

Fraction Matcher PhET Simulation Lesson Grades 3-5 by Molly Martin

Overarching Understandings and Essential Questions:

- * Problem solvers use mathematical models to translate real world situations into representations that can be used to find/defend solutions.
- * How do you create a model to use in problem solving?

Mathematical Practices:

- * Developing mathematical practices are processes and proficiencies necessary to flexibly use skills and concepts in multiple contexts.

Students will know:

- * Key Vocabulary: equivalent, mixed number, fraction greater than one (improper fraction), number line, model, whole, part
- * Compare fractions and mixed numbers
- * Convert fractions greater than one to mixed numbers

Students will be able to:

- * Use models and number lines to identify and compare fractions and mixed numbers
- * Convert fractions greater than one (improper fractions) to mixed numbers

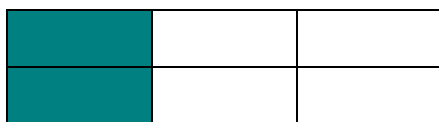
Prior Knowledge:

- * Convert fractions greater than one to mixed numbers (gr. 4/5):

$$43/20 = 20/20 + 20/20 + 3/20 = 2 \frac{3}{20} \text{ [Build a Fraction and Fraction Matcher}$$

PhET sims could be used for remediation]

- Identify fractional models (gr. 3)



$$2/6 = 1/3$$

- Plot fractions on a number line (gr. 3-5) [[Fraction Intro](#) PhET sim could be used for remediation]

Materials:

- * PhET Fraction Matcher simulation:
- * desktop, Chromebook, tablet, or laptop for each pair of students
- * number line paper and fraction manipulatives as needed

Fraction Matcher PhET Simulation Lesson Grades 3-5
by Molly Martin

* Pairs Check recording sheet

Introduction:

* Using number line paper, students will work in partners to locate and record as many fractions as possible between 0 and 3.

0 _____ 1 _____ 2 _____ 3

I do, we do, you do.... (This is a gradual release/scaffolding structure that allows kids to be independent learners after teacher guidance.)

* Teacher will model how to access phet.colorado.edu, Elementary School, Fraction Matcher sim.

* Students will have the opportunity to explore the Fraction Matcher sim independently or in pairs for about 5 minutes, and share with others what they discovered about the navigation, levels, as well as tools, etc.

A possible prompt may be: **What is the first part of this sim that grabbed your attention or that you wanted to interact with? Be prepared to share.**

* Discuss the number line tool and how it relates to fractions.

* Discuss the balance scale and the fraction models.

* Discuss greater than, less than, and equivalence.

* Distribute one Pairs Check recording sheet to each pair and discuss expectations; students will work in pairs, and each student will earn the same grade since they are checking each other's work and initialing that they agree with each solution.

Guided Exploration:

- Using Fraction Matcher sim and the Pairs Check recording sheet, students will navigate, explore and advance through the levels (recording equivalent fractions and mixed numbers). The teacher may model these directions/expectations by playing one round with another student in order to learn how to play and set the tone.

Fraction Matcher PhET Simulation Lesson Grades 3-5
by Molly Martin

- Pairs Check is a cooperative learning structure that allows students to monitor their own work, as well as that of their partner. Each student takes turns working through (while showing work and talking through each step) and ultimately solving a problem on the sim and recording the match (equivalent fraction) on their paper. Their partner then needs to “check” their work, and if they agree with the solution, they initial the problem.
- Depending on the level of students, they may start with (or stay on) the “fractions” level before moving to “mixed numbers”.

Interventions/Extensions:

* Double Pairs Check is taking it one step further to have four pairs of eyes on the work in order to check for accuracy. After pairs complete recording sheet, they can trade with another pair.

* Advanced students can write their own fractions for matching using the level 8 template, and then trade with a partner to solve.

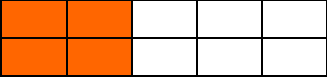
* Students who may need additional support can pair up with an advanced student. This partnership can create a successful learning experience for both students.

Fraction Matcher PhET Simulation Lesson Grades 3-5
by Molly Martin

Name: _____

Name: _____

PhET Fraction Matcher Simulation
Pairs Check

<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;"> <p>1 <u>MM</u></p> </div> </div> <p style="text-align: center; margin-top: 20px;">$4/10 = 2/5$</p>	<div style="text-align: center;"> <p>1 <u>IM</u></p> </div> <p style="text-align: center; margin-top: 20px;">$34/21 = 21/21 + 13/21 = 1 \frac{13}{21}$</p>
2 _____	2 _____
3 _____	3 _____
4 _____	4 _____
5 _____	5 _____
6 _____	6 _____
7 _____	7 _____
8 _____	8 _____
9 _____	9 _____
10 _____	10 _____