# PYTHAGOREAN THEOREM PROBLEMS ON TAKS

Below are examples of Pythagorean theorem problems in multiple choice format. Try solving the problems before looking at the solutions. (Cover the solutions with a piece of paper.) Then check your solutions against the ones given.

1. The two utility poles shown in the diagram are supported by cables. About how much cable is needed to anchor both utility poles?

cable

30 ft | x x | 30 ft

10 ft   10 ft
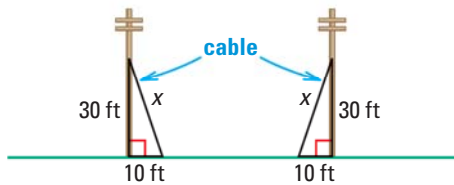
A 12.6 ft

B 31.6 ft

C 63.2 ft

D 100 ft

Solution

Each support cable forms the hypotenuse of a right triangle. The right triangles are congruent, so the support cables have the same length.

$$x^2 = 30^2 + 10^2$$
$$x = \sqrt{30^2 + 10^2}$$
$$x \approx 31.6$$

The total length of cable is $2x = 63.2$ feet.
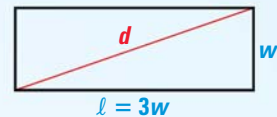
The correct answer is C.

Ⓐ   Ⓑ   **Ⓒ**   Ⓓ

2. A rectangular playground has a perimeter of 76 meters. The length of the playground is three times the width. What is the approximate length of the playground's diagonal?

F 24 m

G 30 m

H 48 m

J 60 m

Solution

Draw a diagram.

d w

$\ell = 3w$

$$\text{Perimeter} = 2\ell + 2w$$
$$76 = 2(3w) + 2w$$
$$76 = 8w$$
$$9.5 = w$$
$$(\text{Diagonal})^2 = (3w)^2 + w^2$$
$$d^2 = (28.5)^2 + (9.5)^2$$
$$d = \sqrt{(28.5)^2 + (9.5)^2}$$
$$d \approx 30$$

The length of the playground's diagonal is about 30 meters.

The correct answer is G.

Ⓕ   **Ⓖ**   Ⓗ   Ⓙ