

Name: _____

Date: _____

INTRODUCTION TO RATIOS
N-GEN MATH[®] 6

Video Notes
Link is on my weebly

We compare quantities all the time in the real world. It is natural to do so and important in many circumstances. Let's do some comparison in the first exercise.

Exercise #1: While at the beach, Sofia collected 10 seashells while her brother Martin collected 5 seashells. Compare the amounts of seashells the two collected in four different ways.

1. _____
2. _____
3. _____
4. _____

Exercise #2: The next day, Sofia again collects 10 seashells and Martin collects 5, so that now Sofia has 20 and Martin has 10. Which of the comparisons above would not change?

We now introduce the concept of a **ratio**.

RATIOS

A **ratio** is a comparison of two quantities that can be **scaled up** or **scaled down** using multiplication or division.

Exercise #3: A recipe for pie crust calls for three cups of flour and four sticks of butter. Fill in the blanks for each of the following.

(a) the ratio of flour to butter is _____ to _____



(b) the ratio of butter to flour is _____ to _____

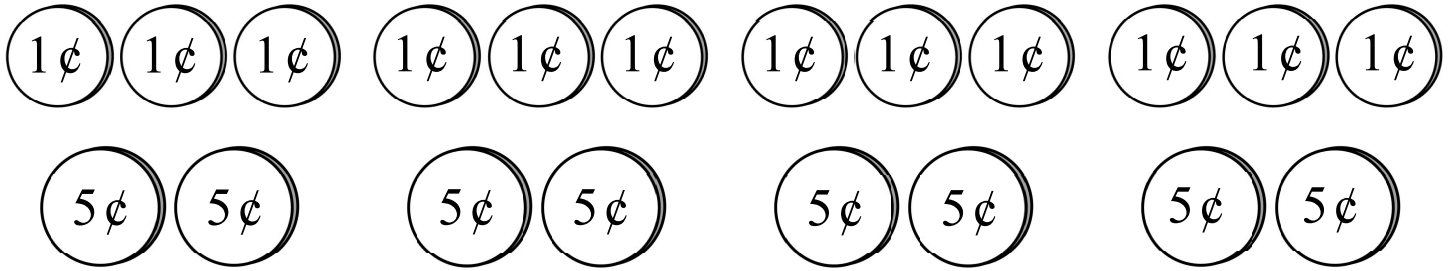


(c) If the recipe was doubled, the ratio of flour to butter would be _____ to _____.



In the last exercise, we saw ratios of 3 to 4 and 6 to 8 in (a) and (c). These ratios are considered **equivalent** since for every 3 cups of flour there are 4 sticks of butter in both.

Exercise #4: Mia pulled out coins from her change jar and found she had 12 pennies and 8 nickels as shown.



(a) Based on the **total** number of coins, what is the ratio of **pennies to nickels**?

(b) List three other ratios of **pennies to nickels** that are equivalent to (a) based on the diagram.

_____ to _____
 _____ to _____
 _____ to _____

(c) Mia adds enough nickels and pennies so that there are 12 nickels. If the ratio of pennies to nickels stays the same, how many pennies are there now? Fill in the table below.

Pennies				12		
Nickels				8		

Each entry in the above table simply was a **multiple** of the **simplest ratio** of 3 to 2. Tables like these are a great way to think about ratios.

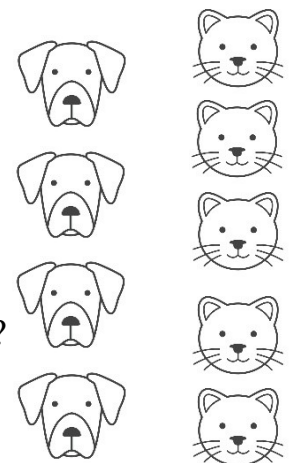
Exercise #5: At a pet shelter, the ratio of dogs to cats is 4 to 5.

(a) Interpret this ratio by filling in the blanks below.

For every _____ there are _____.

(b) If there are a total of 20 cats at the shelter, how many dogs are there? Fill out the table below to find the answer.

Dogs	4				
Cats	5				



Name: _____

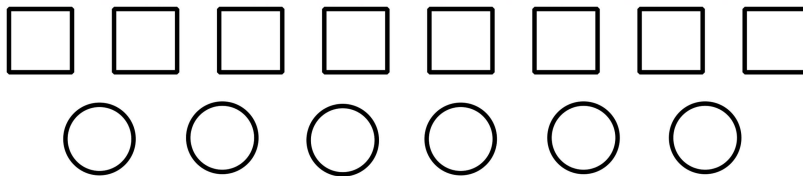
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**INTRODUCTION TO RATIOS
N-GEN MATH[®] 6 HOMEWORK**

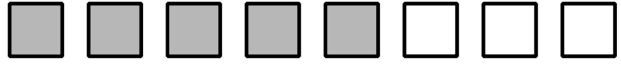
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FLUENCY

1. The diagram below shows a collection of squares and circles. Answer the following ratio questions based on the diagram.



- (a) The ratio of **squares to circles** is _____ to _____.
- (b) The ratio of **circles to squares** is _____ to _____.
- (c) If the ratio of squares to circles stays the same and four more squares are added, how many circles will be added? Explain.
- (d) Which of the following ratios of squares to circles would *not* be equivalent to the one from (a)?
- (1) 4 to 3 (3) 12 to 9
- (2) 10 to 8 (4) 16 to 12 _____

2. In the pattern shown at the right some squares are shaded and some are not. 

- (a) What is the ratio of unshaded squares to shaded squares?
- (b) If there were a total of 9 unshaded squares, how many shaded squares would there be if the ratio stayed the same as in (a)? Add to the picture to justify.



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USING YOUR MATH

3. After a certain number of games for the Admirals, the ratio of wins to losses was 7 to 2. If they had six total losses, how many wins did they have? Use the table below to help find your answer.

Wins	7			
Losses	2			

4. At a birthday party, the ratio of kids to adults was 8 to 3. If there were 32 kids at the party, how many adults were there? Create a table to justify your answer.

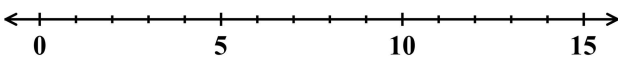
5. A hot chocolate recipe calls for six tablespoons of sugar and four tablespoons of cocoa. Maria wants an extra-large cup of hot chocolate, so she uses six tablespoons of cocoa. To keep the sugar to cocoa ratio equivalent to the one in the recipe, how much sugar should Maria add? Fill in the missing portions of the table below to help find the answer.

Sugar		6	
Cocoa		4	6

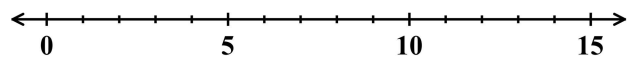
Bonus (not required)

6. Graph each of the following inequalities on the number lines given.

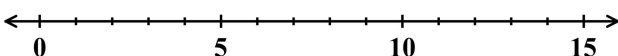
(a) $x \geq 6$



(b) $x > 2$



(c) $x < 13$



(d) $x \leq 10$

