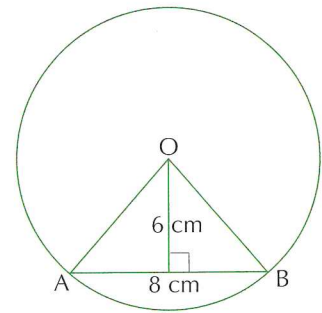


- 5 AB is a chord of a circle and is 8 cm long.
The centre, O, is 6 cm from the mid-point of AB.
Calculate the length of the diameter of the circle.

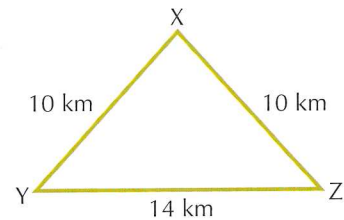


- 6 The lengths of two sides of a right-angled triangle are 10 cm and 20 cm.
Calculate the possible lengths of the third side.

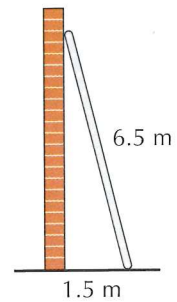
- 7 In $\triangle XYZ$, $\angle X = 90^\circ$, $XZ = 3.21$ m and $YZ = 5.64$ m.
Calculate the length of XY.

Hint The symbol \triangle is a short way of writing 'triangle' and the symbol \angle means 'angle'.

- 8 The diagram shows the positions of three towns X, Y and Z connected by straight roads.
Calculate the shortest distance from X to the road connecting Y and Z.



- 9 Jaka thinks that if he moves his ladder 1 m closer to the wall, it will reach 1 m further up the wall.
Is he correct?
Show your working to explain your answer.



- 10 Calculate the length between each pair of coordinate points.
- | | | | |
|---|----------------------|---|-----------------------|
| a | A(2, 3) and B(5, 7) | b | C(4, 8) and D(6, 12) |
| c | E(-1, 6) and F(2, 1) | d | G(-5, 4) and H(2, -3) |

Problem solving: Pythagorean triples

Any set of three whole numbers a , b and c that obey Pythagoras' theorem:

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

is called a **Pythagorean triple**, named after Pythagoras, who first discovered a formula for finding them.

In this table, the numbers in each row form a Pythagorean triple, but with the extra condition that a is an odd number.

a	b	c
3	4	5
5	12	13
7	24	25

- A Continue the table to calculate other Pythagorean triples, ensuring that a is always an odd number.
You could use a spreadsheet to help you.
- B Work out the formulae that Pythagoras discovered, to calculate b and c when the value of a is known.
- C Try to find out whether multiples of any Pythagorean triple still give another Pythagorean triple.