

6-2 GEOMETRIC MEAN (DAY 2)

6-2 day 2

EXAMPLE 1: Find x, y, and z.

find x:

$$\frac{x}{20} = \frac{5}{x}$$

$$x^2 = 100$$

$$\sqrt{x^2} = \sqrt{100}$$

$$x = 10$$

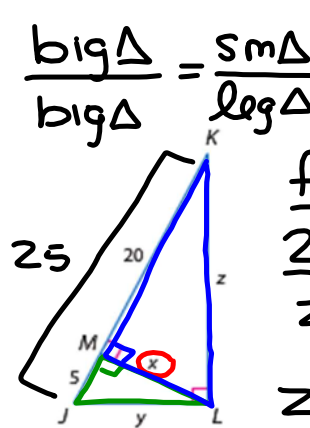
find y:

$$\frac{25}{y} = \frac{y}{5}$$

$$y^2 = 125$$

$$\sqrt{y^2} = \sqrt{125}$$

$$y = \sqrt{125}$$



find z:

$$\frac{25}{z} = \frac{z}{20}$$

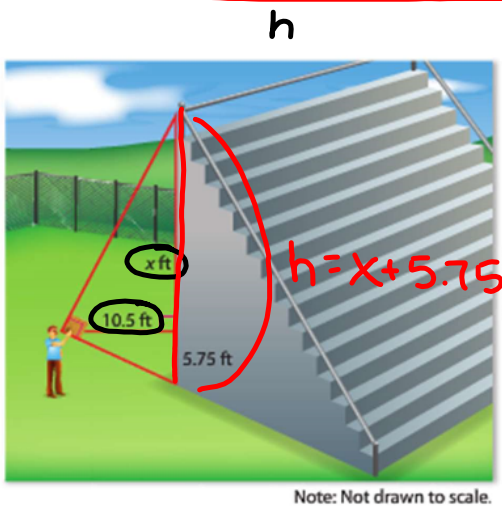
$$z^2 = 500$$

$$\sqrt{z^2} = \sqrt{500}$$

$$z = \sqrt{500}$$

EXAMPLE 2:

Zach wants to order a banner that will hang over the side of his high school baseball stadium grandstand and reach the ground. To find this height, he uses a cardboard square to line up the top and bottom of the grandstand. He measures his distance from the grandstand and from the ground to his eye level. Find the height of the grandstand to the nearest foot.



rounding

10.5 = geometric mean

$$\frac{10.5}{x} = \frac{5.75}{10.5}$$

$$5.75 \cdot x = 10.5 \cdot 10.5$$

$$\frac{5.75x}{5.75} = \frac{110.25}{5.75}$$

$$x = 19.17391304$$

$$h = 19.17391304 + 5.75$$

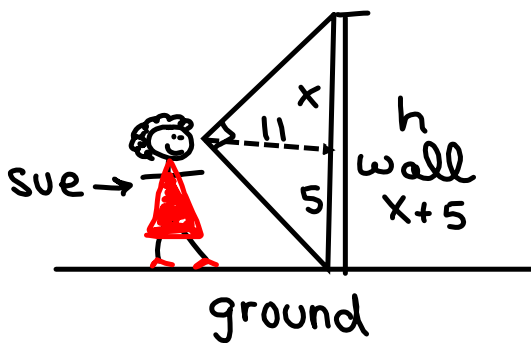
$$h = 24.92391304$$

$$h \approx 25 \text{ ft.}$$

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EXAMPLE 3:

A community center needs to estimate the cost of installing a rock climbing wall by estimating the height of the wall. Sue holds a book up to her eyes so that the top and bottom of the wall are in line with the bottom edge and binding of the cover. If her eye level is 5 feet above the ground and she stands 11 feet from the wall, how high is the wall? Draw a diagram and explain your reasoning. (HINT: model a picture like that from example 2).



$$\frac{11}{x} = \frac{5}{11}$$

$$5 \cdot x = 11 \cdot 11$$

$$\frac{5x}{5} = \frac{121}{5}$$

$$x = 24.2$$

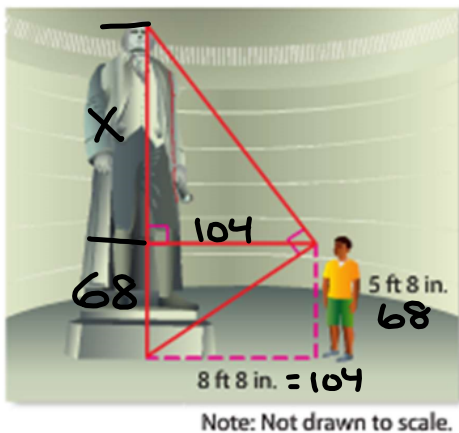
$$h = 24.2 + 5$$

$$h = 29.2 \text{ ft.}$$

EXAMPLE 4:

Corey is visiting the Jefferson Memorial with his family. He wants to estimate the height of the statue of Thomas Jefferson. Corey stands so that his line of vision to the top and base of the statue form a right triangle as shown in the diagram. About how tall is the statue?

$$h = 68 + x$$



convert to inches:

$$8' 8'' = \underset{96}{8(12)} + 8 = 104''$$

$$5' 8'' = \underset{60}{5(12)} + 8 = 68''$$

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$$\frac{104}{68} = \frac{x}{104}$$

$$68 \cdot x = 104 \cdot 104$$

$$\frac{68x}{68} = \frac{10816}{68}$$

$$x = 159.0588235$$

$$h = 159.0588235 + 68$$

$$h = 227.0588235 \text{ in.}$$

$$h \approx 227 \text{ in.}$$

$$h \approx 19 \text{ ft.}$$