

Justification:

[CCSS.Math.Content.4.NF.A.1](#) Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

[CCSS.Math.Content.4.NF.A.2](#) Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

Objectives: Students will be able to:

- Find matching fractions using numbers and pictures
- Make equivalent fractions using different numbers as a numerator or denominator
- Match fractions in different picture patterns
- Compare fractions using numbers and patterns

Lesson Plan:

- 1) Each student will have their own computer to work on individually, whether it be a tablet or desktop (based on availability in school setting). Students can also work in pairs while gaining general understanding of simulation.
- 2) Students get to choose which level and/or tab to begin working on (Tab 1: Improper Fractions, Tab 2: Mixed Numbers)
- 3) Students drag objects or fractions onto the balance pan. They can also drag objects to the bottom in order to try a new match.
- 4) Students are required to check their answers and then a line chart shows up with an indication of relative number size and also a greater than or less than symbol.
- 5) Use the attached student recorder worksheet for students to draw their successful matches.
- 6) A smiley face indicates success, and the match created moves into the match boxes. Points are earned based on how many tries it takes to be successful. Each game has 6 challenges.
- 7) Students can use the REFRESH button to gain new objects at the same level.
- 8) Teachers and students can use the arrow to scroll to the front page and see which levels have been completed. Stars are used to show how many matches were made in a game.

Differentiation:

- Teachers may choose to assign levels or tabs using the Level Descriptions
 - Level 1 of both tabs has only circles and rectangles, exact matches, and simplified fractions
 - Beyond level 1, non-simplified fractions, (like $3/6$) are included in numbers and shapes
 - The complexity of the shapes increases with levels
- Teachers can assign partnerships based on ability levels, so that students below grade level are working with a student who can help him/her better understand the skills and concepts required to be successful
- Whiteboards/Scrap paper/Manipulatives can be used for students to do work before attempting a match via the simulation

Title: Fraction Matcher

Introduction: In this activity, you will investigate how to create equivalent fractions and mixed numbers.

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2. Click the “Play with sims” button.

3. Click “New Sims” -> Click “Fraction Matcher”->Click “Run Now!”

4. It will take time to load before appearing.

Exploration

1. Click the “Matching Game” tab on the sim. Click on “Level 1.”
2. Freely place fraction amounts on the balance and click “Check” to see if it’s a correct equivalent fraction match.
3. Try various matches.

Questions

1. How is the number line in the center of the screen used?
2. What do the yellow symbols in the middle represent?

Explanation

Click on the yellow button with shapes on the right of your screen under SCORE. Switch to “Level 2.”

Aim: What does the numerator of a fraction represent? What does the denominator represent?

Here are some concepts:

The top (numerator) of a fraction describes how many parts of the whole is shaded. The whole is shown on the bottom (denominator.) Example: $\frac{1}{4}$ means that 1 out of 4 pieces are shaded.

The shapes are shaded to show how a part of a whole. Example: This shape shows $\frac{1}{2}$ because one out of two parts are shaded.



Use the sim and fill in the blanks of the following table on the provided worksheet for 6 different equivalent fractions.

Match	Fraction 1	Fraction 2
Example		$\frac{3}{6}$
1		
2		
3		
4		
5		
6		
Challenge	$\frac{2}{10}$	
Challenge	$\frac{10}{12}$	
Challenge	$\frac{3}{9}$	
Challenge	$1 \frac{3}{7}$	

Application Phase

Continue to play the game to create various equivalent fractions. Write your scores below:

Level 2:

Level 3:

Level 4:

Level 5:

Conclusion Explain what you learned from this simulation. What was your reasoning for matching two fractions with one another? Use two examples of your evidence.

Finished: Congratulations!