

## Chapter 5

# Fractions and Decimals

Linda M. Gojak, the president of the National Council of Teachers of Mathematics, said “We’ve had a tendency in our traditional scope and sequence of math that you teach all this whole number stuff and then all of a sudden you get to fractions and it’s a whole new world of what to do – everything they learned in whole numbers has nothing to do with how you do fractions. It’s one of the hardest things for kids to get their heads around.” Students need a balanced curriculum that is not only focused on procedural fluency but on developing a conceptual foundation of fractions that enables students to be flexible problem solvers.

*Pause*\_\_\_\_\_

For each example, refer to the description of the Mathematical Process Standard provided in Chapter One and consider which specific components of the targeted Mathematical Process is being addressed. A solution guide is included at the end of the chapter.

### **3<sup>rd</sup> grade**

**Content Focus:** The student will be able to compare fractions with like denominators.

#### **Problem 1**

**Mathematical Process Standard 2:** Reason contextually and abstractly

**Mathematical Process Standard 4:** Model with mathematics

**Mathematical Process Standard 7:** Identify and utilize structure and patterns

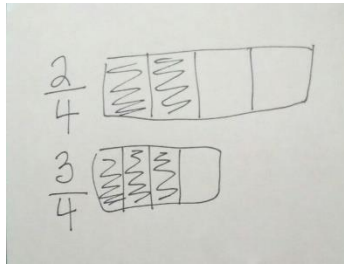
Britni and Tonya are sharing one cake. Britni has three pieces of cakes that are each  $\frac{1}{5}$ . Tonya has two pieces of cake that are each  $\frac{1}{5}$ . Using numbers or words, write a statement comparing Britni’s amount of cake to Tonya’s amount of cake.

**Problem 2****Mathematical Process Standard 3:** Justify your mathematical thinking

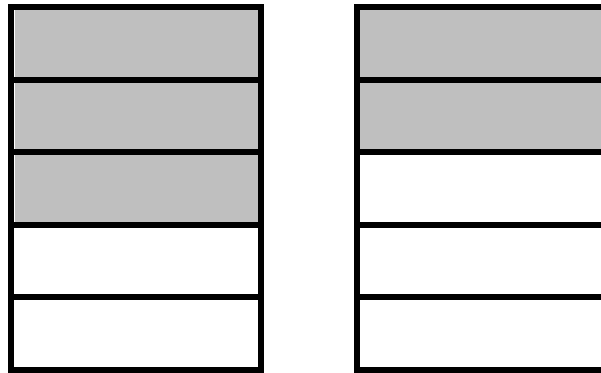
Compare  $\frac{5}{8}$  and  $\frac{7}{8}$ . Explain how you know your answer is correct.

**Problem 3****Mathematical Process Standard 3:** Critique the reasoning of others

Britni was asked to compare  $\frac{2}{4}$  and  $\frac{3}{4}$ . She drew the picture below to prove that  $\frac{2}{4}$  is greater than  $\frac{3}{4}$ . Is her answer correct? Explain your thinking.

**Problem 4****Mathematical Process Standard 4:** Model with Mathematics

Which statement is true for the two fractions modeled below?



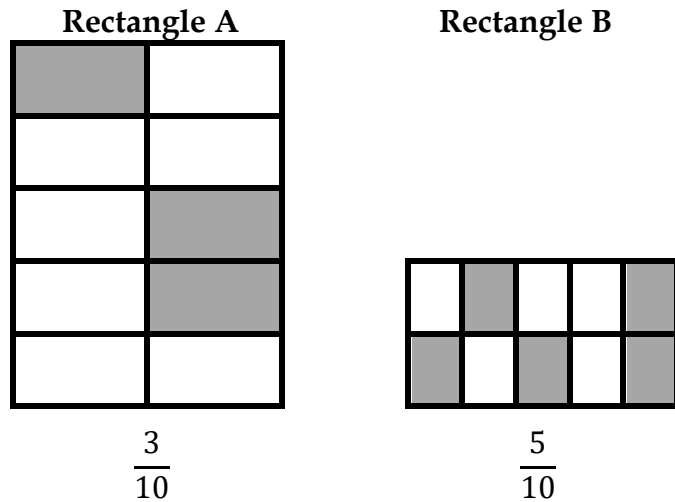
a.  $\frac{2}{5} > \frac{3}{5}$

b.  $\frac{2}{5} < \frac{3}{5}$

c.  $\frac{2}{5} = \frac{3}{5}$

d.  $\frac{3}{5} < \frac{2}{5}$

**Problem 5****Mathematical Process Standard 1:** Make sense of problems and persevere in solving them**Mathematical Process Standard 4:** Model with mathematics



Which statement best describes the relationship between the two fractions?

- a.  $\frac{5}{10} > \frac{3}{10}$  because more area is shaded in rectangle B.
- b.  $\frac{5}{10} < \frac{3}{10}$  because more area is shaded in rectangle A.
- c.  $\frac{5}{10} = \frac{3}{10}$  because the same amount of area is shaded in each rectangle.
- d. The comparison of the two fractions is not fair because the rectangles are different sizes.

## Chapter 5 Connections and Solutions

**3<sup>rd</sup> grade**

**Content Focus:** The student will be able to compare fractions with like denominators.

Problem	Mathematical Process	Connections to the Mathematical Processes
1	MPS 2	The student is asked to decontextualize the problem by representing the situation symbolically.
	MPS 4	The student is asked to represent the mathematical situation using numbers or words.
	MPS 7	The student is asked to identify and utilize the structure of a fraction i.e. $\frac{\text{the number of equal parts}}{\text{size of the part}}$ to solve the problem.

<b>Problem</b>	<b>Mathematical Process</b>	<b>Connections to the Mathematical Processes</b>
2	MPS 3	The student is asked to justify or explain their mathematical thinking.
3	MPS 3	The student is asked to analyze the arguments of others to determine if the argument has errors or flaws in logic then explain their thinking.
4	MPS 4	The student is asked to analyze and interpret the pictorial model of a fraction to solve a problem.
5	MPS 1	The student is asked to connect the current problem situation to previously learned concepts and skills i.e. when is a comparison of fractions valid.
	MPS 4	The student is asked to analyze and interpret the pictorial model of a fraction to solve a problem.

A solution guide is also included for each problem at the end of each chapter.