<name>
Class: Honors Geometry
Date: <date>
Topic: Lesson 8-1 (Ratios and Proportions)

Ratio

A comparison btwn 2 values. Make sure use same units.

Ratio Example

A scale model of a car is 4 *in* long. The actual car is 15 *ft* long. What's the ratio of the len of the model car to the real?

$$\frac{4in}{15ft} = \frac{4in}{15ft \bullet 12in} = \frac{4in}{180in} = \frac{1}{45} \text{ or } 1:45$$

Proportion

A statement that two ratios are equal:

$$\frac{4in}{15ft} = \frac{4in}{15ft \bullet 12in} = \frac{4in}{180in} = \frac{1}{45} \text{ or } 1:45$$

Proportion Properties

1. $ad = bc$ (Cross product)
2. $\frac{b}{a} = \frac{d}{c}$
3. $\frac{a}{c} = \frac{b}{d}$
4. $\frac{a+b}{b} = \frac{c+d}{d}$

Proportion Examples

1. if $\frac{a}{4} = \frac{12}{b}$, then $\frac{b}{12} = \frac{?}{?}$. Answer: $\frac{4}{a}$
2. Solve $\frac{2}{5} = \frac{n}{35}$ … $\frac{2}{5} = \frac{n}{35}$; $2 \bullet 35 = 5 \bullet n$; $n = 14$
3. Solve $\frac{x+1}{3} = \frac{x}{2}$ … $\frac{x+1}{3} = \frac{x}{2}$; $2(x+1) = 3x$; $2x + 2 = 3x$; $x = 2$

Scale Drawings

The scale tells how the len of drawing compares to actual len.

Scale Example

2 cities are 3½ *in* apart on a map w/scale 1 *in* = 50 *mi*. Find the actual distance.

Every inch on the map represents 50 miles. So the 3.5 inches represents 3.5*50 or 175 *mi.*

<name>
Class: Honors Geometry
Date: <date>
Topic: Lesson 8-1 (Ratios and Proportions)

Quadratic equation standard form

$$ax^2 + bx + c = 0, a \neq 0$$

Quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Quadratic equation example

Solve for x: $-3x^2 - 5x + 5 = 4$

First note the quadratic is not equal to zero…we need to get it equal to zero first…

$$\begin{aligned} -3x^2 - 5x + 5 &= 4 \\ -4 \quad &-4 \\ -3x^2 - 5x + 1 &= 0 \end{aligned}$$

Now we identify the coefficients: a = -3, b = -5, and c = 1
Finally we plug these into the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(-3)(1)}}{2(-3)}$$

$$= \frac{5 \pm \sqrt{25 + 12}}{-6} = \frac{5 \pm \sqrt{37}}{-6}$$

so $x = \frac{5 + \sqrt{37}}{-6} (x \approx -1.85)$ *and* $x = \frac{5 - \sqrt{37}}{-6} (x \approx 0.18)$