

Fraction Riddles

Reporting Category Computation and Estimation

Topic Adding and subtracting fractions

Primary SOL 4.5 The student will

b) add and subtract fractions having like and unlike denominators that are limited to 2, 3, 4, 5, 6, 8, 10, and 12, and simplify the resulting fractions, using common multiples and factors.

Related SOL 4.5a, d

Materials

- Sets of fractions strips (see the “Fraction Strip Addition” or “Fraction Strip Subtraction” activities) or another region/area model
- Fraction Chart (attached)

Vocabulary

fraction, mixed number, improper fraction, like denominators, unlike denominators, estimation, simplify, simplest form, factor, least common denominator, common factors, common multiples, greatest common factor (GCF), least common multiple (LCM), add, sum, subtract, difference

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Note: In this activity, students continue their practice of adding and subtracting fractions, using region/area models. This is not intended to be a complete lesson.

1. Group students in pairs, and give each pair a set of fraction strips or other region/area model and a copy of the attached Fraction Chart. Each pair might use a different fraction manipulative. Pose the following riddles to the class, one at a time. Ask the pairs to find as many *different* solutions to the riddles as they can, using only fractions from the chart. Display responses. After Riddle 1, have students share their reasoning for their choices.

RIDDLES

Riddle 1: I have two fractions whose sum is more than $\frac{1}{2}$ but less than 1. What two fractions from the chart might I have?

Riddle 2: I have two fractions whose difference is less than $\frac{1}{2}$. What two fractions from the chart might I have?

2. Have each student choose two fractions from the chart and either add or subtract them. Then, have each student tell his/her partner the result of the addition or subtraction, and instruct each partner to guess the original fractions. Choose several student pairs to share their solutions with the class.
3. Have each student make up a riddle, using fractions from the chart, and then challenge his/her partner to solve it.

Assessment

- **Questions**
 - How could I use a number line from 0 to 1 to show the answers to the riddles?
 - Is there more than one correct answer to the riddles? How do you know?
- **Journal/Writing Prompts**
 - Find three fractions on the chart whose sum is less than 1, and prove your answer with a drawing or diagram. Explain your drawing.
 - Make up a riddle using fractions from the chart and then challenge your partner to solve it.
- **Other**
 - Assess students' reasoning to determine whether they are thinking mathematically and making reasonable choices or whether they are just guessing.
 - Assess the riddles that students created for their partners.

Extensions and Connections (for all students)

- To make this more challenging, have students take turns answering each riddle, and cross out the fractions as they use them.

Fraction Chart

$\frac{7}{8}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{3}$
$\frac{2}{5}$	$\frac{2}{3}$	$\frac{3}{4}$	$\frac{2}{4}$
$\frac{1}{8}$	$\frac{5}{8}$	$\frac{3}{6}$	$\frac{6}{8}$
$\frac{3}{5}$	$\frac{4}{5}$	$\frac{3}{8}$	$\frac{1}{5}$
$\frac{9}{10}$	$\frac{7}{12}$	$\frac{3}{10}$	$\frac{5}{12}$