Treasure hunt: finding the values of right angle triangles essay sample

This final weeks course asks us to find a treasure with two pieces of a map. Now this may not be a common use of the Pythagorean Theorem to solve the distances for a right angled triangle but it is a fun exercise to find the values of the right angle triangle.

Buried treasure: Ahmed has half of a treasure map, which indicates that the treasure is buried in the desert 2x + 6 paces from Castle Rock. Vanessa has the other half of the map. Her half indicates that to find the treasure, one must get to Castle Rock, walk x paces to the north, and then walk 2x + 4 paces to the east. If they share their information, then they can find x and save a lot of digging. What is x?

So, if you walk x paces north, then 2x+4 paces east, you have moved roughly east northeast to a distance of 2x+6 paces. This is a right angle, with 2x+6 on the hypotenuse or line c, so we must solve using the Pythagorean Theorem:

$a^2 + b^2 = c^2$add in the values

$(x)^2 + (2x+4)^2 = (2x+6)^2$multiply inside the parenthesis

$x^2 + 4x^2 + 16x + 16 = 4x^2 + 24x + 36$

subtract $4x^2 + 24x + 36$ from both sides $x^2 – 8x – 20 = 0$factor the quadratic equation

$(x -10)(x + 2) = 0$use zero factor property to solve

$X – 10 = 0$ or $x + 2 = 0$creating a compound equation

$x = 10$ or $x = -2$the answer cannot be – 2

$x = 10$

Now we will plug in the value and solve: x paces north and 2x + 4 paces east or 10 paces north and 2(10) + 4 = 24 paces east of Leaning Rock. Or 2x + 6 paces northeast or 2(10) + 6 = 26 paces northeast from the rock to reach the buried treasure.

In this exercise we learned how to find the value of a right angle triangle with one given point and two variables based off that point. I personally learned to take my time with a written out problem like this, as at first was a bit frustrated and confused with it. Overall this course MAT 221 has helped me quite a bit to refresh on my Algebra skills. Thank you for helping me realize that with a little help I could hop right back to it with minimal barricades.

References

Dugopolski, M. (2012). Elementary and intermediate algebra (4th ed.). New York, NY: McGraw-Hill Publishing