

Using shadows to measure height



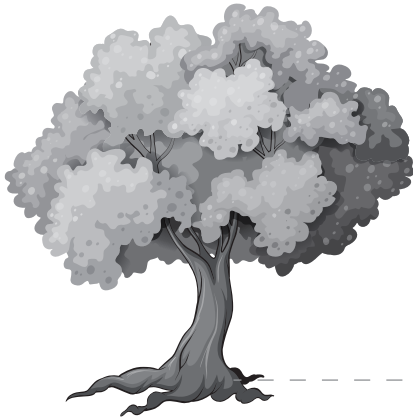
Task:

To roughly calculate the height of a tree using the length of its shadow.

Step 1: Measure the length of the shadow cast by a 1 meter ruler. Record your answer in centimeters.

Step 2: Measure the length of the shadow cast by a tree (this needs to be done straight after measuring the ruler's shadow). Record its length in **CENTIMETERS**. e.g. 3.6 m = 360 cm

Step 3: Using a calculator, divide the length of the tree's shadow by the length of the ruler's shadow. The result shows the height of the tree in meters.



$$\begin{array}{ccccccc}
 \underline{\hspace{2cm}} & \text{cm} & \div & \underline{\hspace{2cm}} & \text{cm} & = & \underline{\hspace{2cm}} & \text{m} \\
 \text{length of tree's shadow} & & & \text{length of ruler's shadow} & & & \text{height of tree} &
 \end{array}$$

Extension:

Why do you need to quickly measure the tree's shadow after measuring the ruler's shadow?

Can you explain why this technique works?