

Fractions

Overview Using the raised beds in the garden, students will represent fractions outside to show parts of a whole. They will then collect natural materials to bring inside to represent fractions as parts of a collection.

**Lesson
Planner**

Time Required	60 minutes
Key Concepts/Terms	Numerator, Denominator, Fraction, Whole
Prerequisites	<ul style="list-style-type: none">• Knowledge of expectations for outdoor classroom conduct.• A basic understanding that a fraction is part of a whole.
Setting	<ul style="list-style-type: none">• 20-minute field study outside• Remainder of lesson inside

Standards DC 4th Grade
4.NSO-F.9 Demonstrate an understanding of fractions as parts of unit wholes, as parts of a collection, and as locations on a number line.

Objectives Students will use the raised beds in the garden in order to demonstrate fractional parts of unit wholes. Students will use natural objects they collect from outside in order to demonstrate fractional parts of a collection.

**Materials
Required**

- Signs of fractions to use outside
- Fractions worksheet
- String or meter sticks to divide beds into fractional parts

**Background
Information**

Students can already....

-Match a picture to a fraction if they don't need to reduce the fraction (e.g., a circle divided into three equal parts with one shaded in is $\frac{1}{3}$)

-Compare fractions with like denominators

-Add and subtract fractions with like denominators

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-Add and subtract decimals as money

By the end of this unit, students should be able to also

-Compare, add and subtract fractions with unlike denominators

-Locate fractions on a number line (and on a ruler!)

-Match decimals to a model

-Identify and generate equivalent fractions and decimals

Students should be able to understand fractions at least to twelfths

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Procedure Follow the steps in the table below to conduct the activity. **Sentences in bold are suggestions for what teachers might say to students.** *Items in italics are possible teacher answers to questions.*

Phase	Step	Action
Engage	1	<p><u>Establish rules and expectations (5 minutes)</u> Go over the rules and expectations for learning outside. A poster may be created to be kept in the classroom for future outdoor lessons.</p> <p>Have in mind some expectations for outdoor learning specific to your schoolyard that you want to be sure students include. For instance,</p> <ul style="list-style-type: none"> • <i>Regular school rules still apply (respect each other, listen to the speaker, follow directions, etc.)</i> • <i>No yelling, screaming, tapping on/waving into windows that will disrupt class learning inside the school building.</i> • <i>“Look, learn, and let go” when you see insects.</i>
	2	<p><u>Parts of a Whole (5 minutes) – Directions</u> Students will be going outside for part of today’s lesson. Begin with the directions indoors.</p> <p>Students will split into four groups each one around a raised bed in the garden. The class will be given a fraction, and students’ will divide the bed into parts to show the given fraction.</p> <p>If nothing is planted in the bed, students can draw lines in the soil. If something is planted in the bed, students will be given string, meter sticks, or something else to show the divided parts.</p> <p>Model an example on the board of a raised bed divided into parts.</p>

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	3	<p><u>Parts of a Whole (10 minutes) - Outside</u></p> <p>Take students outside. Split the class into four groups spaced around the beds.</p> <p>Hold up the first fractional sign. Check each group's fraction. Assure that the parts are about equal.</p> <p>For each of the following fractions, continue checking for accuracy. Also, incorporate in a verbal word problem. For example, "Ms. Golub would like to plant one fifth of this bed with cabbage. How much of the bed would be planted in cabbage?"</p>
Explore	4	<p><u>Parts of a Whole (10 minutes) - Outside</u></p> <p>When students are ready, begin expanding. Ask students to show you $\frac{2}{6}$ or $\frac{4}{5}$ with your word problems. Groups can demonstrate these fractions when getting checked.</p> <p>Another expansion would be asking for equivalent fractions. Give fractions such as $\frac{2}{4}$ and ask what other fraction would show the same amount.</p>
	5	<p><u>Parts of a Set (5 minutes) - Outside</u></p> <p>Before coming back into the classroom, ask students to collect one handful of natural objects (seeds, nuts, leaves, grasses, etc.).</p>
Explain	6	<p><u>Model Skill (5 minutes)</u></p> <p>Back in the classroom, students should lay out their natural objects. Model for students how to use the natural objects to show a fraction (on the fraction worksheet).</p> <p>Distinguish this from the fractions outside. Outside, students were dividing a whole into parts. Inside they will be finding fractions of a collection (in this case, their natural objects).</p>

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Elaborate	7	<u>Practice Skill (10 minutes)</u> Ask students to work through the worksheet showing the fractions with their objects. Students can work in groups or independently. Display good examples on the visualizer, and have students verbalize how they came up with their model.
Evaluate	8	<u>Quiz (5 minutes)</u> Ask students to draw their answer for one of the fractions and to explain why their picture represents that fraction.

Vocabulary

Understanding of the following terms is required in this activity.

Term	Definition
Numerator	the part of a fraction that is above the line
Denominator	the part of a fraction that is below the line
Fraction	a part of a whole
Whole	a number that is a natural number (as 1, 2, or 3)



Written by Christa Haverly

Name: _____

Date: _____

Fun with Fractions

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

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

3. $\frac{3}{5}$

4. $\frac{7}{10}$

