Chapter 6.1: Ratios, Proportions, and the Geometric Mean

The ratio of a to b

$\frac{a}{b}$ a:b

Simplify the ratio:

64m:6m

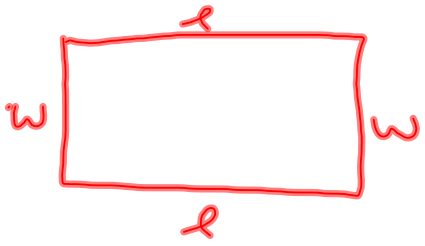
32m:3m

$\frac{5ft}{20in}$

$\frac{60in}{20in}$

$\frac{3in}{1in}$

You are planning to paint a mural on a rectangular wall. You know that the perimeter of the wall is 484 feet and that the ratio of its length to its width is 9:2. Find the area of the wall.



$2l + 2w = 484$

$2(9x) + 2(2x) = 484$

$18x + 4x = 484$

$\frac{22x}{22} = \frac{484}{22}$

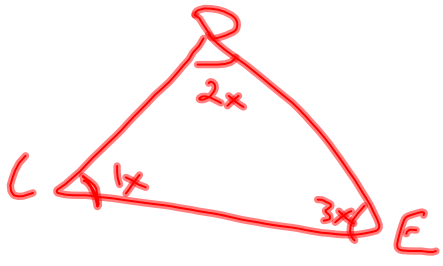
$x = 22$

$l = 9x = 9(22) = 198\text{ ft}$

$w = 2x = 2(22) = 44\text{ ft}$

8712 ft^2

The measures of the angles in triangle CDE are in the extended ratio of 1:2:3. Find the measures of the angles.



$1x + 2x + 3x = 180$

$\frac{6x}{6} = \frac{180}{6}$

$x = 30$

$m\angle C = 30$

$m\angle D = 60$

$m\angle E = 90$

Proportions- an equation that sets two ratios equal.

Solve: $\frac{5}{10} = \frac{x}{16}$

$10x = 80$

$\frac{10}{10} \quad \frac{10}{10}$

$x = 8$

$\frac{1}{y+1} = \frac{2}{3y}$

$2(y+1) = 3y$

$2y + 2 = 3y$

$-2y \quad -2y$

$2 = y$

As part of an environmental study, you need to estimate the number of trees in a 150 acre area. You count 270 trees in a 2 acre area and you notice that the trees seem to be evenly distributed. Estimate the total number of trees.

$\frac{\text{acre}}{\text{tree}} = \frac{2}{270} = \frac{150}{x}$

$40{,}500 = 2x$

$\frac{2}{2}$

$x = 20{,}250$ trees

Geometric Mean: satisfies....

$$\frac{a}{x} = \frac{x}{b}$$

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

$$x = \sqrt{ab}$$

Find the geometric mean of 24 and 48

$$x = \sqrt{ab}$$

$$x = \sqrt{24 \cdot 48}$$

$$x = \sqrt{1152}$$

$$x \approx 33.9$$

Homework: Chapter 6.1 pg.360
#'s 4,8,16,20,26,28,32,34,40,42