Name: _____ Date: _____ Class: _____

A ratio is a comparison of two quantities. A common way to express a ratio is as a fraction in simplest form. Ratios can also be written in other ways. For example, the ratio $\frac{2}{3}$ can be written as 2 to 3, 2 out of 3, or 2:3.

1. Hiroshi has 4 engines and 18 boxcars. Find the ratio of engines to box cars.

   Write the ratio as a fraction in simplest form. Then explain its meaning.

2. At the potluck, there were 6 pecan pies, 7 lemon pies, 13 cherry pies, and 8 apple pies. Find the ratio of apple pies to the total number of pies. Then explain its meaning.

3. A petting zoo has 5 lambs, 11 rabbits, 4 goats, and 4 piglets. Find the ratio of goats to the total number of animals. Then explain its meaning.

4. At the potluck, there were 6 pecan pies, 7 lemon pies, 13 cherry pies, and 8 apple pies. Find the ratio of apple pies to the total number of pies. Then explain its meaning.

Name: _____ Date: _____ Class: _____

A **rate** is a ratio of two measurements having different kinds of units. When a **rate** is simplified so that it has a denominator of 1, it is called a **unit rate**.

Write each ratio as a fraction in simplest form.

1. 2 guppies out of 6 fish	2. 12 puppies to 15 kittens	3. 5 boys out of 10 students

Write each rate as a unit rate.

4. 6 eggs for3 people	5. $12 for 4pounds	6. 40 pages in 8 days

The Nozomi train in Japan can travel 558 miles in 3 hours. At this rate, how far can the train travel per hour?

Write the ratio 20 students to 5 computers as a unit rate. Create a table to show how many computers does 32 students will have. Hint: Use unit rate.

Students	20	32	36	48	60
Computers	5				

Name: _____ Date: _____ Class: _____

A ratio table organizes data into columns that are filled with pairs of numbers that have the same ratio, or are equivalent. Equivalent ratios express the same relationship between two quantities.

a) You need 1 cup of rolled oats to make 24 oatmeal cookies. Use the ratio table to find how many oatmeal cookies you can make with 5 cups of rolled oats.

Cups of oats	1				5
Oatmeal Cookies	24				120

b) Luz earns $400 for 40 hours of work. Use a ratio table to determine how much she earns for 6 hours of work.

Money Earned		$400			
Hours		40	45	50	55

c) An ostrich can run at a rate of 50 miles in 60 minutes. At this rate, how long would it take an ostrich to run 18 miles?

Distance Run (mi)	50				
Time (mins)	60				

Name: _____ Date: _____ Class: _____

1. A soup that serves 16 people calls for 2 cans of chopped clams, 4 cups of chicken broth, 6 cups of milk, and 4 cups of cubed potatoes.
    - Create a ratio table to represent this situation.

Answer: _____

- How much of each ingredient would you need to make an identical recipe that serves 8 people? 32 people?

Answer: _____

- How much of each ingredient would you need to make an identical recipe that serves 24 people? Explain your reasoning.

Answer: _____

Name: _____ Date: _____ Class: _____

Two quantities are said to be proportional if they have a constant ratio. A proportion is an equation stating that two ratios are equivalent.

1. Determine if the quantities in each pair of rates are proportional. Explain your reasoning and express each proportional relationship as a proportion. $35 for 7 balls of yarn; $24 for 4 balls of yarn.

   $$\frac{\$35}{7\ balls\ of\ yarn} = \frac{\$5}{1\ ball\ of\ yarn}$$

   Since the ratios do not share the same unit rate, the cost is not proportional to the number of balls of yarn purchased.

   Answer: _____

2. Determine if the quantities in each pair of rates are proportional. Explain your reasoning and express each proportional relationship as a proportion. 8 boys out of 24 students; 4 boys out of 12 students. Write each ratio as a fraction.

   Answer: _____

Name: _____ Date: _____ Class: _____

3. Determine if the quantities in each pair of rates are proportional. Explain your reasoning and express each proportional relationship as a proportion.

   a) $12 saved after 2 weeks; $36 saved after 6 weeks

   b) $9 for 3 magazines; $20 for 5 magazines

   c) 135 miles driven in 3 hours; 225 miles driven in 5 hours

   d) 24 computers for 30 students; 48 computers for 70 students

   e) 18 vocabulary words learned in 2 hours; 27 vocabulary words learned in 3 hours

f) $15 for 5 pairs of socks; $25 for 10 pairs of socks

g) 20 out of 45 students attended the concert; 12 out of 25 students attended the concert

h) 78 correct answers out of 100 test questions; 39 correct answers out of 50 test questions

i) 15 minutes to drive 21 miles; 25 minutes to drive 35 miles

Name: _____ Date: _____ Class: _____

ANIMALS For Exercises a,b,c, refer to the table on lengths of some animals with long tails. Determine if each pair of animals has the same body length to tail length proportions. Explain your reasoning.

a. Brown rat and opossum

b. Hamster and lemming

c. Opossum and prairie dog

Animal Lengths (mm)		
Animal	**Head & Body**	**Tail**
Brown Rat	240	180
Hamster	250	50
Lemming	125	25
Opossum	480	360
Prairie Dog	280	40

Name: _____ Date: _____ Class: _____

To solve a proportion means to find the unknown value in the proportion. By examining how the numerators or denominators of the proportion are related, you can perform an operation on one fraction to create an equivalent fraction.

1. Solve: Three servings of broccoli contain 150 calories. How many servings of broccoli contain 250 calories?

Answer: _____

2. Jeremy spent $33 on 3 CDs. At this rate, how much would 5 CDs cost?

Answer: _____

Name: _____ Date: _____ Class: _____

3. A pronghorn antelope can travel 105 miles in 3 hours. If it continued traveling at the same speed, how far could a pronghorn travel in 11 hours?

Answer: _____

4. Out of 32 students in a class, 5 said they ride their bikes to school. Based on these results, predict how many of the 800 students in the school ride their bikes to school.

Answer: _____

5. Hamburger sells for 3 pounds for $6. If Alicia buys 10 pounds of hamburger, how much will she pay?

Answer: _____

Name: _____ Date: _____ Class: _____

6. If 24 extra large cans of soup will serve 96 people, how many cans should Ann buy to serve 28 people?

Answer: _____

7. The ruby throated hummingbird has a wing beat of about 200 beats per second. About how many wing beats would a hummingbird have in 3 minutes?

Answer: _____