

Four in a Row

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)
- Four-in-a-Row Fraction Chart (attached)
- Four-in-a-Row Game Board (attached)
- Four-in-a-Row Recording Sheet (attached)
- Board markers in two different colors
- Fraction strips or other manipulatives for subtracting fractions

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)

1. Present the following word problem to the class: “One-half of the students in Mr. Joy’s class bought lunch yesterday, while three-eighths of the students brought their lunch. The remainder of the class went home before lunch. What fractional part of the class went home before lunch?” Have the students work in pairs to solve this problem.
2. After the problem has been solved and discussed, give each pair of students a copy of the Four-in-a-Row Fraction Chart, a copy of the Four-in-a-Row Game Board, and two copies of the Four-in-a-Row Recording Sheet. Also give each pair piles of board markers in two colors. Have the pairs play the Four-in-a-Row Game, as follows:
 - Each pair of students decides who goes first.
 - Player 1 chooses from the fraction chart two fractions that can be added or subtracted to get one of the answers shown on the game board. Player 1 must demonstrate the problem with the fraction strips or another manipulative, after which he/she may cover the answer on the board with a marker. Once a fraction has been covered, it may not be used again.
 - Both players record the problem and its solution on their recording sheet.
 - Player 2 now takes a turn.

- Play continues until someone covers four fractions in a row—horizontally, vertically, or diagonally.

Assessment

- **Questions**

- How do manipulatives help with solving these problems? Are there other methods to solving these problems? If so, what are they?
- Is there more than one way to get an answer on the game board?

- **Journal/Writing Prompts**

- Explain how you would choose sums and differences to include on a new Four-in-a-Row game board to use the next time you play.
- Choose an addition or subtraction problem you created during this game, and draw a picture to model the process of finding the answer.
- Choose an addition or subtraction problem you created during this game, and write a word problem that fits that problem.

Four-in-a-Row Fraction Chart

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

Four-in-a-Row Game Board

| | | | |
|-----------------|----------------|----------------|---------------|
| $\frac{1}{4}$ | $\frac{3}{8}$ | $\frac{2}{3}$ | $\frac{1}{2}$ |
| $\frac{3}{4}$ | $\frac{1}{12}$ | $\frac{7}{8}$ | $\frac{1}{8}$ |
| $\frac{5}{8}$ | $\frac{1}{12}$ | $\frac{11}{8}$ | $\frac{3}{2}$ |
| $\frac{13}{10}$ | $\frac{9}{8}$ | $\frac{5}{4}$ | 0 |

Four-in-a-Row Recording Sheet

| Fraction | Operation (+) or (-) | Fraction | Sum or Difference |
|----------|-------------------------|----------|----------------------|
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