

# Baldermath

Design Document

# Game Overview

## Game Concept:

The game is for prospective teachers. The core experience of the game is of mindfully attending to the details of student mathematical work. Teacher educators can use this game to exemplify how accomplished teachers think about student work.

## Genre:

Party game, ala Balderdash/Wait Wait Don't Tell Me/Fictionary

## Target Audience:

The intended audience of this game are prospective teachers in general. More specifically, the targets are the teacher candidates at the WW Academy.

# Gameplay and Mechanics

## In Summary, How Does this Game Work?

There's a teacher trying to figure out who the Real Student is; there are student who are all trying to create work that makes the teacher think that their work is the genuine article. This means that everybody is asking themselves the question: *what does real student mathematical thinking look like?*

## Gameplay:

### Game Progression

The game is for a group of 4+ players. (I suppose the game *could* be played with 3, but that seems like it would be less fun.)

- **Intro Round: Inspect a Sample of Student Work:** Not everyone will be familiar with what 4th Grade student work on fractions will look like. In this intro activity, everyone inspects a piece of student work, just to get their feet wet. (e.g. student work often has pictures; often has a mix of right and wrong ideas; usually more than just a number answer, etc.)
  - This is currently in a Desmos activity. ([link](#))
  - After everyone completes the Desmos activity, each player should share something they see in the student work.

- **Choose the Teacher:** One player takes the role of the teacher. Their job is to inspect the work and decide which one came from an actual student. After each round a different player becomes the teacher.
- **Choose the Real Student:** One player takes the role of an actual student. Their task is to study a student's work and give a rationale for the student's thinking to the teacher. After each round all the students roll a die to determine who is the Real Student. The highest roll wins, roll-off to break ties. *THE TEACHER CAN'T SEE THIS SELECTION PROCESS. BLINDFOLD OR SEND THEM AWAY.*
- **Everyone else is a Bluff Student:** Their task is to convince the teacher that they are the Real Student.
- **While the teacher is away, hand out the real work from the "Real Work" pile and select the blanks.**
- **The students create their work:** The teacher should not be able to see the students create their work. They students create two things, both of which are important:
  - Student work, as you would see on a page.
  - A teacherly explanation of what the student was doing, which is the *rationale* of their work.
  - The **Real Student** has a copy of actual student work with an error, and is copying that work in their own handwriting and writing a rationale that explains how this student arrived at their work.
  - The **Bluff Students** only have a copy of the math problem; they are creating their own solution with an incorrect answer. They are also preparing their rationale, in order to convince the teacher that their work is the work of an actual student.
- **The teacher analyzes the work:** The teacher picks up each piece of student work and tries to decide if it came from a Real or Bluff Student. For each piece of student work, the Student who produced it provides the rationale that they wrote for it.
- **The teacher tries to identify the Real Student:** The teacher announces their decision. The students share who was the Real/Bluff students.
- **Points**
  - 2 points per round
  - If the teacher guesses correctly, the teacher and the real student get 1 point each
  - If a bluff student successfully bluffs, they get 2 points for the round
- **Pick another Teacher, and play another round.**
- **Post-activity:** Another Desmos activity ([link](#))

## Could it Be Digital?

It's very hard to create genuine-looking student work in a digital interface, unless participants have digital paper or those special computer pens (and even then).

One way to make this digital would be to collect the work of Real/Bluff students from live gameplay and digitally assign players to this work. Then, they have to type the rationale for the student work, rather than producing it. It's possible to imagine versions of this game without a teacher, where nobody knows who was given the genuine mistake, and each player is trying to decide on which of the group's mistakes was genuine. The role of the rationales is then heightened. It's probably worth a shot testing this version of the game live, to see if it's plausible to play it digitally.


# Materials

## STUDENT WORK (Print one for each player)


*Intro Round: This is what a 4th Grader's Work Might Look Like (This could be a [Desmos assessment?](#))*

### Assessment: Comparing Fractions

Circle the fraction that is larger in each pair. Explain how you decided which is larger.

1.  $\frac{3}{8}$       

2.  $\frac{2}{3}$       

3.  $\frac{3}{4}$       

# Round 1: Which is larger?

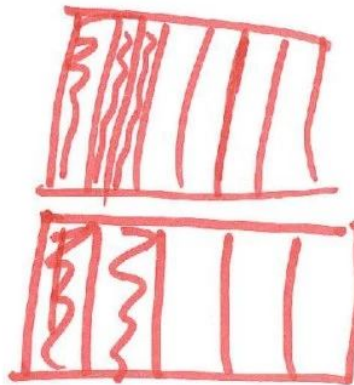
Which is larger?

$$\frac{2}{3} \text{ or } \frac{3}{2} \quad \frac{3}{2}$$

$$\frac{2}{3} \text{ or } \frac{3}{4} \quad \text{same thing.}$$

$$\frac{2}{5} \text{ or } \frac{3}{10} \quad \frac{2}{5}$$

$$\frac{3}{7} \text{ or } \frac{2}{5} \quad \frac{2}{5}$$



## Round 2: Adding Fractions

3.  $\frac{1}{2} + \frac{3}{8} = \frac{3\frac{1}{8}}{4}$  ✓

$\frac{1}{2} + \frac{2}{8} = \frac{3}{4}$   ~~$\frac{2}{8} = \frac{1}{4}$~~

$\frac{3}{4} + \frac{1}{8} = \frac{3\frac{1}{8}}{4}$

## Round 3: From Least to Greatest

2. Place the following fractions on the number line in order from least to greatest.

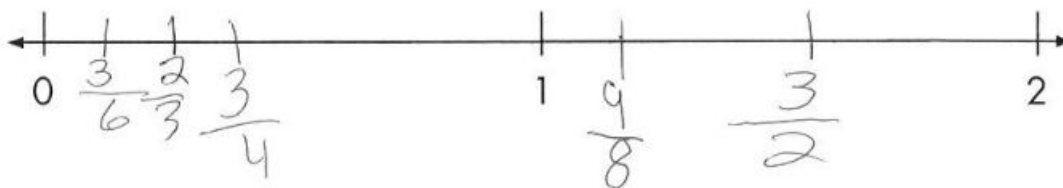
$$\frac{3}{2}$$

$$\frac{3}{4}$$

$$\frac{2}{3}$$

$$\frac{9}{8}$$

$$\frac{3}{6}$$





## Round 4: Sharing Crackers

2. If 8 people share 44 crackers equally, how many crackers does each person get?

5.8

5 and  $\frac{1}{8}$

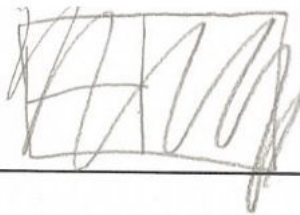


## Round 5: Greater Than One

"Fractions can be greater than 1."

Tell whether you agree, disagree or are unsure about this statement and why.

<sup>do not</sup>  
I agree because



if you have  $1\frac{1}{2}$  it is a fraction of 2. It

is always a fraction if it has something like

this:  $\frac{1}{2}$

# ***Blank Student Work Cards: (Print one per player)***

Round 1:

Which is larger?

$$\frac{2}{3} \text{ or } \frac{3}{2} ?$$

$$\frac{2}{3} \text{ or } \frac{3}{4} ?$$

$$\frac{2}{5} \text{ or } \frac{3}{10} ?$$

$$\frac{3}{7} \text{ or } \frac{2}{5} ?$$

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**What did the student do?**

*Round 2*

$$\frac{1}{2} + \frac{3}{8} = \underline{\hspace{2cm}}$$

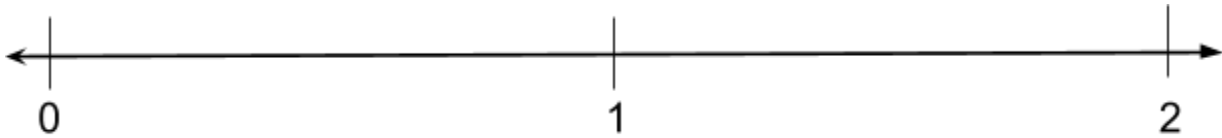
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**Rationale:**

Round 3:

Place the following fractions on the number line in order from least to greatest.

$$\frac{3}{2} \quad \frac{3}{4} \quad \frac{2}{3} \quad \frac{9}{8} \quad \frac{3}{6}$$



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**What did the student do?**

*Round 4:*

If 8 people share 44 crackers equally, how many crackers does each person get?

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**What did the student do?**

*Round 5:*

“Fractions can be greater than 1.” Tell whether you agree, disagree or are unsure about this statement and why.

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**What did the student do?**

# **Example Gameplay [Insert example here]**

**Original Version**

**Digital Version**

**07/16 Playtesting Notes**