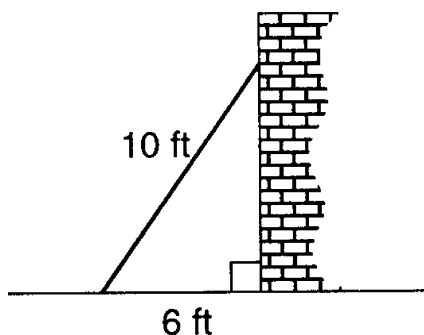
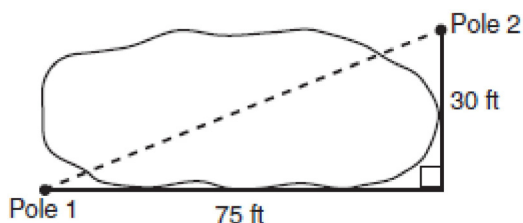


A.A.45: Pythagorean Theorem 3: Determine the measure of a third side of a right triangle using the Pythagorean theorem, given the lengths of any two sides

- 1 A wall is supported by a brace 10 feet long, as shown in the diagram below. If one end of the brace is placed 6 feet from the base of the wall, how many feet up the wall does the brace reach?



- 2 The NuFone Communications Company must run a telephone line between two poles at opposite ends of a lake, as shown in the accompanying diagram. The length and width of the lake are 75 feet and 30 feet, respectively.



What is the distance between the two poles, to the nearest foot?

- 1) 105
- 2) 81
- 3) 69
- 4) 45

- 3 A 10-foot ladder is placed against the side of a building as shown in figure 1 below. The bottom of the ladder is 8 feet from the base of the building. In order to increase the reach of the ladder against the building, it is moved 4 feet closer to the base of the building as shown in figure 2.

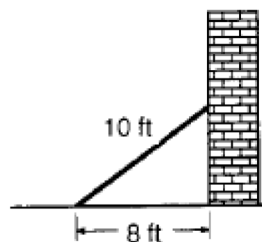


Figure 1

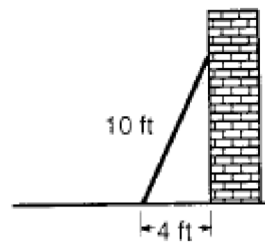
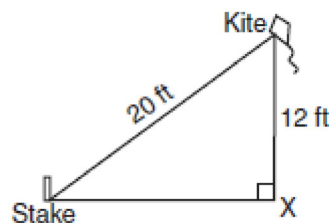


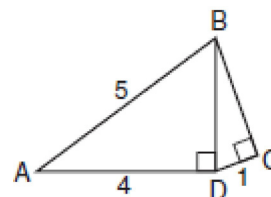
Figure 2

To the nearest foot, how much further up the building does the ladder now reach? Show how you arrived at your answer.

- 4 The accompanying diagram shows a kite that has been secured to a stake in the ground with a 20-foot string. The kite is located 12 feet from the ground, directly over point X. What is the distance, in feet, between the stake and point X?



- 5 In the accompanying diagram of right triangles ABD and DBC , $AB = 5$, $AD = 4$, and $CD = 1$. Find the length of BC , to the nearest tenth.



A.A.45: Pythagorean Theorem 3: Determine the measure of a third side of a right triangle using the Pythagorean theorem, given the lengths of any two sides
Answer Section

1 ANS:

$$6^2 + b^2 = 10^2$$

8. $b^2 = 64$ 6, 8, 10 is a multiple of the 3, 4, 5 triangle.

$$b = 8$$

PTS: 2

REF: 010023a

2 ANS: 2

$$30^2 + 75^2 = c^2$$

$$6525 = c^2$$

$$81 \approx c$$

PTS: 2

REF: 010508a

3 ANS:

3. Figure 1: $b = \sqrt{10^2 - 8^2} = 6$. Figure 2: $b = \sqrt{10^2 - 4^2} \approx 9$. $9 - 6 = 3$

PTS: 4

REF: spring9834a

4 ANS:

$$12^2 + b^2 = 20^2$$

16. $b^2 = 256$. 12, 16, 20 is a multiple of the 3, 4, 5 triangle.

$$b = 16$$

PTS: 2

REF: 080531a

5 ANS:

$$BD = 3$$

$$1^2 + b^2 = 3^2$$

2.8.

$$b^2 = 8$$

$$b \approx 2.8$$

PTS: 2

REF: 080633a