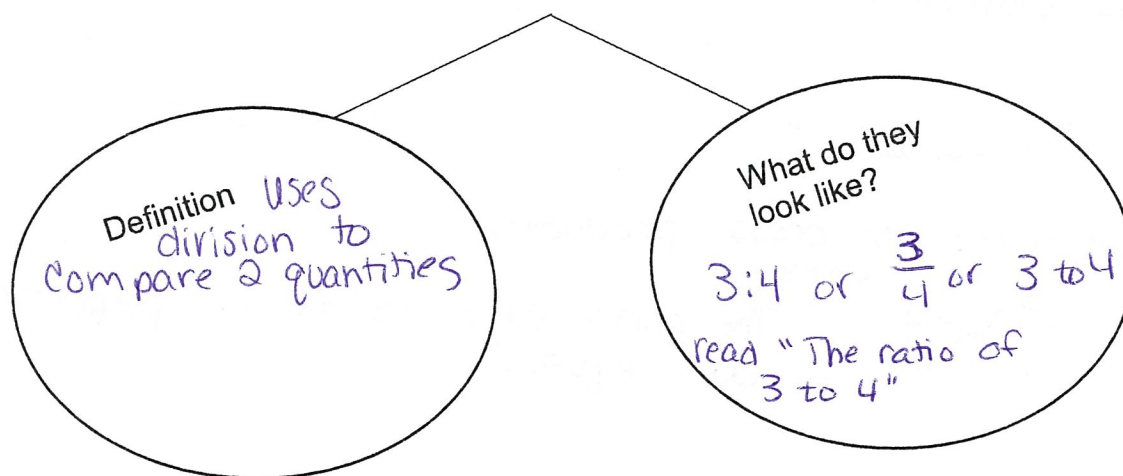


Algebra 1
Unit 2, Lesson 3 Notes
Ratios and Proportions

Key

Essential Question: How do I find ratios and write and solve proportions?

Ratios



***Ratios should be written in simplest form.

Examples:

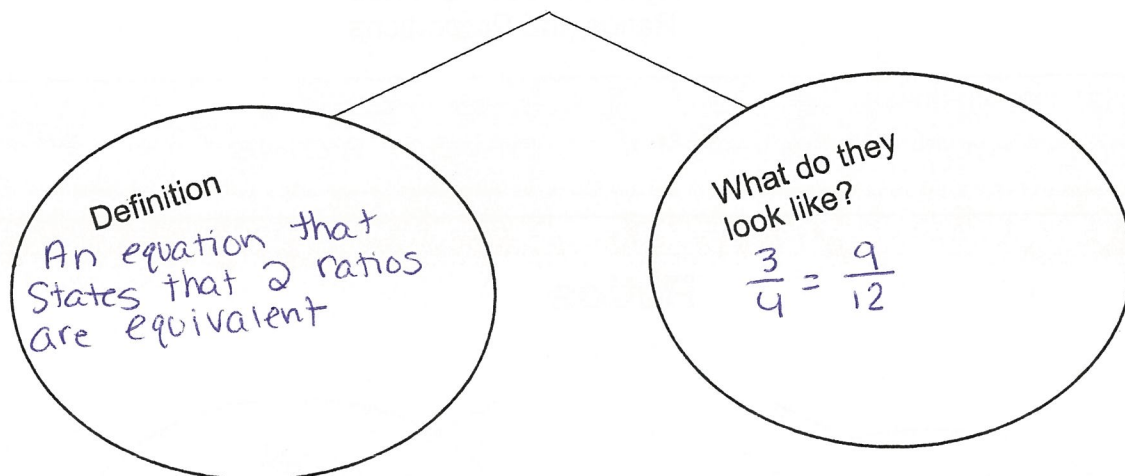
- 1) Of the 30 champions of the National Spelling Bee from 1974 – 2003, 16 are boys. Find the ratio of the number of champions who are girls to the number who are boys.

$$\frac{\# \text{ champs-girls}}{\# \text{ champs-boys}} = \frac{30-16}{16} = \frac{14}{16} \text{ simplify } \frac{7}{8}$$

- 2) In their first 134 games of the 2015 season, the Braves have only 54 wins. Find the ratio of the number of wins to the numbers of losses for the Braves.

$$\frac{\# \text{ wins}}{\# \text{ losses}} = \frac{54}{134-54} = \frac{54}{80} \text{ simplify } \frac{27}{40}$$

Proportions



To solve proportions: Use cross products!

notice:

$$\frac{3}{4} = \frac{9}{12}$$

(Note: 3 · 12 = 36 and 4 · 9 = 36)

The cross products of a proportion are equal!

Examples:

$$1) \frac{2}{5} = \frac{x}{3}$$

$$5x = 2(3)$$

$$5x = 6$$

$$\boxed{x = \frac{6}{5}}$$

$$2) \frac{x}{9} = \frac{10}{18}$$

$$9(10) = 18(x)$$

$$90 = 18x$$

$$\boxed{5 = x}$$

$$3) \frac{x}{60} = \frac{40}{50}$$

$$50x = 60(40)$$

$$50x = 2400$$

$$\boxed{x = 48}$$

- 4) A student can read 7 pages of a book in 10 minutes. How many pages of the book can the student read in 30 minutes?

$$\frac{7 \text{ pages}}{10 \text{ min}} = \frac{x \text{ pages}}{30 \text{ min}}$$

$$\text{OR } \frac{10 \text{ min}}{7 \text{ pages}} = \frac{30 \text{ min}}{x \text{ pages}}$$

NOT

$$\frac{10 \text{ min}}{7 \text{ pages}} = \frac{x \text{ pages}}{30 \text{ min}}$$

$$10x = 210$$

$$x = \boxed{21 \text{ pages}}$$

- 5) Zoe can run 8 miles per hour. How many miles can she run in 20 minutes?

$$\frac{8 \text{ miles}}{60 \text{ min}} = \frac{x \text{ miles}}{20 \text{ min}}$$

$$\frac{8}{60} = \frac{x}{20}$$

$$60x = 160$$

$$x = \frac{160}{60} =$$

$$\boxed{2.6 \text{ miles} \text{ or } 2\frac{2}{3} \text{ miles}}$$