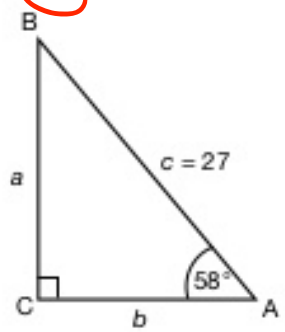
Emily

Solution:



a. To find B, since B and ∠A are complementary angles, then

$$\angle B + \angle A = 90°$$
$$\angle B = 90° - 58°$$
$$\angle B = 32°$$

b. To find b, since b is the adjacent side of ∠A and c is the hypotenuse of right ΔBCA, then use CAH.

$$\cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$
$$\cos A = \frac{b}{c}$$
$$\cos 58° = \frac{b}{27}$$
$$b = 27\cos 58°$$
$$b = 27\,(0.5299)$$
$$b = 14.31$$

c. To find a, since a is the opposite side of ∠A and c is the hypotenuse of right ΔBCA, then use SOH.

$$\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}}$$
$$\sin A = \frac{a}{c}$$
$$\sin 58° = \frac{a}{27}$$
$$a = 27\sin 58°$$
$$a = 27\,(0.8480)$$
$$a = 22.9$$

C. Solving a Right Triangle Given the Length of One Leg and the Measure of One Acute Angle

Example:

Triangle ACB is right-angled at C. If ∠A = 63° and a = 11 cm, find ∠B, b, and c.