - 169}$
$y = \sqrt{56}$
$y = 7.5$ (1 d.p.)

(3 marks)

Pythagoras

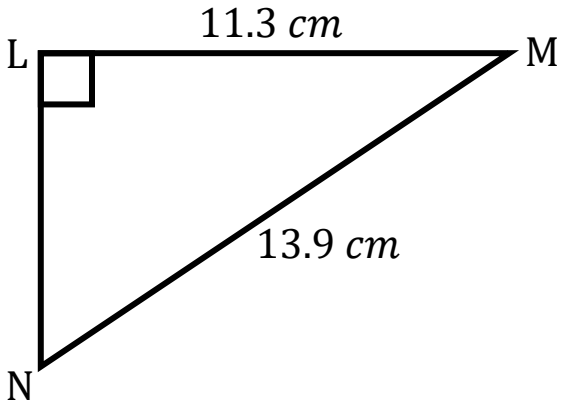
5. DEF is a right angled triangle.
Find the length of DF.



$DF = \sqrt{3.4^2 + 7.1^2}$
$DF = \sqrt{11.56 + 50.41}$
$DF = \sqrt{61.97}$
$DF = 7.9$ (1 d.p.)

(3 marks)

6. LMN is a right angled triangle.
Find the length of LN.

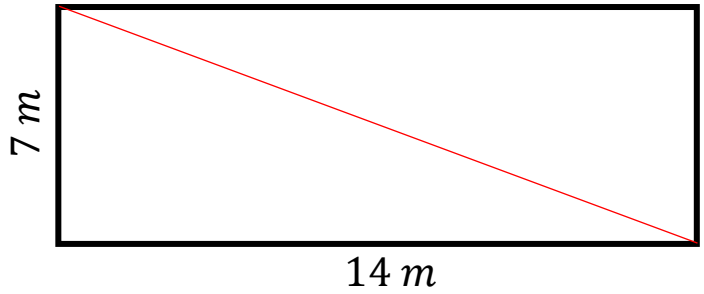


$LN = \sqrt{13.9^2 - 11.3^2}$
$LN = \sqrt{193.21 - 127.69}$
$LN = \sqrt{65.52}$
$LN = 8.1$ (1 d.p.)

(3 marks)

Pythagoras

7. Shown below is a rectangle.
Find the length of the diagonal.



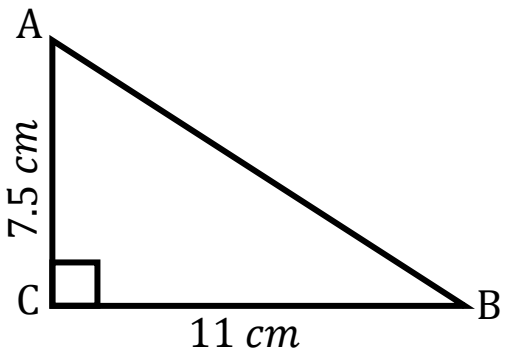
Diagonal $= \sqrt{14^2 + 7^2}$

D $= \sqrt{196 + 49}$

D $= \sqrt{245}$

D $= 15.7$ (1 d.p.) (3 marks)

8. ABC is a right angled triangle.
Find the perimeter of the triangle.



Perimeter = AB + BC + CA

AB $= \sqrt{11^2 + 7.5^2}$

AB $= \sqrt{121 + 56.25}$

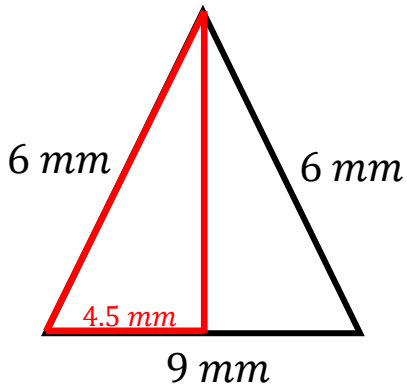
AB $= \sqrt{177.25}$

AB $= 13.3$ (1 d.p.)

(4 marks)

Pythagoras

9. XYZ is an isosceles triangle.
Find the area of the triangle.



Area of triangle $= \frac{1}{2}$ *x base x perpendicular height*

Height $= \sqrt{6^2 - 4.5^2}$

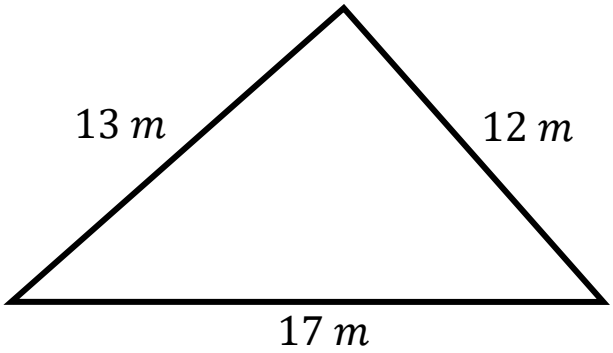
Height $= \sqrt{36 - 20.25}$

Height $= \sqrt{15.75}$

Height $= 3.97$ (2 d.p.)

(4 marks)

10. Below is a triangle.
Is this triangle right angled?
Show all workings.



If triangle is right-angled then Pythagoras' theorem will hold true.

Therefore, if $\sqrt{12^2 + 13^2} = 17$. Then the triangle is right-angled.

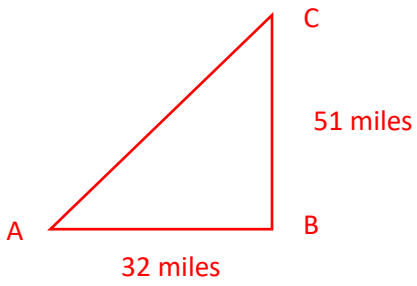
$\sqrt{144 + 169} = \sqrt{313} = 17.7$ (1 d.p.)

$17.7 \neq 17$ Therefore, triangle is not right-angled.

(3 marks)

Pythagoras

11. A car drives 32 miles east from town A to town B.
It then travels 51 miles north to town C.
What is the direct distance from town A to town C?



$AC = \sqrt{AB^2 + BC^2}$

$AC = \sqrt{32^2 + 51^2}$

$AC = \sqrt{1024 + 2601}$

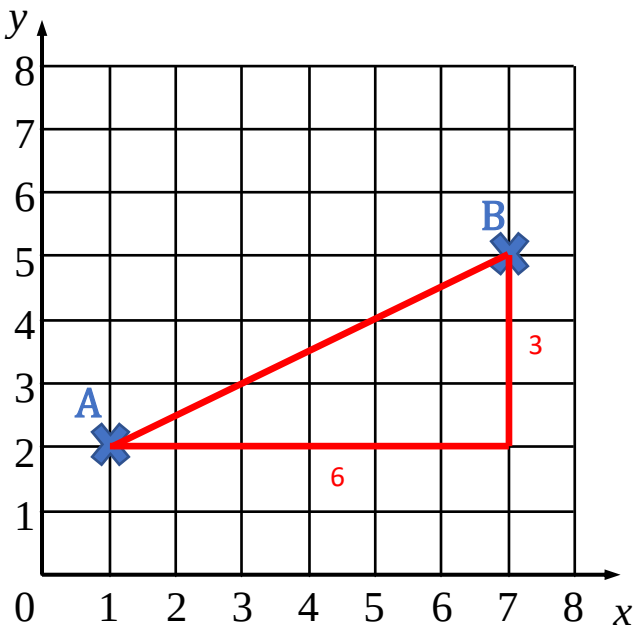
$AC = \sqrt{3625}$

$AC = 60.2$ miles (1 d.p.)

(3 marks)

Pythagoras

12. Work out the distance between coordinates A and B.



Diagonal can be found using Pythagoras' theorem

$AB = \sqrt{6^2 + 3^2}$

$AB = \sqrt{36 + 9}$

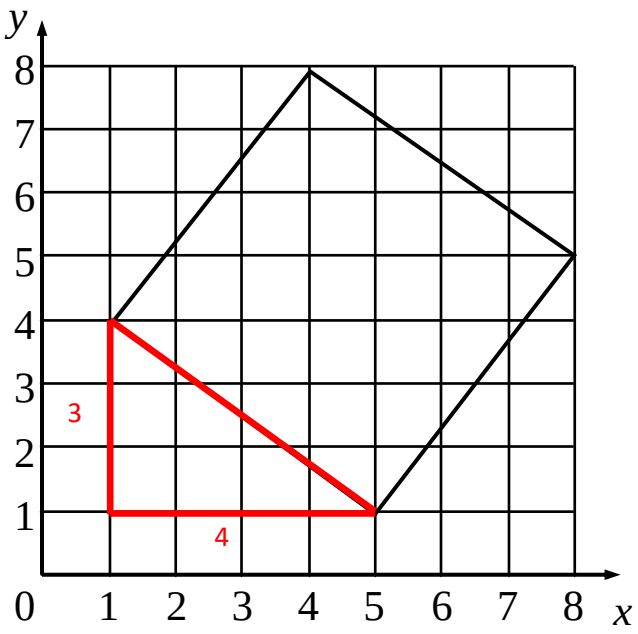
$AB = \sqrt{45}$

$AB = 6.7$ (1 d.p.)

(3 marks)

Pythagoras

13. Work out the area of the square.



Since the shape is a square, all sides must be the same length.
Use Pythagoras theorem to find the length of the diagonal.

Diagonal $= \sqrt{3^2 + 4^2}$

Diagonal $= \sqrt{9 + 16}$

Diagonal $= \sqrt{25}$

Diagonal $= 5$

Area of square $= 5 \times 5$

Area $= 25\ units^2$

(4 marks)

Pythagoras

14. Point A has coordinates (-2, 5)
Point B has coordinates (5, 12)
Calculate the length of the line segment AB.

Find difference between x-co-ordinates. $5 - -2 = 7$
Find difference between y-co-ordinates. $12 - 5 = 7$
Line segment $= \sqrt{7^2 + 7^2}$
Line segment $= \sqrt{49 + 49}$
Line segment $= \sqrt{98}$
Line segment $= 9.9$ (1 d.p.)

(4 marks)