

Measuring Tricks

A Handy Measuring Stick

Measuring is fairly simple. Just use the ruler you always have with you -- yourself. That's what people used to do, and we still have leftovers of their methods in the names of some of our measurements.

A foot, originally, was actually the length of a human foot. It was divided into twelve parts, and each part was called an inch (from the Latin word *unica*, which simply means "one-twelfth").

Yard comes from the old word meaning "a stick." But how long should the stick be to be a measuring rod? The story goes that King Henry I of England was asked to establish a standard measure of length for his people. He proclaimed "Measure the distance from the point of my nose to the end of my thumb, and use that henceforth." And that's exactly what they did.

Our mile comes from the Latin *milia passum*, which means "a thousand paces." The Romans considered a pace from the heel of one foot to the heel of the same foot when it comes down again -- a little more than five feet. That's how we got stuck with the awkward figure of 5,280 feet to a mile.

So use your own measurements, but check them first with the standard ones so that you'll be more accurate than the old-timers were.

Personal Measurements

Here are the measurements that will be most useful to you:

Measurement

1. My height
2. Height of my eyes above ground
3. My reach up, from ground to tip of up-stretched hand
4. My reach across, from tip of hand to tip of other hand
5. Length of my forearm, from tip of middle finger to elbow
6. Span of my hand, thumb to little finger
7. Breadth of my thumb
8. Length of my index finger
9. Length of my foot
10. Length of my step (heel of one foot to heel of the other)
11. Length of my pace (heel of one foot to heel of same foot)

Feet	Inches

Learn two of these measurements at a time, and make use of them. That's the way to remember them.

Another trick is to find a full inch, foot and yard on you. A man's thumb is usually 1" wide. How wide is yours? Is your forearm from elbow to wrist by any chance 1'? Remember to periodically update your measurements as you grow.

Where Did It Strike?

Have you ever wanted to know how far away lightning struck? The difference between the speed of light and the speed of sound will tell you. The moment you see a lightning flash start to count seconds until you hear the thunder. Light travels with terrific speed, sound only about 1,200 feet per second (365 yards per second). So by multiplying 1,200 by the number of seconds, you get the distance in feet. Four seconds between flash and thunder: lightning struck almost one mile away.

The steam and sound of a factory whistle, the smoke from a gun and the report, the woodsman bringing down his axe and the "wham!" of it, will help you in the same manner. To count the seconds, say quickly "one Scout uniform, two Scout uniforms," and so on. Each time takes about a second.

Judging Distances

Every Scout should be able to judge distance from an inch up to a mile and more. If you remember your self-measurements accurately, they are a great help to you in measuring things. Also, it is useful to cut notches in your staff, showing such measurements as one inch, six inches, one foot, and one yard. These you can measure off with a tape measure before you use your staff.

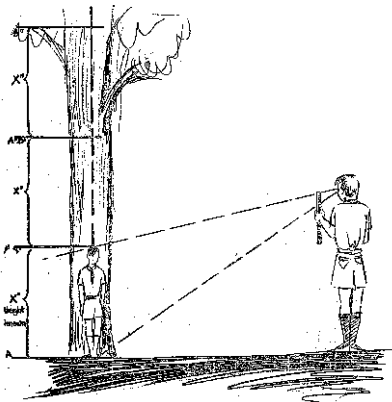
Judging the distance of a journey is generally done by seeing how long you have been travelling and at what rate. Suppose you walk at the rate of four miles an hour. If you have been walking for an hour and a half, you know you have done about six miles.

Test the following from your own observations:

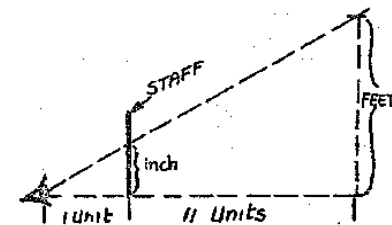
- At 50 yards, the mouth and eyes of a person can be clearly seen
- At 100 yards, eyes appear as dots
- At 200 yards, buttons and details of uniform can still be seen
- At 300 yards, the face can be seen
- At 400 yards, the movement of legs can be seen
- At 500 yards, the color of the uniform can be seen

For distances over these, think out for yourself which point is halfway to the object. Estimate how far this may be from you and then double it to obtain the distance. Another way is to estimate the furthest distance that the object can be away, and the very nearest it could be, and strike a mean between the two.

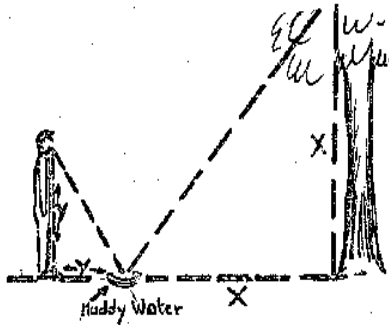
Objects appear nearer than they really are when the light is bright and shining on the object; when looking across water or snow, and when looking uphill or down. Objects appear farther off when in the shade; when across a valley; when the background is of the same color; when the observer is lying down or kneeling; when there is a heat haze over the ground.



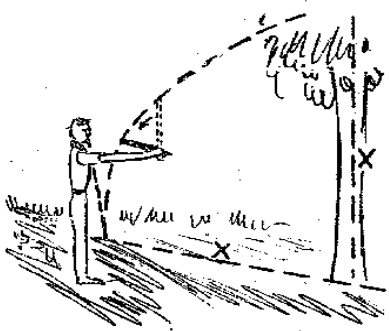
Pencil Method - Place a friend whose height you know, against the tree, or make a mark for your own height on the trunk. Step back. Hold a stick or pencil up before you in outstretched hand. With one eye closed, measure off on the stick with your thumbnail the height of your friend. Then see how many times this measurement goes into the height of the tree. Multiply the height of your friend with the number you found to get the height of the tree.



Inch-To-Foot Method - Starting from tree, walk eleven units (each unit a certain number of steps), and push a stick in the ground. Continue one unit further and place a mark. Sight with your eye close to the ground from the mark to the top of the tree. Notice where the sighting line cuts the stick. The height of the stick from the ground gives in inches the height of the tree in feet.

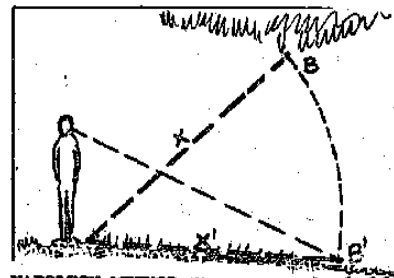
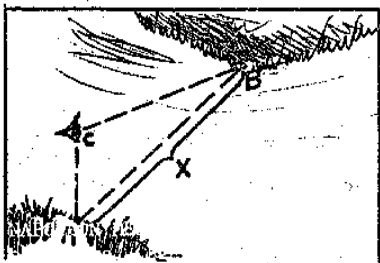


Muddy Water Method - Place basin with muddy water on the ground between you and the tree. Step back from the basin a distance equal to that from your eyes to the ground. You should now see the top of the tree reflected in the water. If not, move basin and yourself. Distance from basin to foot of tree is the tree's height.

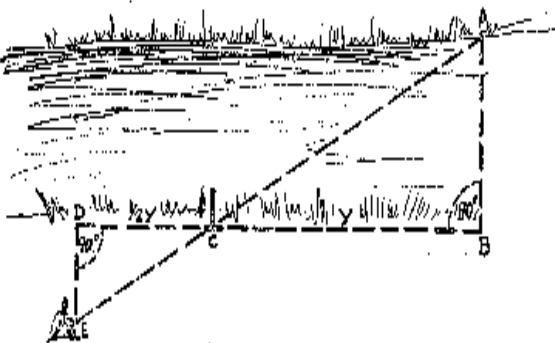


Tree Felling Method - Hold a stick upright in your outstretched hand. Sight to the tree you want to measure with the tip of the stick covering its top, and your thumb marking its foot. Then move the stick 90 degrees. Notice the point where the tip of the stick hits the ground. Stride the distance from this point to the foot of the tree to get its height.

When you want to measure the width of a river there are a couple of simple methods you can use. If the river is narrow, try the **Napoleon Method**. If it is wide, use **Step-Measuring**.



Napoleon Method - Stand firmly on one shore. Bend your head with your chin against your chest. Place your hand on your forehead so that the front edge of your palm seems to touch the opposite shore. Make a half-right turn, transferring the distance to your shore. The distance to the point that your palm edge now seems to touch is the width of the river. Step it off.



Step-Measuring - Notice a rock on the other side of the river (A). Place a stick on this side, exactly opposite the rock (B). Walk along the shore at right angles to AB. Take any number of steps, say one hundred. Place another stick here (C). Continue walking for half as many steps as before. Place another stick here (D). At this point, turn away from the river walking at right angles to DB. When you sight stick C and mark A in a straight line, stop. This point is E. DE is then half the distance across the river. Step it off. Double it to get the full distance.