THE ART OF ESTIMATION

**Estimation of Height and Widths**

This is quite a useful skill for a Scout during pioneering projects, camping or going on an adventure trip. After learning all these skills, he will be able to estimate the height of a tree, building or even a specific distance. It is also one of the tests conducted at the King Scouts' Standardization.
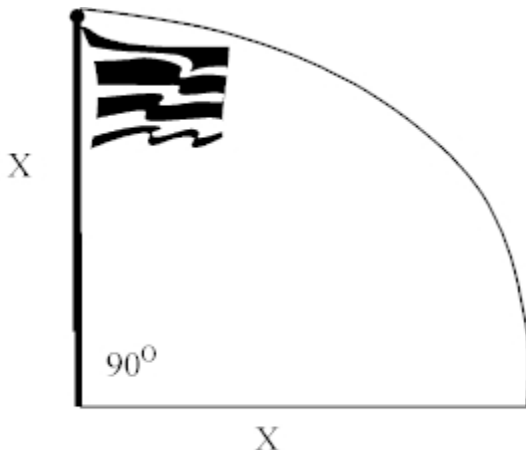
Heights

Measuring Heights - Pencil Method or Proportional Method
Have a friend whose height you know stand beside a tree, or tie a ribbon around the tree at your own height. Step back and hold a pencil or a stick at arm's length in front of you. With one eye closed, sight over the stick so that the top of it appears to touch the ribbon or your friend's head. Place your thumbnail on the stick where it seems to touch the base of the tree. Now move the stick up to see how many times this measurement goes into the height of the tree. Multiply that number by the height of your friend or the ribbon, and you will know the height of the tree. You can also use this method to measure buildings, waterfalls, and walls.
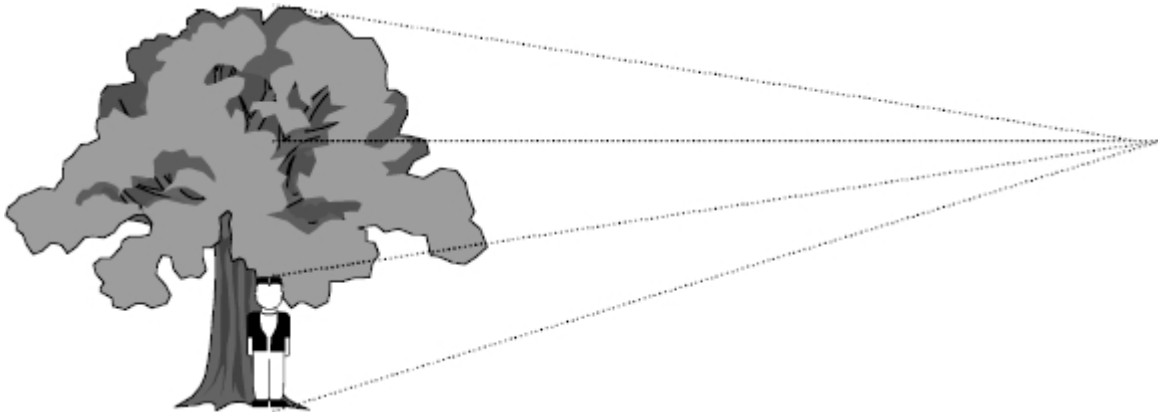

Measuring Heights - Tree-felling method
Back away from a flagpole or tree that you want to measure. Hold a stick upright at arm's length. Sight over the stick so that its tip appears to touch the top of the pole and your thumb is at its base. Swing the stick 90 degrees to a horizontal position as if the flagpole were falling. Keep your thumb at the base of the pole, and notice where the tip of the stick seems to touch the ground. Pace the distance from that point to the base of the flagpole to get its height.

Measuring Heights - Shadow Method
The method can be used only if the sun is able to cast a shadow. First is we measure the shadow cast by the tree (from the base of the tree to the shadow of it's top), we label this length as AB. We then measure the shadow cast by someone or an object of known height, we label this as CD.
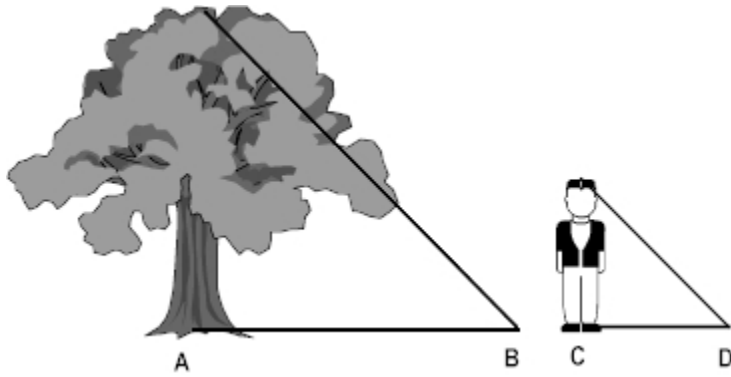
We merely solve the unknown height by use of proportions, by equating:

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        AB KNOWN              AB - Length of the shadow cast by tree
UNKNOWN = ----------------------, where
         CD              CD - Length of the shadow cast by a known height
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Measuring Heights - Inch-to-Foot Method
From the foot of the object you are to measure pace eleven (11) units, we label it distance AB. A unit can be any number of paces, so if we say our unit is five paces then 11 units is equivalent to 55 paces. Place something to mark the point B. From B take one more unit forward, this is distance BC. From location C lie down on the ground such that your eyes are close to the ground as possible. Sight the tree with the marker on B in your line of sight. Note where your line of sight cuts the marker to the tip of the tree. That spot is labelled as D. The distance of BD in inches is the estimated height of tree in feet.
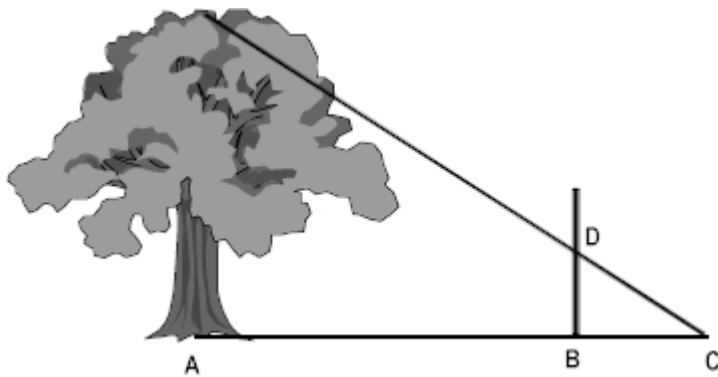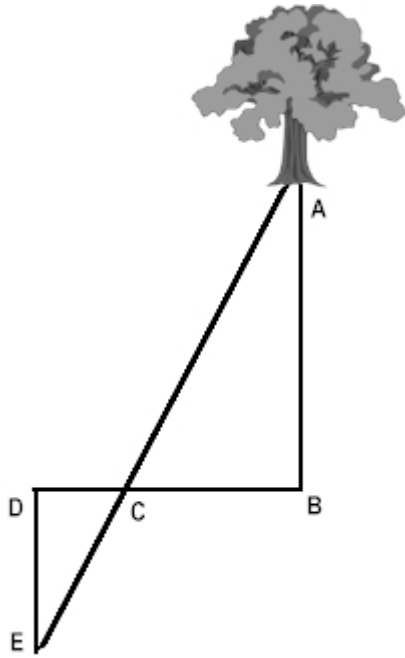

Widths

Measuring Widths - Napoleon Method
Stand on one shore of a stream. Bow your head, chin against your chest. Hold your hand to your forehead in a salute. Move your hand down until the front edge of it seems to touch the opposite shore. Without changing the position of your hand, make a quarter turn. Notice the point at which the edge of your hand seems to touch the near shore. Pace off the distance to that point, and you will know the width of the river. Napoleon might have used the brim of this hat instead of his hand. If you are wearing a cap with a visor, so can you.
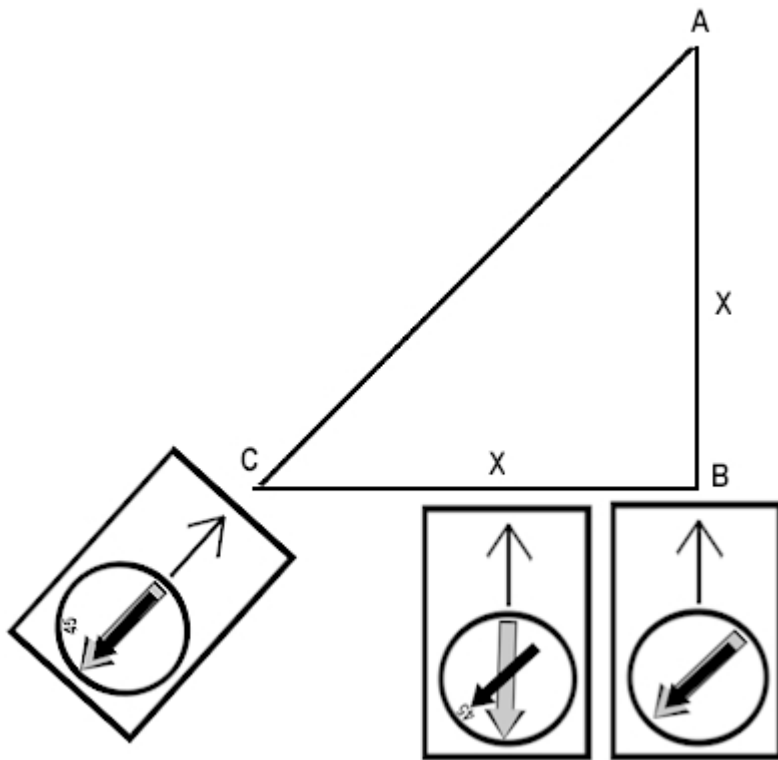
Measuring Widths - Stride or Step Method
Select an object on the opposite side of the river, such as a tree and we mark it as A. Mark the point directly in front of the object on the opposite side of the river, mark it as point B. Take at least 50 paces to point C, so as to form line BC. Note that line BC should be perpendicular to line AB. Mark point C with a stick or another person. Again, pace another distance to point D. The distance CD is half the distance of BC. From point D, pace another distance to point E. Line DE is parallel to line AB. Point E is marked on a location wherein you can see point C forming a straight line with point A. Meaning when you look at the stick on point C. it somewhat blocks your line of sight to point A. The distance AB is twice the distance DE. AB = DE x 2. We can alter the method a bit. Instead of having distance CD half the distance between BC, we can make it equal to each other. Do the same method to find point E. Using this alternative, AB=DE. This is more accurate.

Measuring Widths - Compass Method

Locate an object on the other side of a river. Stand on your side and point the direction-of-travel arrow towards the object. Align the magnetic needle to 45O indicator of the compass housing. Pace the line BC while pointing the direction-of-travel arrow towards the object all the time. Point C is marked when the compass is oriented (magnetic needle is directly above the orienteering arrow). The distance BC is a rough estimate of distance AC. You have just formed a 45-45-90 triangle, which has two of its sides equal to each other.

Courtesy of – 18th GT(N) Online – http://www.scout.org.my/18gtn