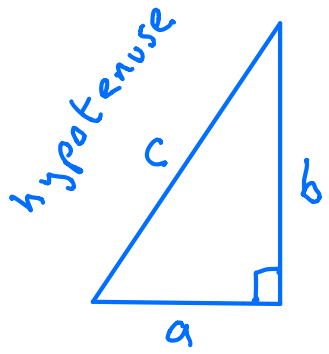
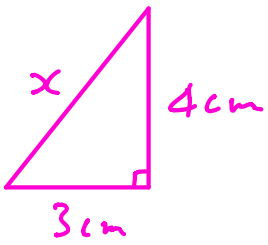
Pythagoras Theorem



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

Example 1

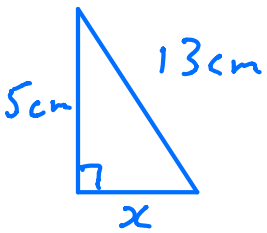


By Pythagoras

$$3^2 + 4^2 = x^2$$
$$9 + 16 = x^2$$
$$25 = x^2$$
$$\sqrt{25} = x$$
$$5 = x$$

$x = 5$ cm

Ex 2



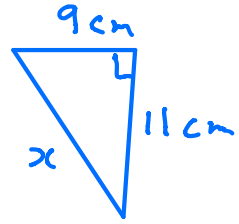
By Pythagoras

$$x^2 + 5^2 = 13^2$$
$$x^2 = 13^2 - 5^2$$
$$x^2 = 169 - 25$$
$$x^2 = 144$$
$$x = \sqrt{144}$$
$$x = 12 \text{ cm}$$

Well known Pythagorean Triples

3, 4, 5 5, 12, 13 7, 24, 25 8, 15, 17

Ex 3



By Pythagoras

$9^2 + 11^2 = x^2$

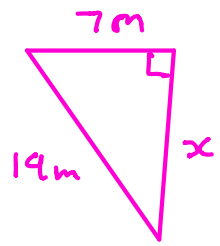
$202 = x^2$

$\sqrt{202} = x$

$x = 14.2\text{ cm}$

Exercise

1)



By Pythagoras

$x^2 + 7^2 = 19^2$

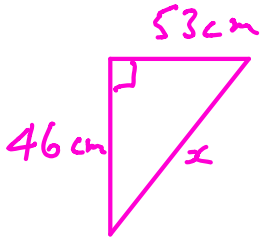
$x^2 = 19^2 - 7^2$

$x^2 = 312$

$x = \sqrt{312}$

$x = 17.7\text{ m}$

2)



By Pythagoras

$46^2 + 53^2 = x^2$

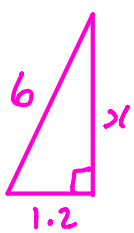
$4925 = x^2$

$\sqrt{4925} = x$

$x = 70.2\text{ cm}$

Problem.

The foot of a 6m ladder is 1.2m from a wall. How far up the wall is the top of the ladder?



By Pythagoras

$x^2 + 1.2^2 = 6^2$

$x^2 = 6^2 - 1.2^2$

$x^2 = 34.56$

$x = 5.88\text{ m}$