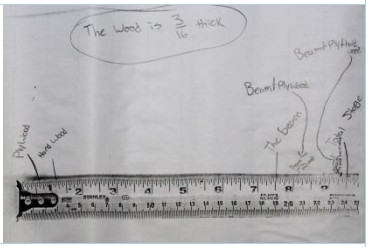
Operation D

Add and subtract fractions with friendly but unlike denominators (e.g., 2 and 10) using models and symbols

Building a Stage

Description

Students will determine an unknown measure by using a tape measure as a number line. Within the context of building a stage using layers of different types of wood, students will find the sum of friendly but unlike denominators. This will help them to understand the need for common units (denominators) when adding fractions.



Mathematics

This is a real world task with connections to building and measuring with an Imperial tape measure, allowing students to add different types of fractions using a number line. Students work with friendly but unlike denominators in a more concrete way then just finding common denominators. They also engage in developing strategies for adding the fractions together by finding common units or by adding on using the tape measure (number line).

Curriculum Connections

Students will:

- add fractions with friendly but unlike denominators;
- determine equivalent forms of a fraction;
- compose/decompose fractions.

Instructional Sequence

1. Partner students and introduce the task, including an overview of how to use/read an imperial measuring tape.
2. Provide students BLM 1 and BLM 2. Allow them to complete the task.
3. Highlight different strategies that students used by purposely choosing students that solved the problem using different strategies. Have students identify the similarities and differences between the strategies.
4. Have students complete BLM 3 independently.

Highlights of Student Thinking

Students may:

- place the thicknesses on the tape measure number line individually rather than consecutively;
- multiply all the denominators together to find a common denominator;
- need to be encouraged to convert improper fractions to mixed numbers;
- place either the biggest thickness or the smallest thickness on the number line first. Both are correct; however, starting with the larger thickness mirrors the Primary strategy ‘counting on’ which may leave less room for errors;
- be strategic about the order in which they add the numbers together based on the fractional units (start with sixteenths because they are the smallest units or start with half because it is the largest unit).

Key Questions

1. How did you put halves, eighths and sixteenths on your number line?
2. How did you additively place your thicknesses on the tape number line? Which thickness did you start with and why?
3. How did you compare the different types of fractions (proper, improper and mixed)?
4. Is there a different way you could have combined the fractions?

Materials

BLM 1 (one copy/two pairs; cut)
imperial tape measures (optional)

BLM 2 (one copy/pair)
graph paper (optional)

BLM 3 (one copy/student)