

## GED 2002 Teachers' Handbook of Lesson Plans

Area/Skill - Mathematics	Cognitive Skill Level - Application	Correlation to Framework - 05.01/05.07	Lesson Number - 02
<p><b>Activity Title – Understanding Fractions</b></p> <p><b>Goal/Objective</b> Divide a common object into fractional parts and manipulate the fractional parts to illustrate addition and subtraction of fractions.</p> <p><b>Lesson Outline</b></p> <p><b>Introduction</b> Many items are made of smaller pieces. These smaller pieces may be described as a fraction of the whole. Nature is filled with fractions. The orange is one such item and is used to illustrate the basic concept of fractions in this lesson.</p> <p><b>Activity</b> Provide each student with an orange and newspaper to cover the desk or table. Carefully peel the orange and divide the sections. Count the number of sections. This number becomes the denominator (bottom number) of the fraction. Instruct students to use their orange slices to illustrate the concept of <math>\frac{1}{2}</math> of their orange by dividing the orange in half. Students should note the total number of slices in each group.</p> <p>Students should use their orange slices and come up with additional methods to represent <math>\frac{1}{2}</math> such as <math>\frac{2}{4}</math> etc. Speculate if these two fractions actually represent the same amount.</p> <p>Illustrate subtraction by removing slices from the total and write a fraction to represent the amounts.</p> <p>Illustrate addition by adding slices to the total and representing the amount by a written fraction.</p> <p><b>Debriefing/Evaluation Activity</b> Have students review the concept of representing parts of a whole object by dividing it into smaller pieces.</p>			<p><b>Materials/Texts/Realia/Handouts</b></p> <ul style="list-style-type: none"> <li>• Handout—Biscuit Recipe</li> <li>• Oranges/Tangerines</li> <li>• Optional Chocolate Bars</li> <li>• Newspapers or desk covering</li> <li>• Ruler or tape measure</li> </ul>
			<p><b>Extension Activity</b></p> <p>Obtain a chocolate bar that is made in equal sections that can be broken apart. Use these individual pieces to illustrate fractional amounts. After the activity, eat the chocolate.</p>
			<p><b>ESE/ESOL Accommodations</b></p> <ul style="list-style-type: none"> <li>• Use actual ingredients for biscuit recipe.</li> <li>• Arrange fractional pieces for students</li> <li>• Allow group work.</li> <li>• Allow extra time.</li> </ul>
<p><b>Real-Life Connection</b></p> <p>Use a biscuit recipe and increase or reduce the number of servings. Determine what fraction of the original servings are needed and utilize this amount to adjust the amount of ingredients up or down.</p> <p>Utilize a ruler or tape measure and measure various objects and note various lengths in fractional units. Combine the length of various objects to practice adding fractions. Delete objects from the measuring activity and practice subtraction of fractions.</p> <p>Speculate why carpenters say measure twice, cut once.</p>			

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### Activity Title - Understanding Fractions

#### Introduction

*Say:* Fractions are a part of everyday life. Many people use fractions as part of their job. Carpenters measure boards, cooks increase or decrease recipes and many items are weighed and measured for sale using fractions.

#### Main Activity

*Say:* We are going to illustrate fractions using an item from nature. We are going to divide an orange into segments and use fractions to describe what we do with it.

*Do:* Pass out newspapers to protect the desks and make sure each student has an orange. Instruct the students to carefully peel the orange without breaking the segments.

*Say:* Now that you have peeled your orange divide it into the sections. As you divide the orange take care to notice about how many sections you have.

*Do:* Ask for a volunteer to explain how many sections he/she has found. Ask this student to describe his/her orange in fractional terms. If the orange has eight sections one section would represent  $\frac{1}{8}$  and continue in like fashion.

*Say:* You have described your orange in fractional terms. Now we will be adding some sections together and representing the total as a fraction. Each student should select several slices to contribute to the total.

*Do:* After all students have contributed several slices to a common group, describe the total in terms of a fraction, or mixed number. After describing the total, begin to have students remove their individual sections from the pile and describe the amount left as a fraction.

#### Closure/Conclusion

*Say:* As you saw, we can represent parts of a whole as a fraction. We can also add fractions together to make a whole or more than a whole. You likely use fractions each day without giving it much thought. It is important to see how parts of a whole can be combined and removed to create different fractional parts of a whole.

#### Follow-Up Lessons/Activities

*Say:* I would like to share a recipe with the class. I want you each to use fractions to convert the recipe so that it will make enough to serve the entire class. This recipe serves 10 people. For the purpose of this demonstration, let's agree that our class is made up of fifteen people. Take a few moments and see if you can work it out. Depending on time and comfort with the topic this extension could be developed for an entire class session.

*Do:* Pass out the recipe to the students and instruct them to convert it to feed 15 people.

*Note:* You may use the actual number of class members but answers would vary.

*Do:* After the class has worked on the recipe individually, place the recipe on the overhead and work through it together. Answers will vary depending upon the number of students in the class.

## Math Lesson 02

### Basic Biscuit Ingredients

$\frac{1}{4}$  cup shortening  
2 cups all-purpose or whole-wheat flour  
1-tablespoon sugar  
3 tablespoons baking powder  
1-teaspoon salt  
 $\frac{3}{4}$  cup milk

This recipe makes about 10 biscuits. If the class has 15 members and everyone eats one biscuit, fractions would be needed to change the recipe.

Start with dividing 10 into 15. The answer is 1 with a remainder of 5. Since 5 is half of ten express the answer like this:  $1 \frac{1}{2}$ . We must make  $1 \frac{1}{2}$  of the original recipe to feed a biscuit to each class member

Compute the amount of ingredients needed like this:

$$\frac{1}{4} \times 1 \frac{1}{2}$$

$$\frac{1}{4} \times \frac{3}{2} = \frac{3}{8} \text{ cup shortening}$$

$$2 \times 1 \frac{1}{2}$$

$$\frac{2}{1} \times \frac{3}{2} = \frac{6}{2}$$

$$\frac{6}{2} = 3 \text{ cups of flour}$$

$$1 \times 1 \frac{1}{2} = 1 \frac{1}{2} \text{ tablespoon sugar}$$

$$3 \times 1 \frac{1}{2}$$

$$\frac{3}{1} \times \frac{3}{2} = \frac{9}{2}$$

$$\frac{9}{2} = 4 \frac{1}{2} \text{ teaspoons of baking powder}$$

$$1 \times 1 \frac{1}{2} = 1 \frac{1}{2} \text{ teaspoons of salt}$$

$$\frac{3}{4} \times 1 \frac{1}{2}$$

$$\frac{3}{4} \times \frac{3}{2} = \frac{9}{8}$$

$$\frac{9}{8} = 1 \frac{1}{8} \text{ cup of milk}$$