

## Notes on Proportions

Take a look at the proportions below...

$$\frac{4}{16} = \frac{1}{4}$$

$$\frac{8}{20} = \frac{2}{5}$$

$$\frac{2}{3} = \frac{6}{9}$$

1. **What pattern do you notice about the “cross products” in each proportion? (Cross Product means when you cross multiply)**
2. **Create a proportion of your own by finding two equivalent fractions.**
3. **Test the pattern you found in #1 with the proportion that you wrote in #2. Is the pattern still the same?**

**Multiplication Property of Equality: You can multiply anything to an equation, as long as it is the same number multiplied to BOTH SIDES of the equation.**

Multiply each side by the denominators

$$\frac{4}{16} = \frac{1}{4}$$

$$\frac{8}{20} = \frac{2}{5}$$

We can use this property to determine if a pair of ratios form a proportion (if the fractions are equal).

Do each of the following ratios form a proportion? Use the “SHORT CUT.”

1.  $\frac{9}{20} = \frac{2}{5}$

2.  $\frac{3}{7} = \frac{9}{21}$

3.  $\frac{11}{5} = \frac{22}{9}$

4.  $\frac{72}{9} = 8$

Solve the (2–step) proportions. Show your work.

1.  $\frac{y}{12} = \frac{3}{4}$

2.  $\frac{-16}{m} = \frac{-8}{9}$

#1 answer \_\_\_\_\_

#2 answer \_\_\_\_\_

3.  $\frac{9}{27} = \frac{2}{x}$

4. 14 is to b as 28 is to 18

#3 answer \_\_\_\_\_

#4 answer \_\_\_\_\_

**Solve the story problems using proportions.**

**Mr. Roy paid \$1.29 for 3 ponytail holders. He drove his truck to the store to get the ponytail holders. At this rate, what would eight ponytail holders cost?**

**Step 1: pick a letter (variable) and write down what it represents.**

**Step 2: Set–up a proportion**

**Step 3: Solve the proportion and answer the problem.**

**There are 2 robins for every 5 birds. How many robins are there for 80 birds?**

**Step 1: pick a letter (variable) and write down what it represents.**

**Step 2: Set–up a proportion**

**Step 3: Solve the proportion and answer the problem.**