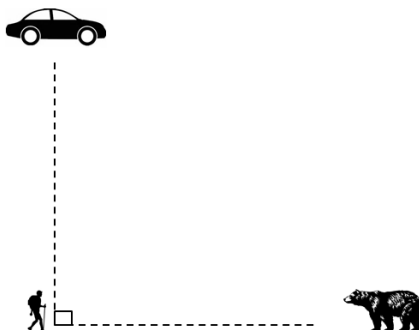


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Place-Based Problem #4 - Pythagorean Theorem

Many bears call Baranof Island home. While out walking it is possible to encounter brown bears. Imagine the following scenario: It is a gorgeous summer day in Sitka. You decided go for a walk on Harbor Mountain Road. Suddenly you notice a bear straight ahead, 100 yards in front of you. It is a huge brown bear. Your car is 100 yards to your right. You decided to slowly walk towards your car while you yell and wave your arms. You slowly walk in a straight line at a rate of 20 yards per minute. Luckily the bear doesn't move and just watches you as you make your way to your car. How far away is the bear from you after 1 minute, 2 minutes, 3 minutes, 4 minutes, 6 minutes. Draw a diagram to illustrate the distances. For an extra challenge label the angles.



I drew a triangle and used the property of a triangle to find the missing angle of the triangle. This angle is the vertical angle to the angle the cruise ship would need to turn due west.

After 1 minute = $a^2 + b^2 = c^2$ $20^2 + 100^2 = c^2$ $10,400 = c^2$ $\sqrt{10,400} = c$
 bear will be 101.98 yards away

After 2 minute = $a^2 + b^2 = c^2$ $40^2 + 100^2 = c^2$ $11,600 = c^2$ $\sqrt{11,600} = c$
 bear will be 107.7 yards away

After 3 minute = $a^2 + b^2 = c^2$ $60^2 + 100^2 = c^2$ $13,600 = c^2$ $\sqrt{13,600} = c$
 bear will be 116.62 yards away

After 4 minute = $a^2 + b^2 = c^2$ $80^2 + 100^2 = c^2$ $16,400 = c^2$ $\sqrt{16,400} = c$
 bear will be 126.13 yards away

After 5 minute = $a^2 + b^2 = c^2$ $100^2 + 100^2 = c^2$ $20,000 = c^2$ $\sqrt{20,000} = c$
 bear will be 141.42 yards away

See Next page for diagram

To find the angles I knew that because side a = 100 yards and side b = 100 yards then the angle walker, bear, car had to be $\frac{1}{2}$ of 90 degrees which is 45 degrees then I was able to divide 45 by 5 because there were five angles of equal proportions with 45 begin the largest. I could then find the missing angles of the triangles.

