

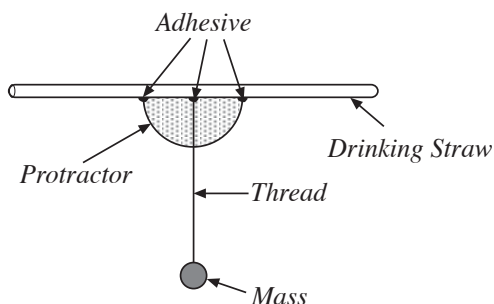
ACTIVITY 15.2

Clinometers

A *clinometer* is an instrument for measuring the angle of an incline (slope).

To make your clinometer you need a drinking straw, a protractor, some adhesive, a small mass and a piece of thread.

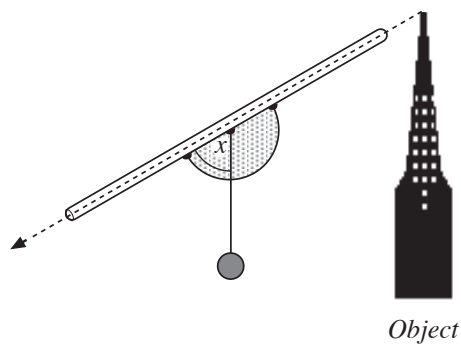
Use adhesive to attach the straw to the protractor, as shown in the diagram. The thread with a mass at its end will serve as a plumb line (to hang vertically).



You can now use your clinometer to determine the height of an object such as a building or a tree.

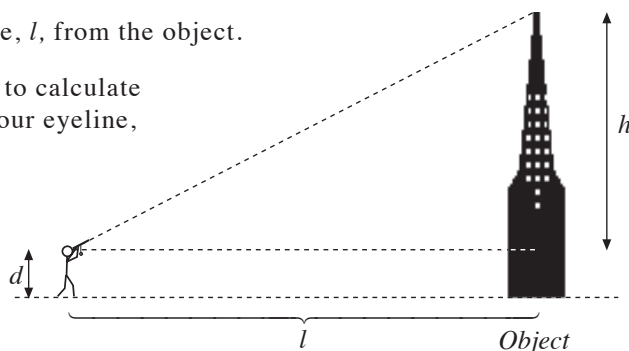
Follow this method.

1. Choose your object.
2. Standing some distance away from the object, view the top of it through the drinking straw. Read and record the value of angle x .



3. Measure and record your distance, l , from the object.
4. Use the readings you have taken to calculate the height of the object, above your eyeline, from the formula

$$\tan x = \frac{l}{h} \Rightarrow h = \frac{l}{\tan x}$$



5. The height, H , of the object is now given by

$$H = \frac{l}{\tan x} + d$$

where d is the height of your eyes from the ground.