

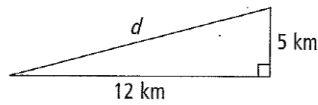
3.5 Applying the Pythagorean Relationship

MathLinks 8, pages 106-111

Key Ideas Review

Use the diagrams provided to complete the equations for #1.

1. a)



$$d^2 = 12^2 + 5^2$$

$$d^2 = 144 + 25$$

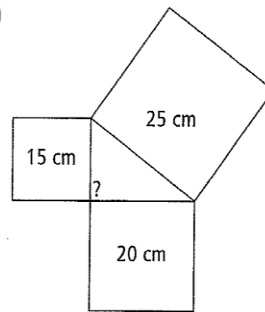
$$d^2 = 169$$

$$d = \sqrt{169}$$

$$d = 13$$

The hypotenuse is 13 km long.

b)



$$15^2 + 20^2 = 25^2$$

$$\begin{aligned} \text{Left side: } & 15^2 + 20^2 \\ & = 225 + 400 \\ & = 625 \end{aligned}$$

$$\text{Right side: } 25^2 = 625$$

Are both sides equal?

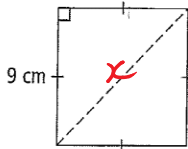
YES NO

Is this a right triangle?

YES NO

Practise and Apply

2. What is the length of the diagonal of a square whose sides measure 9 cm? Give the answer to the nearest tenth of a centimetre. Show your work.



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

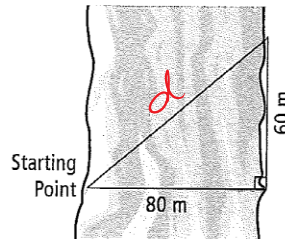
$$81 + 81 = x^2$$

$$162 = x^2$$

$$x = \sqrt{162}$$

$$x = 12.7 \text{ cm}$$

3. Aden decides to swim across a river that is 80 m wide. As he begins to swim the current carries him 60 m downstream. How far did he actually swim?



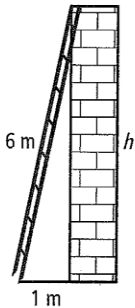
$$60^2 + 80^2 = d^2$$

$$d = 100 \text{ m}$$

Name: _____

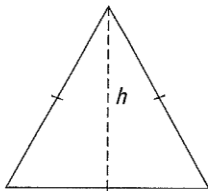
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4. The foot of a ladder is 1 m from a wall. If the ladder is 6 m long, how far up the wall does the ladder reach? Give the answer to the nearest tenth of a metre. Show your work.

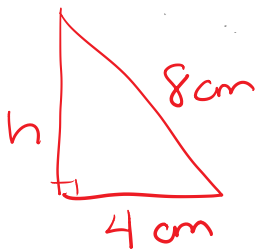


5.9 m

5. The perimeter of an equilateral triangle is 24 cm.



Calculate the height of the triangle to the nearest tenth of a centimetre. Show your work.



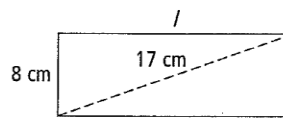
$$h^2 + 4^2 = 8^2$$

$$h^2 + 16 = 64$$

$$h^2 = 48$$

$$h = 6.9 \text{ cm}$$

6. The width of a rectangle is 8 cm, and its diagonal is 17 cm.



- a) Calculate the length of the rectangle. Show your work.

15 cm

- b) Calculate the area of the rectangle. Show your work.

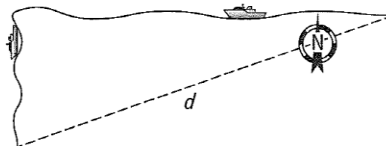
120 cm²

7. A quadrilateral has a width of 17 cm and a length of 26 cm. A diagonal is 31 cm. Is the quadrilateral a rectangle? Justify your answer.

$$17^2 + 26^2 \neq 31^2$$

Not a rectangle.

8. A ship leaves port heading due west. After travelling at a speed of 20 km/h for 10 h, the ship makes a 90° turn and heads south, travelling at the same speed. After travelling south for 7½ h, how far is the ship from the port? Show your work.



250 km