

## Mixed Numbers and Improper Fractions

**STRAND:** Computation and Estimation

**STRAND CONCEPT:** Rational Numbers and Proportional Reasoning

**SOL 5.6a, 6.5b**

### Remediation Plan Summary

Using manipulatives, student discover how mixed numbers and improper fractions are related.

### Errors and Common Misconceptions

- Some students struggle to understand that a mixed number can be written as a fraction using the denominator of the fraction. For example,  $2\frac{2}{3}$  can be written as  $\frac{6}{3}$  combined with  $\frac{2}{3}$ .
- Some students look at a fraction as two distinct whole numbers instead of understanding that the denominator indicates how many parts make a whole and the numerator indicates how many parts of the whole you are discussing.
- Some students confuse the procedure and add the denominator to the whole number and multiply by the numerator.

### Materials

Any of the following; Pattern Blocks, Fraction tiles, paper (cut into equal sized pieces)

### Introductory Activity

Sal walked  $1\frac{1}{2}$  miles. He tracked his time every  $\frac{1}{2}$  mile of the walk. How many half mile intervals did he walk? How could you write this amount as an improper fraction?

### Plan for Instruction

1. Hand each student a set of manipulatives or several sheets of paper and establish the whole. (For example: with the pattern blocks say, “*The hexagon represents one whole.*” Or with the paper, “*one whole sheet represents one whole...*”)
2. Have students represent  $1\frac{1}{2}$  using one whole and one  $\frac{1}{2}$ -sized piece. Ask, “*How else can we represent  $1\frac{1}{2}$ ?*” Encourage students to make as many models as they can (this will reinforce equivalent fractions). Select several students to present their representations. If three halves was not presented, display and discuss this model. Have students record their representations as fractions or mixed numbers.
3. Next have students represent  $1\frac{3}{4}$  multiple ways. Again have students present their models and have them write the fractions represented. Make sure you focus on the  $\frac{7}{4}$  model the most. Ask, “*How are  $1\frac{3}{4}$  and  $\frac{7}{4}$  related?*”, “*Without the models, how could we convert  $1\frac{3}{4}$  to  $\frac{7}{4}$  and vice versa?*” Have students discuss with a partner their thoughts.
4. Give students more mixed numbers to model until you feel they are able to verbalize how to convert from one to the other.

***Pulling It All Together (Reflection).***

When converting a mixed number to an improper fraction, explain why multiplying the whole number by the denominator and adding it to the numerator makes sense.

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