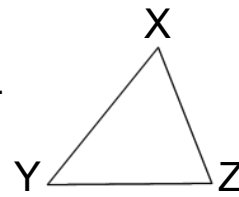


Solving Similar Triangle Problems

Dec 8/2011

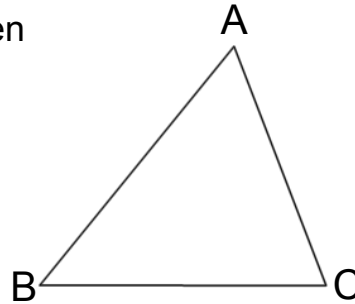
The **scale factor** is the ratio of corresponding sides in similar triangles.



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

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

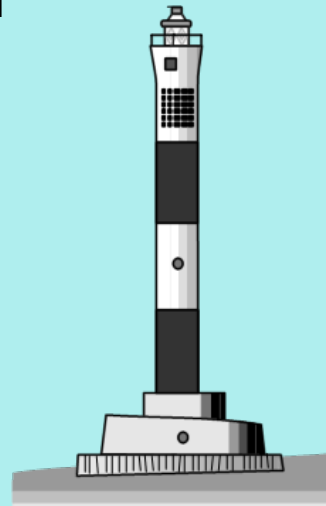
* we often write the scale factor using the larger side over the smaller side



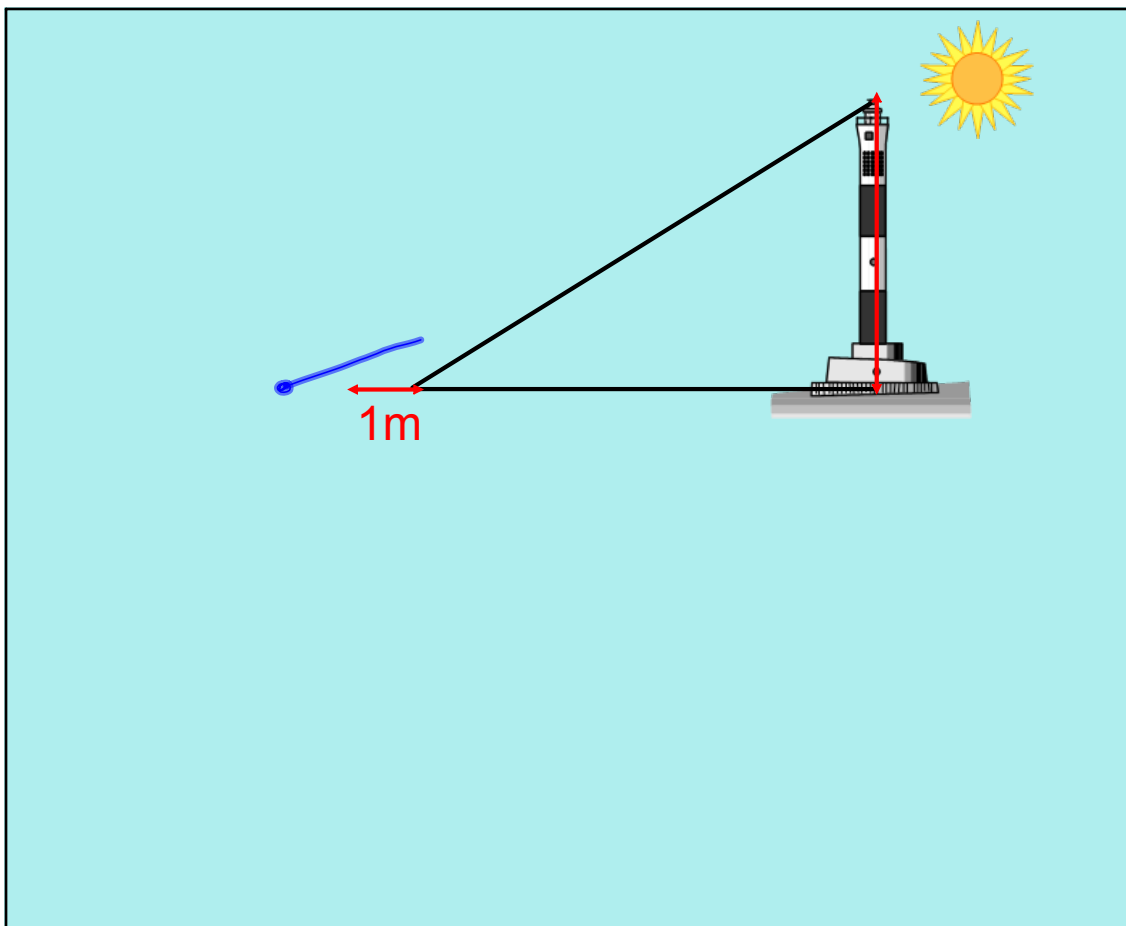
May 9 - 6:45 PM

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?



May 7-7:03 PM



May 7-7:03 PM

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
- heights of tall buildings or structures
- distances in outer space.

Steps:

1. Show triangles are similar using:
SSS~, SAS~, or AA~
2. Use properties of similar triangles to determine unknown quantities:
 - corresponding angles are equal
 - corresponding sides are proportional

May 7-7:34 PM

Assigned Work:

p.386 # 4, 6, 9, 12, 14*

May 9 - 8:41 PM

9.

$\triangle BCD \sim \triangle AED$ (by AA \sim)

$$\frac{BC}{AE} = \frac{CD}{ED} = \frac{BD}{AD}$$

$$\frac{3}{5} = \frac{BD}{h}$$

$AB + BD = h$
 $7.46 + BD = h$
 $BD = h - 7.46$

$$\frac{3}{5} = \frac{h - 7.46}{h}$$

$$3h = 5(h - 7.46)$$

$$3h = 5h - 37.3$$

$$-2h = -37.3$$

$$h = \frac{-37.3}{-2}$$

$$h = 18.65$$

\therefore height of the pole is 18.65m

Dec 9-10:29 AM

12.

$\triangle ABC \sim \triangle EDC$ (by AA \sim)

$$\frac{AB}{ED} = \frac{BC}{DC} = \frac{AC}{EC}$$

$$\frac{1.6}{h} = \frac{0.5}{5}$$

$$0.5h = 8$$

$$h = \frac{8}{0.5}$$

$$h = 16$$

\therefore the window is 16m high.

Dec 9-10:29 AM

14.

$$BC^2 + 96^2 = 204^2$$

$$BC^2 = 204^2 - 96^2$$

$$BC^2 = 32400$$

$$BC = 180$$

$$CD = 396 - 180$$

$$= 216$$

$$\frac{w}{96} = \frac{216}{180}$$

Dec 9-10:43 AM

Attachments

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

02 Scale Factor - GSP.gsp