

◆ Aksum Math

Name: _____

Pythagorean Theorem

Date: _____

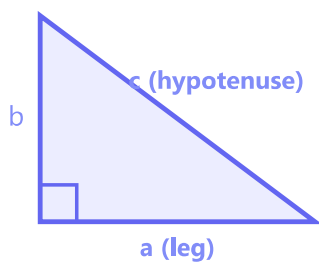
Geometry · Grade 8

Score: _____ / 12

◆ Medium · 12 Questions

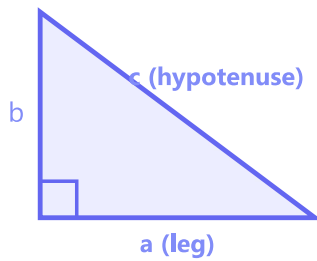
Solve each problem. Show your work in the space provided. Write your answer on the line.

1. A ladder 10 m long leans against a wall. The base is 6 m from the wall. How high does the ladder reach?



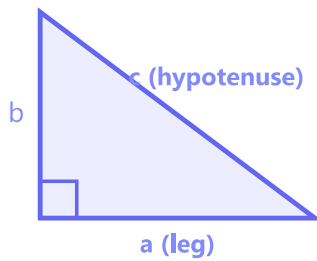
Answer: _____

2. Find the diagonal of a rectangle with sides 5 cm and 12 cm.



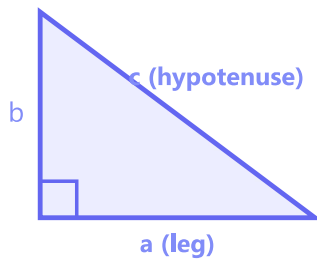
Answer: _____

3. A right triangle has legs 7 and 24. Find the hypotenuse.



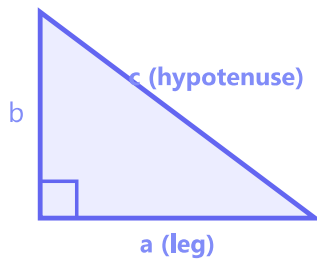
Answer: _____

4. Find the missing leg: hypotenuse = 25, one leg = 7.



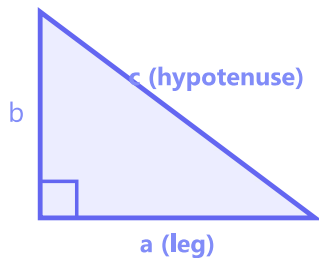
Answer: _____

5. A square has diagonal 10 cm. Find the side length. (Leave in exact form.)



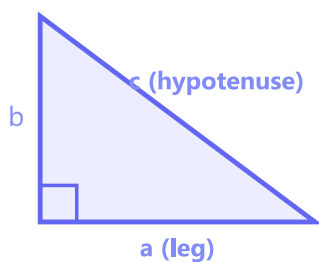
Answer: _____

6. Two students start at the same point. One walks 9 m east and the other walks 12 m north. How far apart are they?



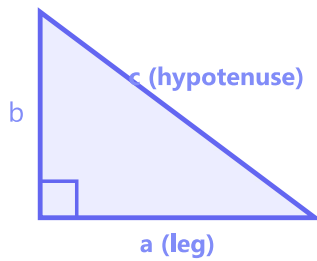
Answer: _____

7. Is a triangle with sides 8, 15, 17 a right triangle? Explain.



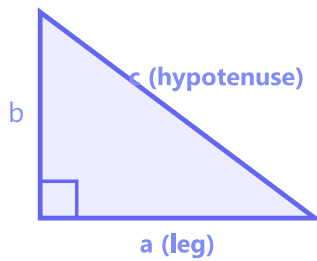
Answer: _____

8. Is a triangle with sides 7, 10, 12 a right triangle?



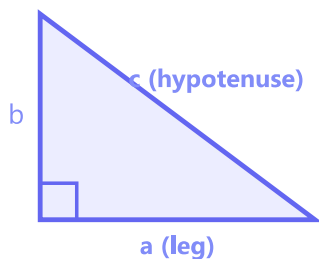
Answer: _____

9. A right triangle has legs 9 cm and 40 cm. Find the hypotenuse.



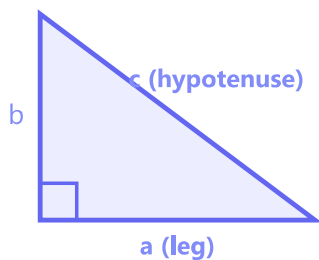
Answer: _____

10. Find the length of a diagonal of a square with side 6 cm. (Leave exact.)



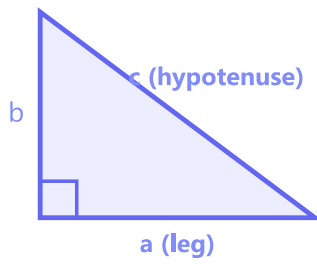
Answer: _____

11. A TV screen is 48 cm wide and 36 cm tall. Find the diagonal (screen size).



Answer: _____

12. A right triangle has hypotenuse 50 and one leg 30. Find the other leg.



Answer: _____

Answer Key Pythagorean Theorem — Medium

1. **8 m**

$$h^2 = 10^2 - 6^2 = 100 - 36 = 64. h = 8 \text{ m.}$$

2. **13 cm**

$$d^2 = 5^2 + 12^2 = 25 + 144 = 169. d = 13 \text{ cm.}$$

3. **25**

$$7^2 + 24^2 = 49 + 576 = 625. \sqrt{625} = 25.$$

4. **24**

$$b^2 = 625 - 49 = 576. b = 24.$$

5. **$5\sqrt{2}$ cm**

$$d = s\sqrt{2}. s = 10/\sqrt{2} = 5\sqrt{2}.$$

6. **15 m**

$$d^2 = 9^2 + 12^2 = 81 + 144 = 225. d = 15 \text{ m.}$$

7. **Yes: $8^2 + 15^2 = 64 + 225 = 289 = 17^2$**

$$\text{Check: } 64 + 225 = 289 = 17^2 \checkmark$$

8. **No: $7^2 + 10^2 = 49 + 100 = 149 \neq 144 = 12^2$**

$$49 + 100 = 149, \text{ but } 12^2 = 144. \text{ Not equal, so not a right triangle.}$$

9. **41 cm**

$$9^2 + 40^2 = 81 + 1600 = 1681. \sqrt{1681} = 41.$$

10. **$6\sqrt{2}$ cm**

$$d = s\sqrt{2} = 6\sqrt{2}.$$

11. 60 cm

$$d^2 = 48^2 + 36^2 = 2304 + 1296 = 3600. d = 60.$$

12. 40

$$b^2 = 2500 - 900 = 1600. b = 40.$$
