

Name: _____

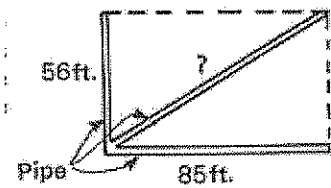
Date: _____

Applications of the Pythagorean Theorem Worksheet

1. If the legs of an isosceles right triangle (2 sides are equal) are 6 units long, find the length of the hypotenuse.

$$\begin{aligned} 6^2 + 6^2 &= x^2 \\ 36 + 36 &= x^2 \\ \sqrt{72} &= \sqrt{x^2} \approx 8.5 \text{ units} \\ 8.5 &\approx x \end{aligned}$$

2. Eva Lewis wants to put an underground sprinkler system in her back yard. A drawing of the system is shown below. About how many feet of water pipe will Eva need?



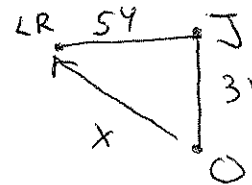
$$\begin{aligned} 56^2 + 85^2 &= x^2 \\ 3136 + 7225 &= x^2 \\ \sqrt{10361} &= \sqrt{x^2} \\ 101.8 &\approx x \end{aligned}$$

102 feet

3. Jackson is 54 miles from Lazy R Resort. Ontario is 31 miles south of Jackson. A land

developer proposes building a shortcut road to directly connect Ontario and Lazy R. Draw a picture and find the length of this new road.

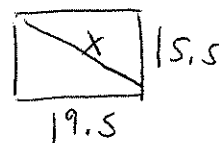
$$\begin{aligned} 31^2 + 54^2 &= x^2 \\ 961 + 2916 &= x^2 \\ \sqrt{3877} &= \sqrt{x^2} \\ x &\approx 62.3 \text{ miles} \end{aligned}$$



4. A television screen measures approximately 15.5 in. high and 19.5 in. wide. A television is advertised by giving the approximate length of the diagonal of its screen. How should this television be advertised?

$$\begin{aligned} 15.5^2 + 19.5^2 &= x^2 \\ 240.25 + 380.25 &= x^2 \\ \sqrt{620.5} &= \sqrt{x^2} \\ x &\approx 24.9 \text{ in} \end{aligned}$$

25 inches



5. A 6-ft ladder is placed against a wall with its base 2 ft from the wall. How high above the ground is the top of the ladder?

$$\begin{aligned} 2^2 + x^2 &= 6^2 \\ 4 + x^2 &= 36 \\ \sqrt{x^2} &= \sqrt{32} \\ x &\approx 5.7 \text{ ft} \end{aligned}$$

