

Homework 1.3 # 1-5, 7, 8, 10, 11, 15-17

Lesson 1.2 Model Quantities

Ratio = A comparison of two numbers by division.

Proportion = An equation that states two ratios are equal. Activity Example

Example: Portable Height Unknown

Student Height Known

Student Shadow Known

~~Student Height~~ = Portable Shadow Known

~~Portable Height~~

$$\frac{\text{Portable Height}}{\text{Student Height}} = \frac{\text{Portable shadow}}{\text{Student shadow}}$$

$$\text{Portable Height} = \frac{\text{Portable shadow}}{\text{Student shadow}} (\text{Student Height})$$

Have student work in pairs estimating the height of the portable.

Using Scale Drawings and Models

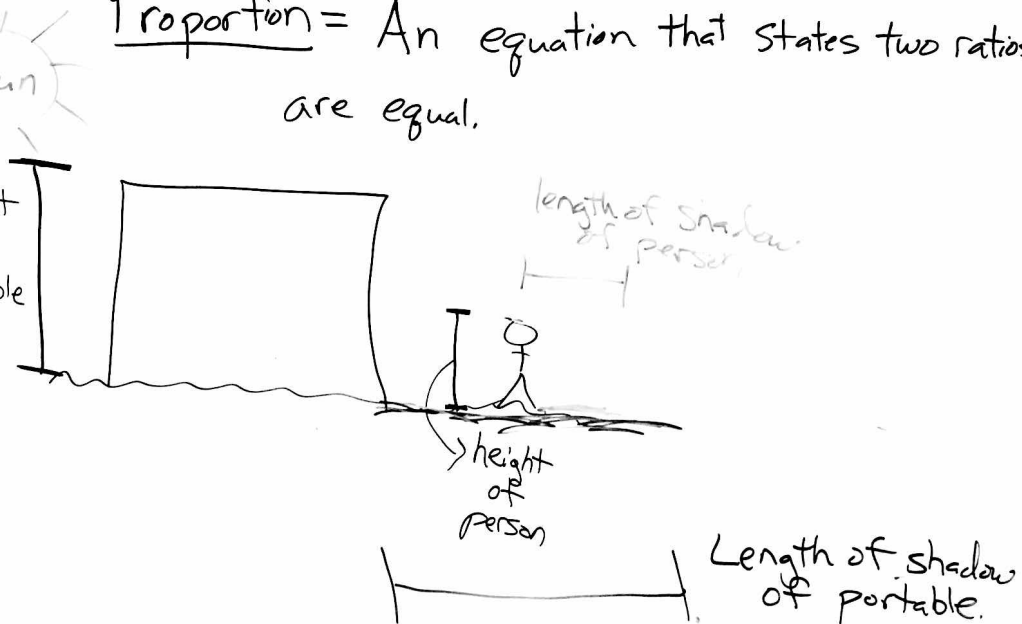
$$\frac{\text{map}}{\text{actual}} = \frac{1 \text{ in}}{18 \text{ mi}}$$

A) The actual distance from Chicago to Evanston is 11.25 mi. What is the distance

1.2: Model Quantities

Ratio = A comparison of two numbers by division.

Proportion = An equation that states two ratios are equal.



$$\frac{\text{Portable Height}}{\text{Person Height}} = \frac{\text{Portable Shadow length}}{\text{Person Shadow length}}$$

$$x = \text{Portable Height}$$

$$1 \text{ in} = 2.54 \text{ cm}$$

$$1 \text{ in} = 0.0254 \text{ m}$$

$$\begin{aligned} \text{Portable Height} &= \frac{\text{Portable shadow length}}{\text{Person shadow length}} \cdot \text{Person Height} \\ &= \frac{173.5 \text{ in}}{98.5 \text{ in}} \cdot 68.5 \text{ in} \\ &= 121 \text{ in} \approx 10 \text{ ft} \end{aligned}$$

on the map?

$$\frac{\text{map}}{\text{actual}} = \frac{1 \text{ in}}{18 \text{ mi}}$$

$$\frac{1}{18} = \frac{d}{11.25}$$

$$\frac{11.25}{18} = d$$

$$d = 0.625 \text{ in}$$

B) The actual distance between North Chicago and Waukegan is 4 mi. What is this distance on the map?

$$\frac{\text{actual}}{\text{map}} = \frac{1 \text{ in}}{18 \text{ mi}}$$

$$\frac{1}{18} = \frac{d}{4}$$

$$\frac{4}{18} = d$$

$$d \approx 0.2 \text{ in}$$

C) A scale model of a human heart is 196 inches long. The scale is 32 to 1. How many inches long is the actual heart?

$$\frac{\text{actual}}{\text{model}} = \frac{1}{32}$$

$$\frac{1}{32} = \frac{l}{196} \Rightarrow \frac{196}{32} = l$$

$$l = 6 \text{ in}$$

Converting Measurements

Conversion Factor = The ratio of two equal quantities each measured in different units. Example

A) Convert 12 pints to quarts

$$\frac{1 \text{ qt}}{2 \text{ pt}} \quad 12$$

~~B~~ Convert quarts to gallons

$$\frac{1 \text{ gal}}{4 \text{ qt}}$$

B) Inches to yards 720 inches

$$\frac{1 \text{ ft}}{12 \text{ in}} \quad \frac{1 \text{ yd}}{3 \text{ ft}}$$

Homework

~~Pg 1-5, 6-8, 9-16~~

Pg 17-18: 1-5, 6-8, 9-16