

The Scale Factor

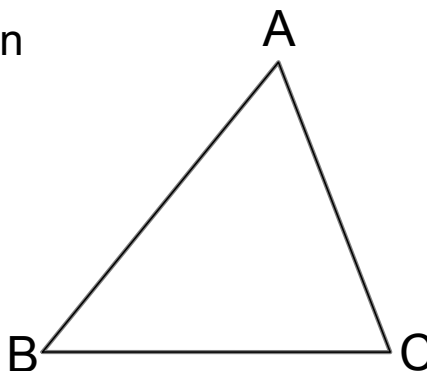
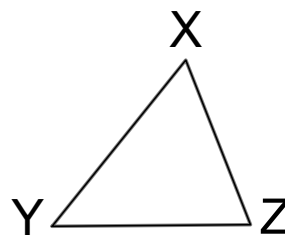
May 19/2010

The **scale factor** is the ratio of corresponding sides in similar triangles.

If $\triangle XYZ \sim \triangle ABC$,
and n is the scale factor, then

$$n = \frac{AB}{XY}$$

* we often write the scale factor using the larger side over the smaller side



May 9 - 6:45 PM

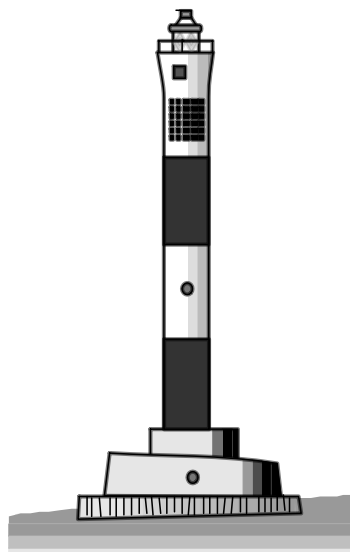
02 Scale Factor - GSP.gsp

Dec 6-6:44 PM

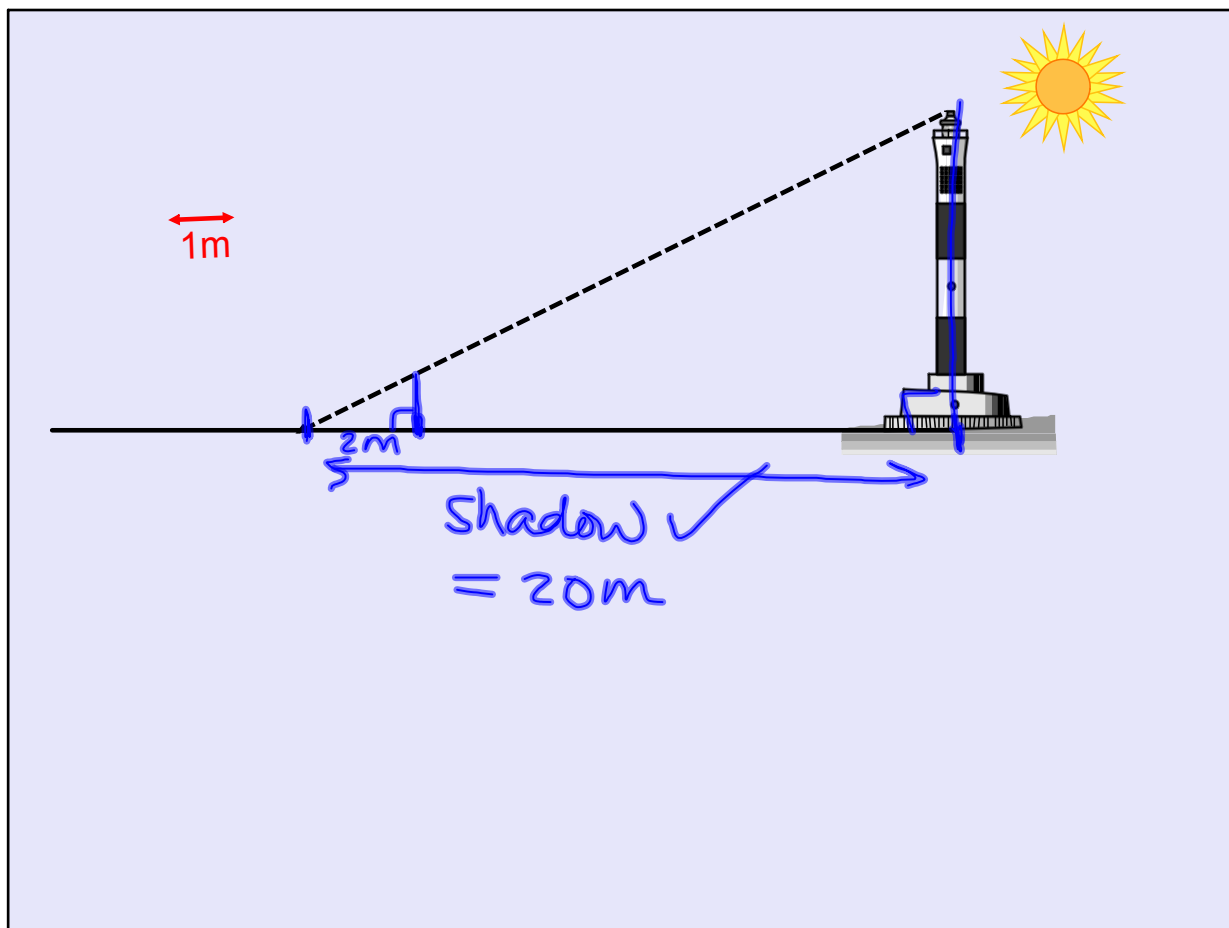
Ex.1

Suppose you are asked to find the height of a building (or a lighthouse) using only a metre stick and a piece of chalk.

How would you do it?



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$\angle A = \angle A$
 $\angle ACB = \angle AED$

* ok to assume buildings make 90° with ground.

$\triangle ABC \sim \triangle ADE$

$\frac{DE}{1} = \frac{20}{2} \quad \therefore \text{the lighthouse is 10m tall}$

$DE = 10$

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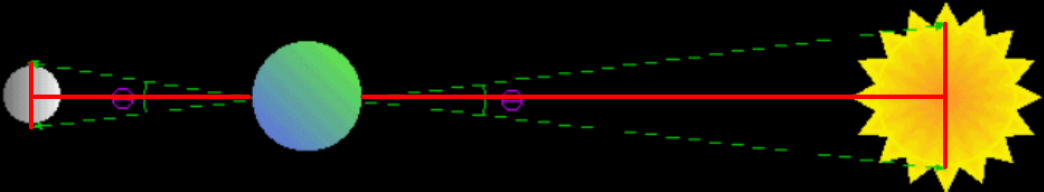
Similar triangles and the scale factor can be used to determine distances that are difficult (or impossible) to measure directly.

For example, distances across rivers and canyons can be measured this way, as well as distances in outer space.

HW: p. 475 # 6de, 7 - 13, 15

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Aristarchus' method of determining the size of the sun:



If the sun is 19 times farther away than the moon from the earth, as Aristarchus thought, then the sun must be 19 times bigger than the moon. His logic is correct, but the sun is actually 390 times farther from the earth than the moon.

Why is Aristarchus' logic correct?

Aristarchus also reasoned that since the Sun and the Moon have the same angular size, but the Sun is 19 times further (or so he thought), then the Sun must be 19 times bigger than the Moon.

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HW: p. 475 # 6de, 7 - 13, 15

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Attachments

MPM 2D (L39- Scale Factor (GSP)).gsp

02 Scale Factor - GSP.gsp