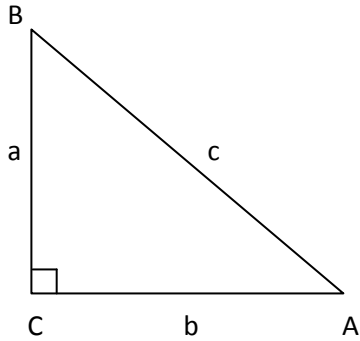


Name: \_\_\_\_\_

Points: \_\_\_\_\_

1.  $30^\circ, 45^\circ, 60^\circ$  Trigonometric Functions

Solve each of the right triangles expressing lengths of sides to the nearest unit and angles to the nearest degree.

a)  $A = 37^\circ$  and  $b = 14$

b)  $B = 23^\circ$  and  $b = 12$

c)  $a = 5$  and  $b = 12$

2. A 30-foot ladder, leaning against the side of a building makes a  $50^\circ$  angle with the ground. How far up on the building does the top of the ladder reach? Express your answer to the nearest tenth of a foot.

3. Bill is standing on top of a 175-foot cliff overlooking a lake. The measurement of the angle of depression to a boat on the lake is  $29^\circ$ . How far is the boat from the base of the cliff? Express your answer to the nearest foot.



It turns out that the “Pythagorean Theorem” about the relationship of squares on the sides of right angles was not invented only by Pythagoras, a Greek mathematician living in ca. 585 - ca. 500 (Eves, 1990). Pythagoras, however, may have been the first to construct a proof of the theorem. This idea, that the sum of squares of the two shorter sides equals the square of the hypotenuse was widely used in India around 300 to 600 B.C. to provide instructions on how to build altars for everyday worship in one’s home. Every male head of family was responsible for building an appropriate altar, and the instructions were provided in a “Sulva Sutra.”

Reference:

Eves, H.W.(1990). *An Introduction to the history of mathematics: a brief course*. New York, NY: John Wiley and Sons.