

Measuring Height with Triangles

Estimated Time: 30-60 minutes

SUMMARY

Have you ever wanted to measure the height of something that is very tall? This is a handy trick involving triangles that will make this daunting task into a simple and easy activity!

WHAT YOU'LL LEARN

- That 45° right triangles have two equal legs.

Materials Used	Resources Used
<ul style="list-style-type: none"> • Pencil • Paper • Square Piece of Paper • Measuring Tape (optional, see Tips) 	<ul style="list-style-type: none"> • Using the Pythagorean Theorem https://www.youtube.com/watch?v=JH9V3bWA1T0&ab • How to Measure the Height of a Tree https://www.youtube.com/watch?v=gmslMgopzMk&ab

WHAT TO DO

1. Take your square of paper and cut it into a triangle. The corner that remains will be a 90° and the other two corners will be 45° . When a right triangle is constructed like this, the “legs” of the triangle (the two shorter sides) will be equal.
2. Use this triangle to measure the height of a house (or some other very tall object). Stand far back from the house and hold up your 45° triangle to your eye.
3. Back up until you can look up the long side (the hypotenuse) of the triangle so that the top of the triangle is even with the top of the house. The closer to the ground you can get, the more accurate this will be.
 - a. You’ve now made a larger triangle that has 45° corners. It runs from you to the house, ninety degrees up the side of the house, and then another 45° corner back down to you.



4. With your measuring tape, measure the distance from you to the base of the house. Because you were standing at a corner on a 45° right triangle, this is also the distance up the side of the house!
5. Try this same procedure with other tall objects. What’s the tallest object you can find!

TIPS

- If you don't have a long tape measure you can try pacing instead. Measure a moderate distance (ten to twenty feet) along the floor and see how many steps it takes you to walk it. Try a few times to get an average. Divide the length by your steps to get length per step (pace) and use that as an easy way to measure long distances.