Ratios & Proportions
(part 1)

title

Ratio—a comparison of two different quantities

➤ Examples: a to b, $a:b$, and $\dfrac{a}{b}$

➤ Because a ratio is a quotient (fraction), its denominator cannot be zero.

➤ Ratios are usually expressed in simplest form.

ratio

There are 21 girls and 7 boys in a class of students.

What is the ratio of girls to boys?

21:7
3:1

What is the ratio of boys to girls?

7:21
1:3

What is the ratio of girls to total students in the class?

21:28
3:4

What is the ratio of boys to total students in the class?

7:28   1:4
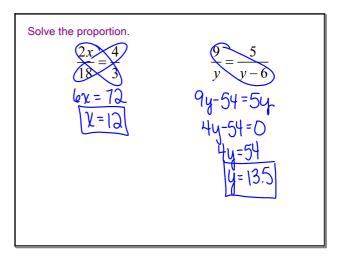
examples

Proportion—two ratios that are set equal to each other

➤ Example: $\dfrac{a}{b} = \dfrac{c}{d}$

➤ Extremes—the first and last terms of a proportion

➤ Means—the middle terms of a proportion

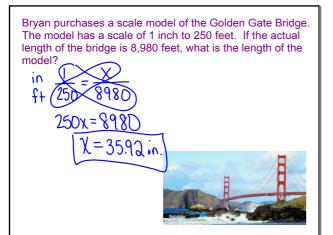proportion

To solve a proportion:

Cross Product Property

In a proportion, the product of the extremes equals the product of the means.

$$\frac{a}{b} = \frac{c}{d} \implies a \cdot d = b \cdot c$$

cross product

Solve the proportion.

$$\frac{2x}{18} = \frac{4}{3}$$

$$6x = 72$$

$$\boxed{x = 12}$$

$$\frac{9}{y} = \frac{5}{y-6}$$

$$9y - 54 = 5y$$

$$4y - 54 = 0$$

$$4y = 54$$

$$\boxed{y = 13.5}$$

examples

Bryan purchases a scale model of the Golden Gate Bridge. The model has a scale of 1 inch to 250 feet. If the actual length of the bridge is 8,980 feet, what is the length of the model?

$$\frac{in}{ft} \quad \frac{1}{250} = \frac{x}{8980}$$

$$250x = 8980$$

$$\boxed{x = 35.92 \text{ in.}}$$

example

Conclusion

1. What is a ratio? A comparison of 2 different Quantities

2. What is a proportion? Setting 2 ratios =

3. What jobs use proportions and how? Architects Models

4. Questions????

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Assignment

Ratios and Proportions Wkst

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