

Alexis works part-time at a clothing store. She is paid an hourly rate of \$10.25/h and also earns a commission of 3.5% of her total weekly sales.

Alexis works at the store 12 hours a week.

If Alexis's goal is to earn \$150 every week, what do her total weekly sales need to be?

Show your work.

$$X = \text{weekly sale} \quad h = \text{hour of work} \quad 0.035x = \text{money earned for sale}$$

$$150 = \$10.25h + 0.035x$$

$$150 = \$10.25(12) + 0.035x$$

$$150 = 123 + 0.035x$$

$$150 - 123 = 123 - 123 + 0.035x$$

$$27 = 0.035x$$

$$27/0.035 = 0.035x/0.035$$

$$\underline{800} = x$$

Answer: Alexis need to have weekly sale of \$300 to earn \$150 per week.

Rationale:

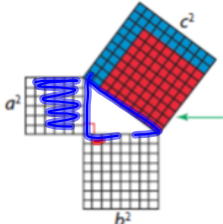
Student demonstrates an accurate application of the procedures; minor errors in arithmetic ($150 - 123 = 28$) do not detract from the demonstration of a thorough understanding.

Learning Goals

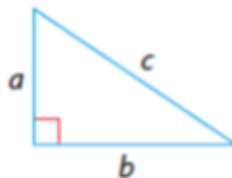
1. To understand that the Pythagorean Theorem is only used on right-angle triangles.
2. To understand how to input into the formula correctly.

8.3 - The Pythagorean Theorem

The Pythagorean Theorem describes both a numerical and geometric relationship between the three sides of right triangle.

Geometric Relationship	Numerical Relationship
	$a^2 + b^2 = c^2$

The formula for the hypotenuse of a right triangles is $c = \sqrt{a^2 + b^2}$, where a and b are the lengths of the legs.



Example One

Zach is constructing a 5.00 m tall windmill supported by wires. One wire must be 13.00 m long and the distance between the wires must be 16.75 m. Zach wanted to know what length to cut for the other wire.

Big Triangle



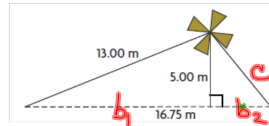
$$c^2 = a^2 + b^2$$

$$13^2 = 5^2 + b^2$$

$$169 = 25 + b^2$$

$$\sqrt{144} = \sqrt{b^2}$$

$$12 = b_1$$



Calculate base of Small Δ

$$b_2 = 16.75 - b_1$$

$$b_2 = 16.75 - 12$$

$$b_2 = 4.75$$

Calculate "c" of Small Δ

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

$$c^2 = 5^2 + 4.75^2$$

$$c^2 = 25 + 22.5625$$

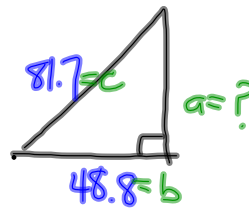
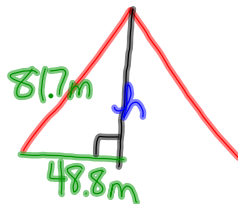
$$c = \sqrt{47.5625}$$

$$c = 6.9\text{m}$$



Example Two

A teepee is 81.7 m long and touches the ground 48.8 m from the centre of the base. What is the height of the teepee?



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

$$81.7^2 = a^2 + 48.8^2$$

$$6674.89 = a^2 + 2381.44$$

$$a^2 = 6674.89 - 2381.44$$

$$\sqrt{a^2} = \sqrt{4293.45}$$

$$a = \underline{\underline{65.5\text{m}}}$$

Complete: p. 445 - 446 #1ac, 2, 3, 4, 5b, 6, 7.