

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## RATIOS AND COMPLEX FRACTIONS N-GEN MATH<sup>®</sup> 7



Recall that ratios can be expressed in terms of fractions. These fractions, when evaluated using division, then produce unit rates. This can be challenging if the quantities involved in the ratios are fractions themselves.

**Exercise #1:** A recipe for pie topping calls for  $\frac{1}{4}$  cup of sugar and  $\frac{3}{4}$  cup of flour.

- (a) Write the ratio of cups of sugar to cups of flour as a **complex fraction**. Then, simplify this fraction.
- (b) What is the ratio of cups of sugar to cups of flour in simplest form?

- (c) How can we interpret (b) in terms of unit rates? State a rate for each of the following:

cups of sugar per one cup of flour

cups of flour per one cup of sugar

Ratios that involve complex fractions can be confusing. Make sure you remember to convert the division into multiplication involving the fraction's reciprocal each time.

**Exercise #2:** A bucket is filling with maple tree sap at a rate of  $\frac{3}{5}$  of a bucket in  $\frac{1}{4}$  of an hour.

Determine the rate of bucket filling per hour. Express your answer as a mixed number.



In these types of problems, you may have to convert fractions between their various forms.

**Exercise #3:** Joe's Pizzeria sells  $3\frac{3}{8}$  pizzas in  $1\frac{1}{4}$  hours.

- (a) Find the rate that pizzas are being sold per hour. First, convert the mixed numbers to fractions and then set up the ratio as a complex fraction.
- (b) At the rate in (a), how many pizzas would they sell in 5 hours? Show the work that leads to your answer.

**Exercise #4:** A 3-D printer is creating geometric models. A single printer can print  $\frac{2}{3}$  of a model in  $2\frac{1}{2}$  hours.

- (a) What is the ratio of hours to models in simplest form? Express as a mixed number.
- (b) Give an interpretation of the answer you found in (a). What does it tell you about the model printing process?



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**RATIOS AND COMPLEX FRACTIONS**  
**N-GEN MATH<sup>®</sup> 7 HOMEWORK**

**FLUENCY**

1. Simplify each of the following complex fractions. Express any improper fractions as mixed numbers.

(a)  $\frac{\frac{2}{9}}{\frac{5}{3}}$

(b)  $\frac{\frac{11}{4}}{\frac{5}{8}}$

**USING YOUR MATH**

2. A recipe calls for  $\frac{1}{4}$  cup of sugar and  $\frac{1}{2}$  cup of flour. Which of the following is the ratio of sugar to flour in this recipe?

(1)  $1\frac{1}{4}$  cup of sugar per cup of flour

(2) 2 cups of sugar per cup of flour

(3)  $\frac{1}{2}$  cup of sugar per cup of flour

(4)  $\frac{3}{4}$  cup of sugar per cup of flour

3. If a snail moves  $1\frac{1}{2}$  feet in  $3\frac{3}{4}$  hours, what is its speed in feet per hour? Show your work and simplify your answer.



4. A water-salt mixture used for preserving vegetables calls for  $\frac{3}{4}$  cup of salt to be placed in  $5\frac{1}{2}$  cups of water. If Rahm decides to use 1 cup of salt, how much water should he use to preserve the proper water to salt ratio? Express your answer as a mixed number.
5. Water is evaporating from a pool at a rate of  $\frac{5}{8}$  of an inch per  $4\frac{1}{2}$  hours.
- (a) Find the unit rate that the water is evaporating at, in terms of inches per hour.
- (b) If the water evaporates at the rate in (a) for 12 hours, how many inches will evaporate? Express your answer as a mixed number.
6. When people buy wood to burn in a stove they purchase it in units of **CORDS** (stacks that are 128 cubic feet). Camilla had 3 cords of wood delivered and stacked. She noticed that the people stacking the wood could stack  $\frac{3}{10}$  of a cord in  $\frac{2}{5}$  of an hour.
- (a) What is the rate they are stacking the wood in cords per hour?
- (b) At the rate in (a), how many hours will it take for them to stack all 3 cords?

