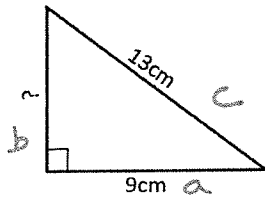


1

Key

Solve for the missing piece of the triangles below in any way possible.

1.



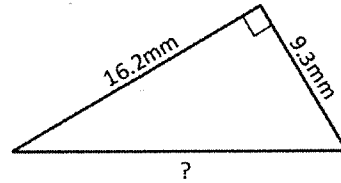
$$a^2 + b^2 = c^2$$

$$81 + b^2 = 169$$

$$b = \sqrt{88}$$

$$b = 2\sqrt{22} \text{ cm}$$

2.



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

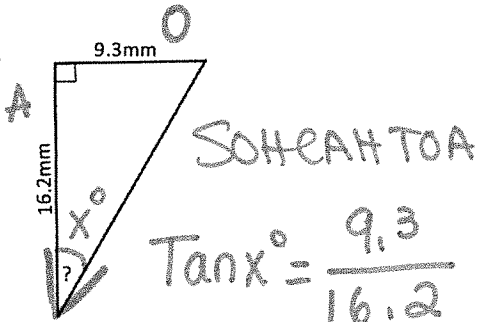
$$(16.2)^2 + (9.3)^2 = c^2$$

$$262.44 + 86.49 = c^2$$

$$c^2 = 384.93$$

$$c = 18.68 \text{ mm}$$

3.

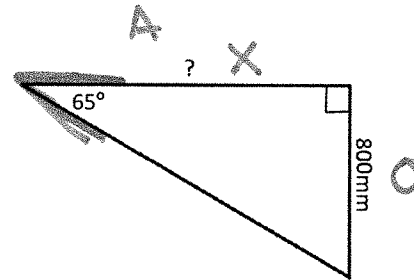


$$\tan x^\circ = \frac{9.3}{16.2}$$

$$\tan x^\circ = 0.57$$

$$\angle x^\circ = 30^\circ$$

4.

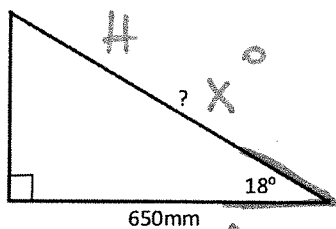


$$\tan 65^\circ = \frac{800}{x}$$

$$2.14 = \frac{800}{x}$$

$$x = 373.8 \text{ mm}$$

5.

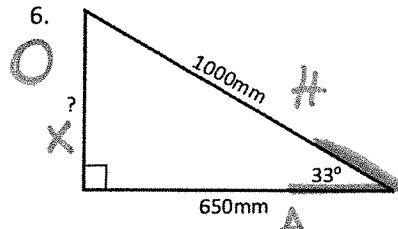


$$\cos 18^\circ = \frac{650}{x}$$

$$0.95 = \frac{650}{x}$$

$$x = 683.45 \text{ mm}$$

6.



$$\sin 33^\circ = \frac{x}{1000}$$

$$0.54 = \frac{x}{1000}$$

$$x = 544.6 \text{ mm}$$

2

Fill in the blanks below for help with the following questions.

$$\sin(\theta) = \frac{\boxed{O}}{\boxed{H}} \quad \cos(\theta) = \frac{\boxed{A}}{\boxed{H}} \quad \tan(\theta) = \frac{\boxed{O}}{\boxed{A}}$$

7. Use the diagram below to answer the following questions.

a. Sine of  $\angle XYW = \frac{3}{5.83} = 0.51$

b. Cosine of  $\angle XYW = \frac{5}{5.83} = 0.86$

c. Tangent of  $\angle YZX = \frac{5}{12} = 0.42$

8. John is 6 feet tall and is looking up at a lamp post with an angle of elevation of  $80^\circ$ . If he is 5 feet away from the bottom of the lamp post:

a. How tall is the lamp post?

$\sin 80^\circ = \frac{x}{5}$   
 $0.98 = \frac{x}{5}$   
 $x = 4.92 \text{ ft}$

b. What is the distance between John and the top of the lamp post?

$\cos 80^\circ = \frac{5}{Y}$   
 $Y = 28.8 \text{ ft}$

9. Find the measure of the indicated angles in any way possible.

a.

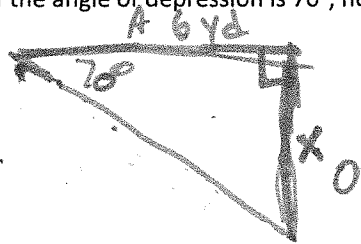
$\tan x = \frac{12.5}{19}$   
 $\angle x = 33.3^\circ$

b.

Any Ratio  
 $\sin x = \frac{200}{250}$   
 $\angle x = 53^\circ$

3

10. Milan is standing on the top of a building looking down at her friend 6 yards from the base of the building. If the angle of depression is  $70^\circ$ , how far is she off the ground?

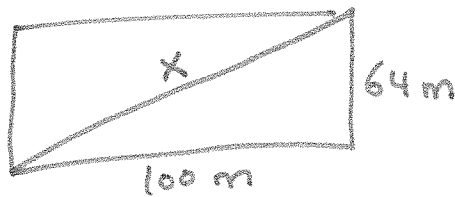


$$\tan 70^\circ = \frac{x}{6}$$

$$x = 16.48 \text{ yd}$$

11. A soccer coach tells his soccer players to run the diagonals of the rectangular field. The length of the field is 100m long and 64m wide. How far do the soccer players run?

$$C = 71.4 \text{ m}$$



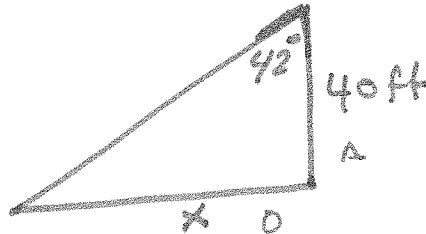
$$a^2 + b^2 = c^2$$

$$10000 + 4096 = c^2$$
$$\sqrt{c^2} = \sqrt{14096}$$

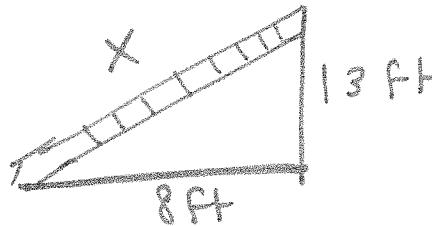
12. The sun's rays hits a flagpole and makes a shadow such that the angle the rays make with the ground is  $42^\circ$ . If the flagpole is 40 feet tall, how long is the shadow?

$$\tan 42^\circ = \frac{x}{40}$$

$$x = 36 \text{ ft}$$



13. A ladder leans up against the side of a house such that the top of the ladder touches the house 13 feet above the ground. If the bottom of the ladder is 8 feet from the base of the house, how tall is the ladder?



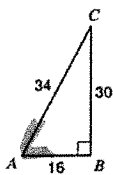
$$a^2 + b^2 = c^2$$

$$169 + 64 = c^2$$

$$c = 15.26 \text{ ft}$$

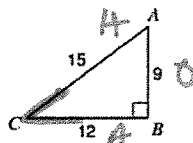
14. Write the following trigonometric ratios:

$\tan A$



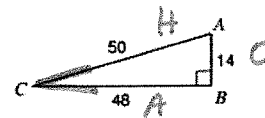
$$\tan A = \frac{30}{16}$$

$\cos C$



$$\cos C = \frac{12}{15}$$

$\sin C$



$$\sin C = \frac{14}{50}$$