OP E

Add and subtract fractions with unlike denominators (e.g., 2 and 7) using models and symbols

Equals Game

Description

This is a series of games to be played in pairs, which will take students from building and naming equivalent fractions, through to building and naming addition and subtraction equations. Students compose and decompose fractions in order to add and subtract using cards (fractions, equals sign and operation cards) and relational rods.

Mathematics

By exploring equivalence, students develop an understanding that equivalent fractions are simply different ways of naming the same quantity. In these games, students build a visual representation to match a corresponding fraction card. This builds a connection between visual representations and notational representations of fractions. These connections allow students to apply their understanding of equivalence in order to add and subtract fractions.

Curriculum Connections

Students will:

- demonstrate and explain the concept of equivalent fractions using concrete materials;
- use a variety of strategies to solve problems involving adding and subtracting of fractions;
- solve problems involving addition and subtraction with simple fractions.

Instructional Sequence

GAME 1 – Equivalent Fractions Game

1. In pairs, Player 1 places one fraction card (available on BLM 1) on one side of the equals sign tent card. Player 2 must find a matching equivalent fraction card and place it on the other side of the equals sign.
2. Students represent both fractions using relational rods and record on BLM 2.
3. Repeat steps 1 and 2 as frequently as desired. Students may create additional fractions cards as needed.

GAME 2 – Adding and Subtracting Operations Game

4. In pairs, Player 1 places one fraction card on one side of the equals sign tent card and Player 2 must find a pair of fraction cards with an equivalent sum. (Example: ____=____+____) Play a few rounds. Encourage students to use the relational rods as the site of the problem solving, in addition to justifying their equivalent sum.
5. Now more than one card can go on either side or both sides of the equals sign. Use operations cards (or blank cards/sticky notes) to write addition signs to make both sides equal. (Example: ____+____=____+____)
6. Repeat steps 4 and 5 using subtraction operation cards. Record your thinking as you go.
7. Identify other equations that are also true (Example: ____+____=____+____ - ____)

Highlights of Student Thinking

Students may:

- easily represent their thinking in fractional notation but struggle to represent their thinking using the relational rods, or vice versa;
- guess and check, and rely on learning conversations with their peer or teacher for support;
- resist cooperation, which may hamper the quality of student thinking (encourage math-talk and collaborative problem solving with the materials for the game).

Key Questions

1. How do you know that you are right? Can you prove it?
2. Can you show fractions greater than a whole?
3. What 3 fractions could you use to make an equivalent sum?

Materials

- BLM 1 (copied, cut, one set per pair)
- BLM 2 (one copy per student)
- Relational rods (one set per pair)
- Blank cards/sticky notes for operations (+ and -) as well as additional fractions if needed