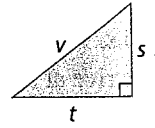




# Connect and Reflect

## Key Ideas

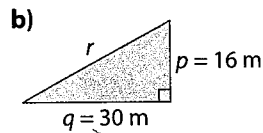
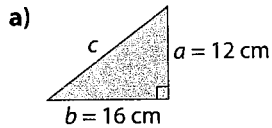
- The Pythagorean relationship connects the three sides of any right triangle. For a right triangle with sides  $s$ ,  $t$ , and  $v$ , where side  $v$  is the hypotenuse,  $v^2 = s^2 + t^2$ .
- You can use the Pythagorean relationship to determine the length of an unknown side of a right triangle if the lengths of the other two sides are known.
- You can use the Pythagorean relationship to determine distances that cannot be measured directly.



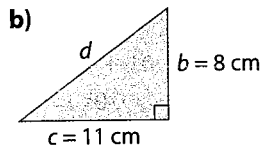
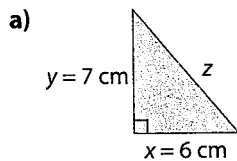
## Practise

For help with #1 to #4, refer to Example 1 on page 23.

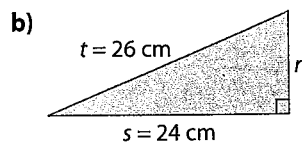
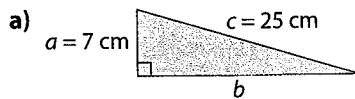
1. Determine the length of each hypotenuse.



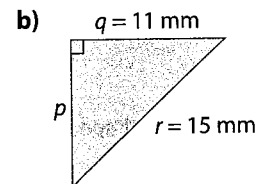
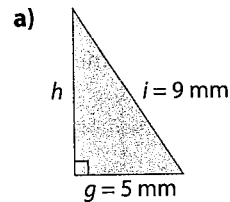
2. What is the length of each hypotenuse? Give your answer to the nearest tenth of a centimetre.



3. Determine the length of the unknown leg for each right triangle.

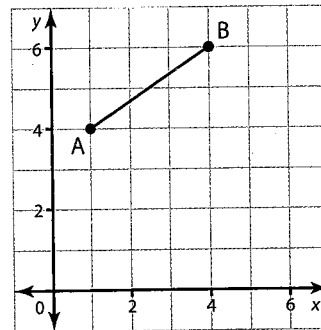


4. What is the missing length of the leg for each triangle? Give your answer to the nearest tenth of a millimetre.

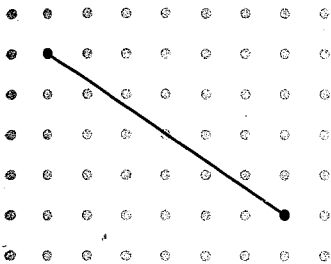


For help with #5 to #7, refer to Example 2 on page 24.

5. What is the length of the line segment? Express your answer as an exact value and to one decimal place.



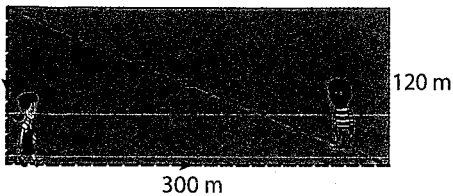
6. What is the length of the line segment on 1-cm dot paper? Express your answer to the nearest tenth of a centimetre.



7. A line segment has endpoints A(-2, 3) and B(10, 8). Draw the line segment and then use the Pythagorean relationship to determine its length.

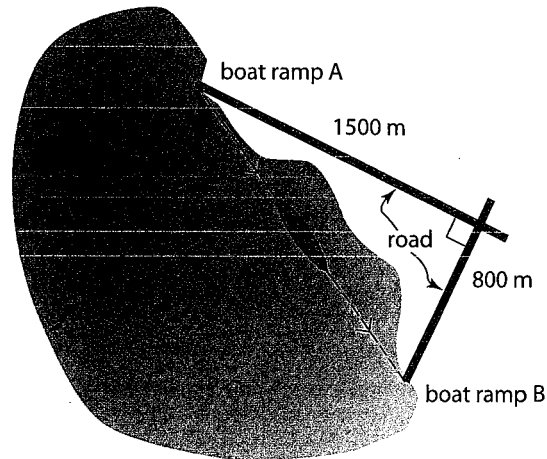
For help with #8 to #10, refer to Example 3 on page 25.

8. Walter walks across a rectangular field in a diagonal line. Maria walks around two sides of the field. They meet at the opposite corner.

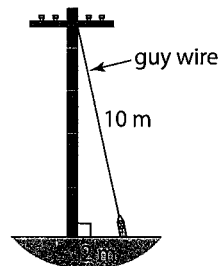


- How far did Maria walk?
- How far did Walter walk? Express your answer to the nearest metre.
- Who walked farther? By how much?

9. a) Anthony and Shalima are canoeing on Cultus Lake near Chilliwack. There are two boat ramps on the lake. How far is it by canoe between the boat ramps?
- b) How much farther is it to travel by road from ramp A to ramp B than to canoe between the two ramps?



10. Find the height of the pole where the guy wire is attached, to the nearest tenth of a metre.



### Apply

11. Kira calculated the missing side length of the right triangle.

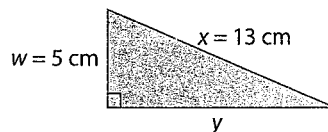
$$y^2 = 5^2 + 13^2$$

$$y^2 = 25 + 169$$

$$y^2 = 194$$

$$y \approx 13.9$$

The length of side  $y$  is approximately 13.9 cm.



Is Kira correct? If she is correct, explain how you know. If she is incorrect, explain the correct method.