Estimate Fraction Sums

Estimate Fraction Sums with Circle Pieces
Mr. Moreno's class has \( \frac{3}{4} \) of a pizza left in one box and \( \frac{2}{3} \) of a pizza left in a second box.

1. Mr. Moreno suggested that Kathy take home the leftover pizza. As she packed up the pizza, she wondered whether it would all fit in one box.

A. If the pieces are combined, will they make more or less than one pizza?
B. Use fraction circle pieces to model the problem. Is \( \frac{3}{4} + \frac{2}{3} \) more than 1 or less than 1? Explain your reasoning.

2. Kathy and Romesh each received a large chocolate chip cookie. Each cookie was as large as a cake. Kathy gave her friend Irma \( \frac{3}{4} \) of her cookie. Later, Romesh gave Irma \( \frac{1}{2} \) of his cookie.

A. Did Irma receive more or less than \( \frac{1}{2} \) cookie altogether? How did you decide?
B. Use fraction circle pieces to model \( \frac{3}{4} + \frac{1}{2} \). Is \( \frac{3}{4} + \frac{1}{2} \) more or less than \( \frac{1}{2} \)?

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Estimate Fraction Sums (SG pp. 86–88)

Questions 1–9

1. A. less than 1 pizza; Possible response: I know that \( \frac{3}{4} \) is a little less than \( \frac{1}{2} \) because it takes \( \frac{1}{2} \) to equal \( \frac{1}{2} \). That means that \( \frac{1}{2} \) pizza + \( \frac{2}{3} \) pizza will be a little less than 1 whole pizza.

B. \( \frac{3}{4} \); less than 1

2. A. more than \( \frac{1}{2} \) a cookie; Possible response: I thought about circle pieces. The yellow piece for \( \frac{1}{4} \) is smaller than the orange piece for \( \frac{1}{3} \). If it takes only 2 yellow pieces to equal \( \frac{1}{2} \), then 1 yellow and 1 orange will be bigger than \( \frac{1}{2} \).

B. \( \frac{3}{4} \); more than \( \frac{1}{2} \)

3. A.* less than 1
   B. less than 1
   C.* greater than 1
   D. greater than 1
   E. greater than 1
   F. less than 1
   G.* greater than 1
   H. less than 1
   G.* greater than 1
   H. less than 1

4. A. greater than \( \frac{1}{2} \)
   B.* less than \( \frac{1}{2} \)
   C. greater than \( \frac{1}{2} \)
   D. greater than \( \frac{1}{2} \)
   E. less than \( \frac{1}{2} \)
   F.* greater than \( \frac{1}{2} \)
   G. greater than \( \frac{1}{2} \)
   H. greater than \( \frac{1}{2} \)

5.* Explanations may vary. I know \( \frac{3}{8} + \frac{1}{4} = \frac{1}{2} \). I know \( \frac{1}{2} \) is greater than \( \frac{1}{2} \), so I can say that \( \frac{3}{8} + \frac{1}{4} \) is greater than \( \frac{1}{2} \).

6.* Examples and explanations will vary. Possible response for A: \( \frac{3}{8} + \frac{1}{4} \) is less than 1 whole, \( \frac{3}{8} \) = 1 whole. I already have \( \frac{3}{8} \). \( \frac{1}{4} \) is smaller than \( \frac{1}{4} \). So \( \frac{3}{8} + \frac{1}{4} \) is less than 1 whole.

7.* Examples and explanations will vary. Possible response for F: \( \frac{1}{4} + \frac{1}{4} \) is exactly \( \frac{1}{2} \). Thirds are greater than fourths. That means \( \frac{3}{8} \) is greater than \( \frac{1}{2} \).

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*Answers and/or discussion are included in the lesson.
8. A. Yes; $\frac{1}{3}$ makes 1 whole. After you add $\frac{2}{3}$ cup of milk to the cup, there will still be room for $\frac{1}{3}$ cup more. $\frac{1}{8}$ is smaller than $\frac{1}{3}$, so it will fit.

B. less than 1; Possible response: I thought about the fraction circle pieces. I used two orange pieces to show $\frac{2}{3}$ and then added one blue piece to show $\frac{1}{8}$. These three pieces did not fill the red circle so $\frac{2}{3} + \frac{1}{8}$ is less than 1 whole.

9. A. No; Possible response: Rosa’s answer is not reasonable because $\frac{3}{11}$ is smaller than $\frac{2}{3}$. If you are adding $\frac{2}{3}$ and $\frac{1}{8}$, your answer can’t be less than either of the two numbers you are adding.

B. No; When Rosa added the fractions, she added the numerators and then added the denominators. When you add fractions you don’t add denominators. You have to find common denominators. Eleven is not a common denominator for thirds and eighths. A common denominator would be 24.

Homework (SG p. 88)
Questions 1–3

1. more than an hour; Possible response: $\frac{3}{2}$ is larger than $\frac{1}{2}$. It is close to 1 whole. Since it takes $\frac{3}{2}$ to equal 1, $\frac{1}{2} + \frac{3}{2}$ will be greater than 1.

2. Yes; I know that $\frac{1}{2} = \frac{2}{4}$ so $\frac{3}{4} = \frac{6}{8}$. $\frac{6}{8} + \frac{7}{8} = \frac{13}{8}$ or 1 $\frac{5}{8}$. Since $\frac{1}{2} = \frac{4}{8}$, Ana will have an extra $\frac{1}{8}$ yard of ribbon.

3. A. less than 1

B. greater than 1

C. greater than 1

D. less than 1

E. Answers will vary. Possible response for Question 3C: $\frac{3}{4} + 1 = 1$ whole; $\frac{7}{6} = \frac{1}{4}$. $\frac{1}{4}$ is greater than $\frac{1}{4}$, so $\frac{3}{4} + \frac{7}{6}$ is greater than 1.
Estimate Fraction Sums with Number Lines

Use the number lines to solve these problems.

1. At the fabric store, sequins are sold in long strips wrapped on spools. Linda’s mother needs 2 yards of sequins to make costumes for the skating show. She found 1 yard of sequins remaining on one spool and 2 yards of sequins remaining on another spool. Did Linda’s mother find enough sequins for the costumes? Explain your reasoning.

2. Maya walked 2/3 of a mile on Saturday. She walked 1/6 of a mile on Sunday. Did she walk a full mile altogether? Explain how you decided.

3. Keenya divided a candy bar into 12 equal parts. She ate 1/6 of the candy bar on Wednesday. She ate 1/4 of the candy bar on Thursday. Did she eat more or less than 1/2 of the candy bar? Explain your reasoning.

4. Luis made cookies with his mother. He used 2 3/4 cups of flour in the sugar cookie recipe and 1 1/2 cups of flour in the oatmeal cookie recipe. Did he use more or less than 4 cups of flour altogether? Show or tell how you decided.

5. Estimate the sums for each problem. Decide if the sum will be greater or less than one.

   A. 3/4 + 1/2
   B. 3/4 + 11/12
   C. 3/4 + 1/12
   D. Explain your reasoning for Question 5B.