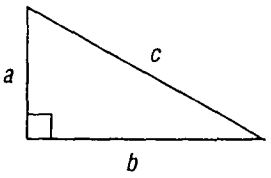
Name _____

7.1 The Pythagorean Theorem

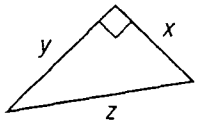
MATHPOWER™ *Eight*, pp. 206–207

The Pythagorean Theorem states that in any right triangle, if c is the length of the hypotenuse, and a and b are the lengths of the legs, then

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



State the relationship in the form $a^2 + b^2 = c^2$ for the sides in each triangle.

1. 

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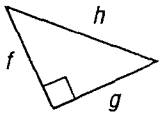
2. 

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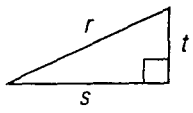
3. 

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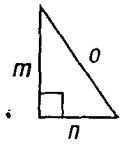
4. 

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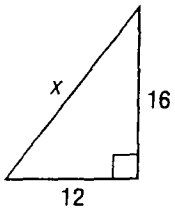
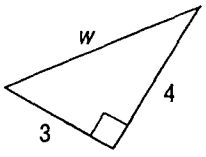
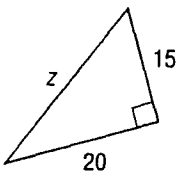
Find the length of the unknown side in each right triangle.

5. 

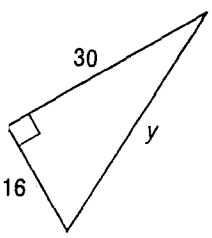
$x =$ _____

6. 

$w =$ _____

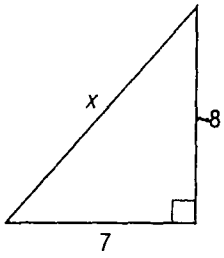
7. 

$z =$ _____

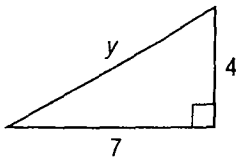
8. 

$y =$ _____

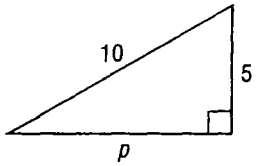
Calculate the length of the unknown side, to the nearest tenth.

9. 

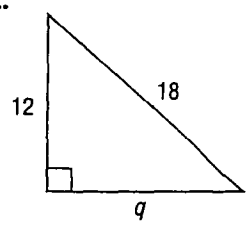
$x =$ _____

10. 

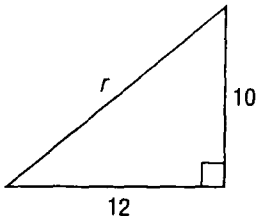
$y =$ _____

11. 

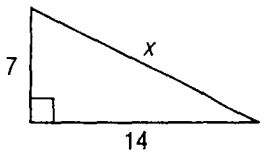
$p =$ _____

12. 

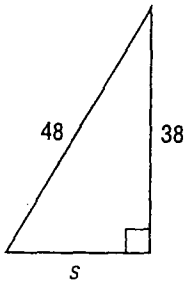
$q =$ _____

13. 

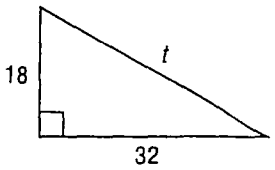
$r =$ _____

14. 

$x =$ _____

15. 

$s =$ _____

16. 

$t =$ _____

Name _____

7.2 Using the Pythagorean Theorem

MATHPOWER™ *Eight*, pp. 208–209

1. A 12-m ladder is leaning against a wall. The foot of the ladder is 3 m from the base of the building. How far up the wall is the top of the ladder?

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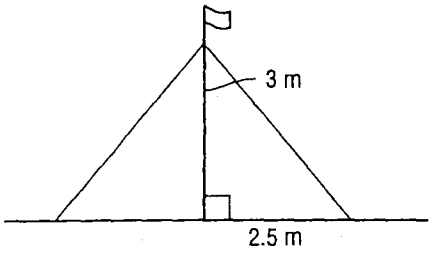
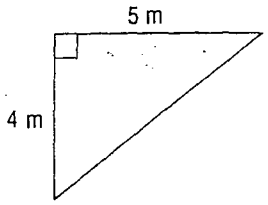
2. Wires are used to support a flagpole at the fairground.



The wires are attached 3 m from the ground and 2.5 m from the base of the pole. How long is each wire?

_____

3. Jacob sectioned off a triangular area in his yard for a vegetable garden.

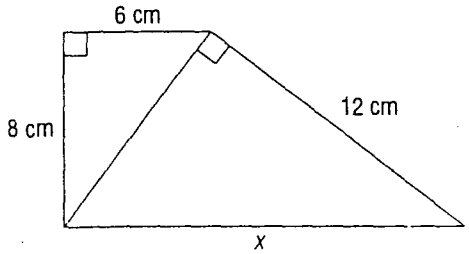


How much fence does he need, in metres, to surround the three sides of the garden?

_____

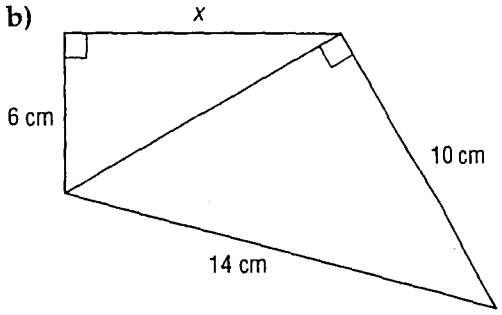
4. Find x to the nearest tenth of a centimetre.

a)



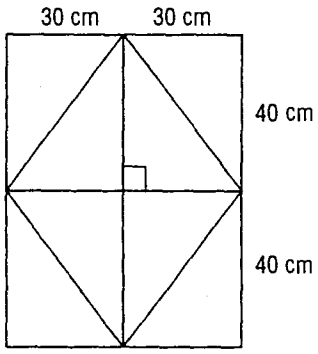
$x =$ _____

b)



$x =$ _____

5. A decorative window has 4 diagonal bars as shown. What is the length of each one?



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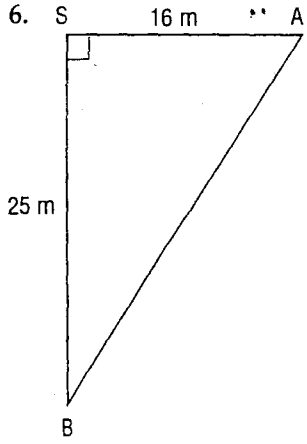
6.



A power cable runs east from the station, S, to point A, and south to point B. What is the length of the cable that runs between A and B, to the nearest tenth of a metre?

_____

7. The pegs on a 3-by-3 geoboard are spaced 5 cm apart. Sketch all the different right triangles that can be made on it, and calculate the length of each side, to the nearest tenth of a centimetre.

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