# INCLINOMETER

A simple inclinometer can be most useful in making
approximate measurements in difficult situations
when more precise instruments are not available.

Determine: slopes of hills for classifying land
           road grades
           heights of trees
           widths of rivers
           falls for water systems
           contours for terracing or planting

To find the approximate elevation of a place
above a pump site when you have no surveying
instrument:

1. Measure the distance along the slope.
2. Measure the incline or slope of the hill
    using the home-made inclinometer.
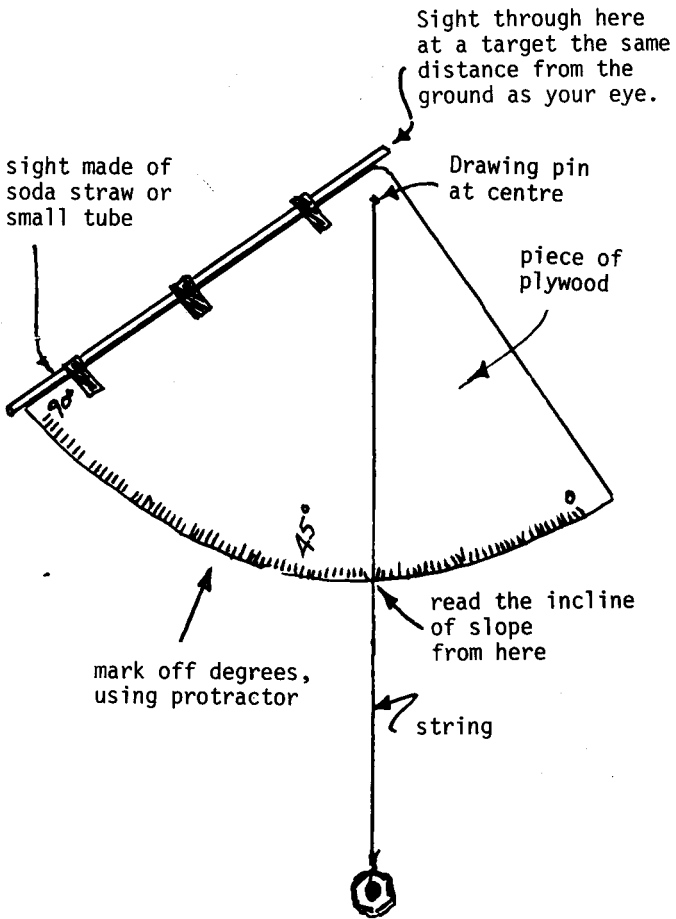
Sight through here at a target the same distance from the ground as your eye.

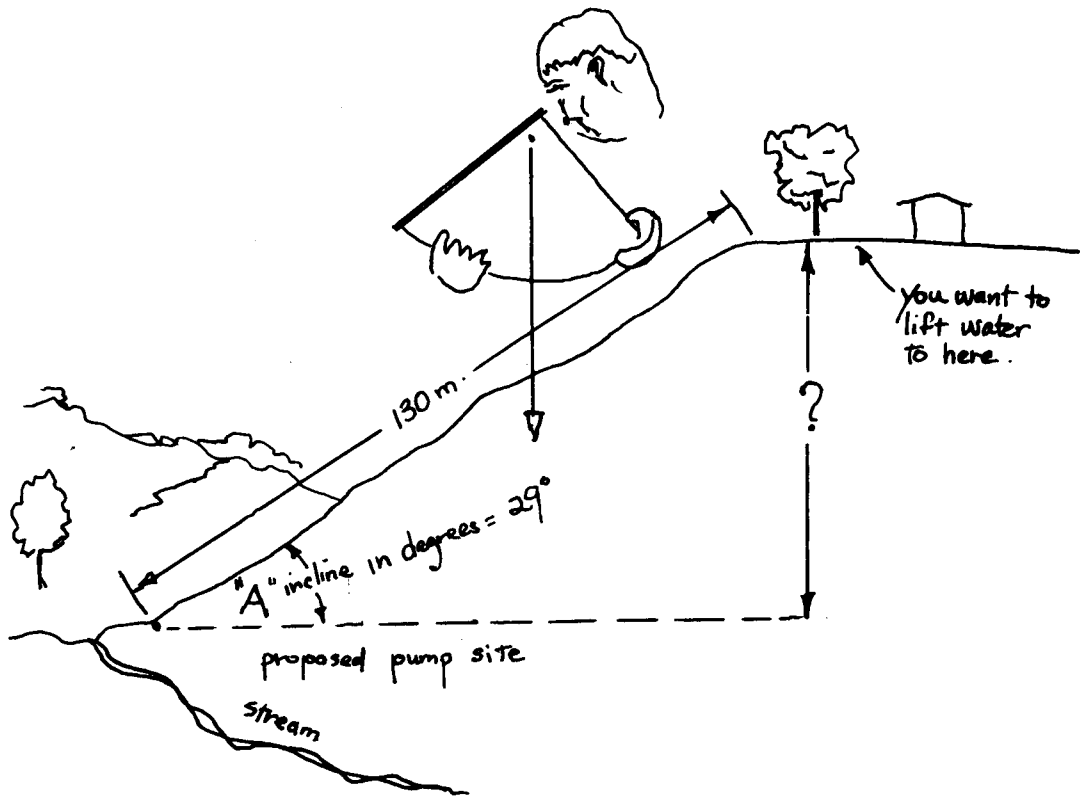sight made of soda straw or small tube

Drawing pin at centre

piece of plywood

90°

45°

0°

mark off degrees, using protractor

read the incline of slope from here

string

130 m

"A" incline in degrees = 29°

proposed pump site

stream

you want to lift water to here.

?

3. Compute the height, using a table "Natural Values of Trigonometric Functions". From trigonometry we have the following formula:

The Sin of any angle "A" = $\frac{\text{opposite}}{\text{hypotenuse}}$ $\frac{\text{(perpendicular)}}{\text{(distance)}}$

$$\text{Sin } 29^0 = \frac{?}{130 \text{ m}}$$

In the table at the back of a math book we find that the Sin of 29^0 = .4848.

$$.4848 = \frac{?}{130 \text{ m}}$$

or ? = .4848 x 130

= 63.02 m

4. If the hill is irregular, do it in two or more stages.

Suggested by F. Keating, Goroka.

NOTE: degrees slope and percent slope are not the same. 10 percent slope means 10 metres rise in 100 metres. If you don't know Trigonometry, plot your case on a piece of paper with a ruler and protractor.
Or, a rough guide:
Angle in degrees = % slope X.6