



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

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

## Student Exploration: Fraction Garden

**Vocabulary:** denominator, equivalent, fraction, greater than, less than, numerator

**Prior Knowledge Questions** (Do these BEFORE using the Gizmo.)

1. You are setting up water stations for a one-mile road race. You need four evenly spaced stations, including one at the end. Mark the locations of the water stations below.



2. How far do the runners have to go to get to the second water station? \_\_\_\_\_

3. How far is it from the starting line to the third water station? \_\_\_\_\_

### Gizmo Warm-up

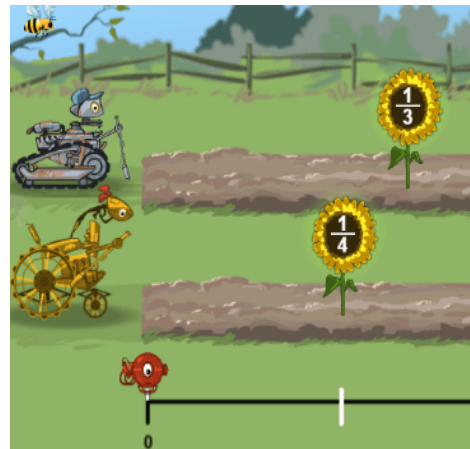
1. In the **Draw chalk marks** section, use the up arrow to set the value to 4. Click **Go Chalky!**

A. Into how many sections does Chalky divide the garden? \_\_\_\_\_

B. Are the sections Chalky makes the same size? \_\_\_\_\_

2. In the **Distance to travel** section, set the distance to  $\frac{3}{4}$  using the up and down arrows next to the fraction.


Then click **Go Bud!** to have Bud plant a flower at  $\frac{3}{4}$ .



A. With which of Chalky's marks does the flower line up? \_\_\_\_\_

B. What is the relationship between the number of chalk marks and the **denominator** (bottom number) of the fraction? \_\_\_\_\_



<b>Activity A:</b> <b>Comparing fractions</b>	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> <li>Under <b>Clear</b>, click on <b>Chalk</b> and <b>Gardens</b>.</li> </ul>	
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Bud and Blossom love to plant flowers in their gardens and give each other challenges.

1. Blossom challenges Bud to plant as many flowers as he can with a denominator of 5. (Hint: Use the up and down arrows to change the fraction in the **Distance to travel** section.) Click **Go Bud!** to plant the flowers in the garden.

A. Write all of Bud's fractions in order. \_\_\_\_\_

B. How do the positions of the flowers change as the **numerator** (top number) gets larger? \_\_\_\_\_

2. Now Bud challenges Blossom to plant five flowers with a numerator of 1.

A. Write all of Blossom's fractions in order. \_\_\_\_\_

B. How do the positions of the flowers change as the denominator gets larger?  
 \_\_\_\_\_

3. Clear the gardens. Use Bud to plant flowers at  $\frac{3}{10}$  and  $\frac{7}{10}$ . Bud then challenges Blossom to plant a flower in between his flowers. See if you can help Blossom meet this challenge.


A. Name a fraction Blossom can use to do this. \_\_\_\_\_

B. Describe how you found the fraction. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

4. Clear the gardens. Have Blossom plant flowers at  $\frac{1}{2}$  and  $\frac{1}{5}$ . Blossom then challenges Bud to plant a flower in between her flowers. Can you help Bud?

A. Name a fraction Bud can use to do this. \_\_\_\_\_

B. Describe how you found the fraction. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

<b>Activity B:</b> <b>Equivalent fractions</b>	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> <li>Under <b>Clear</b>, click on <b>Chalk</b> and <b>Gardens</b>.</li> </ul>	
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Bud challenges Blossom to a new game. She has to plant flowers in the same place as his, using fractions that are **equivalent** (equal, but with different numerators and denominators).

1. First, have Bud plant a garden of thirds ( $\frac{1}{3}$ ,  $\frac{2}{3}$ , and  $\frac{3}{3}$ ) and have Blossom plant a garden of sixths ( $\frac{1}{6}$ ,  $\frac{2}{6}$ ,  $\frac{3}{6}$ ,  $\frac{4}{6}$ ,  $\frac{5}{6}$ , and  $\frac{6}{6}$ ). Which pairs of flowers are perfectly lined up?

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2. Clear the gardens. Bud plants a flower at  $\frac{1}{2}$  and challenges Blossom to plant a flower that is perfectly lined up with his, using an equivalent fraction.

A. List all the fractions that Blossom could use to plant a flower that lines up with Bud's.

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B. Could a fraction with a denominator of 3 line up with Bud's flower at  $\frac{1}{2}$ ? Explain.

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3. Clear the gardens. Now Bud plants a flower at  $\frac{4}{6}$  and challenges Blossom to find *two* fractions that line up with his flower.

A. What two fractions should Blossom use? \_\_\_\_\_

B. Out of all 3 fractions, which one do you think is "simplest" and why? \_\_\_\_\_


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4. Now Blossom challenges Bud to find any two fractions that are equivalent.

A. What are two fractions that Bud could use? \_\_\_\_\_

B. Describe your method for finding these fractions. \_\_\_\_\_

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<b>Activity C:</b> <b>Garden visitors</b>	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> <li>Under <b>Clear</b>, click on <b>Chalk</b> and <b>Gardens</b>.</li> </ul>	
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Bud and Blossom’s gardens are visited by a friendly bee and some not-so-friendly weeds.

1. Under **Add mystery weeds** click on **Bud** to add a weed to Bud’s Garden.
  - A. Use Chalky to find a denominator that lines up with the weed. What is it? \_\_\_\_\_
  - B. Now use Bud to remove the weed. What fraction did you use? \_\_\_\_\_
  - C. Add 3 more weeds to Bud’s garden. Have Bud remove each of them. Mark the locations of the weeds and their fractions below. Use Chalky only if needed.



2. Clear the garden. Practice your estimating skills now with the help of the **bee**. Drag the bee to where you think  $\frac{2}{3}$  is located in the garden. (Also sketch it below.) Then have Bud plant a flower at  $\frac{2}{3}$ . If your estimate was accurate, the bee will drop down and pollinate the flower.



3. Sketch flowers where you think  $\frac{3}{4}$ ,  $\frac{5}{8}$ ,  $\frac{6}{12}$ , and  $\frac{7}{10}$  are located in the garden below. Check your answers in the Gizmo. (First place the bee carefully. Then plant a flower to check.)



4. Bud can’t resist one final challenge for Blossom. Have Bud plant flowers at  $\frac{2}{4}$  and  $\frac{3}{4}$ . Then have Blossom plant a flower between his.
  - A. What fraction did you find? \_\_\_\_\_
  - B. Describe how you found this fraction. \_\_\_\_\_

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