

Using a Compass to Determine Width

Determining Width

Suppose you are standing on one side of a river and want to know how far it is to the other side. One way of finding the width is to use the compass and pace method.

1. Face the river and mark your spot.
2. Locate an object on the other side of the river directly across from you and take a bearing on the object.
3. Add or subtract 90° from the bearing. (If you are going to pace to your right, add 90° - if you are going to pace to your left, subtract 90° .) For example, if the object bears 350° from you and you are going to pace to the left, subtract 90° . The result is 260° .
4. If you are going to walk to the left, add 45° to the original bearing – if you are going to walk to the right, subtract 45° from the original bearing. Using the example above, $350^\circ + 45^\circ = 395^\circ - 360^\circ = 35^\circ$. Write this down so you don't forget it.
5. Using the 260° from the above example, walk along that bearing, counting your paces as you go. Periodically stop and take the bearing to the original object across the river.
6. When the object across the river bears 35° from you, stop. The distance between you and your original position is the width of the river.

This process is based on the trigonometric principle that the sum of the angles of a triangle is 180° . If one of the angles is 90° and one of the other angles is 45° , then the remaining angle is also 45° . Since both angles are the same, the lengths of the sides opposite the angles are also the same.

