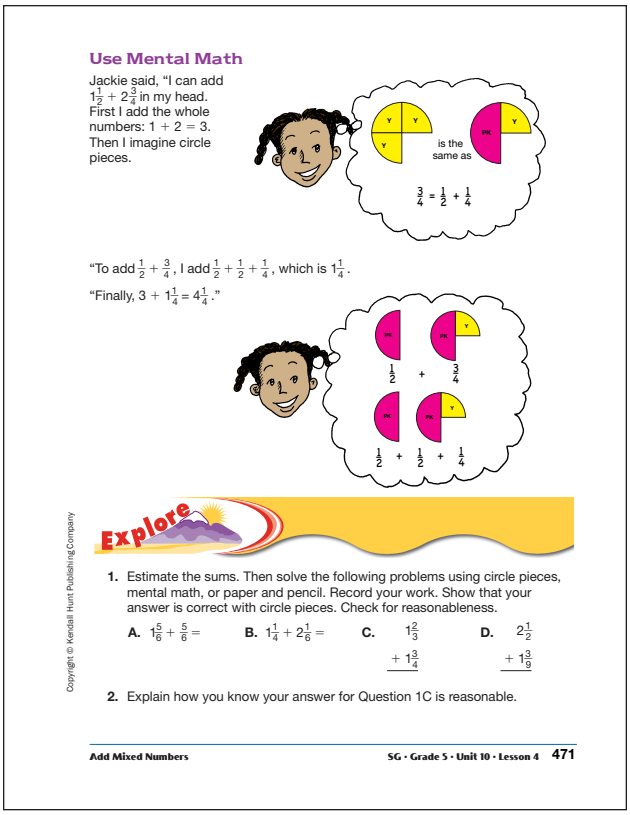

Use Mental Math

Jackie said, "I can add $1\frac{1}{2} + 2\frac{3}{4}$ in my head. First I add the whole numbers: 1 + 2 = 3. Then I imagine circle pieces.

"To add $\frac{1}{2} + \frac{3}{4}$, I add $\frac{1}{2} + \frac{1}{2} + \frac{1}{4}$, which is $1\frac{1}{4}$.

"Finally, $3 + 1\frac{1}{4} = 4\frac{1}{4}$."

Explore

1. Estimate the sums. Then solve the following problems using circle pieces, mental math, or paper and pencil. Record your work. Show that your answer is correct with circle pieces. Check for reasonableness.

   A. $1\frac{5}{6} + \frac{5}{6} =$ B. $1\frac{1}{4} + 2\frac{1}{6} =$ C. $1\frac{2}{3} + 1\frac{3}{4}$ D. $2\frac{1}{2} + 1\frac{3}{9}$

2. Explain how you know your answer for Question 1C is reasonable.

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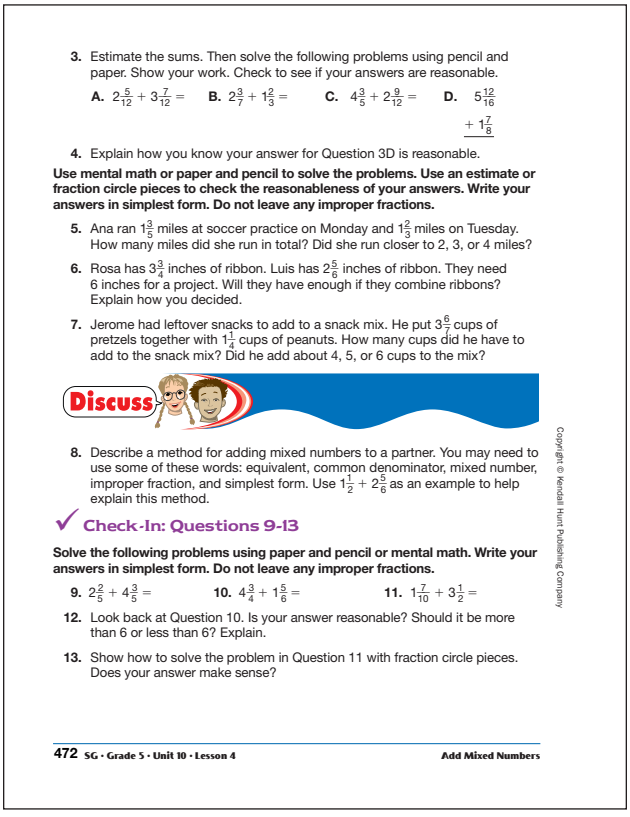

3. Estimate the sums. Then solve the following problems using pencil and paper. Show your work. Check to see if your answers are reasonable.

   A. $2\frac{5}{12} + 3\frac{7}{12} =$ B. $2\frac{3}{7} + 1\frac{2}{3} =$ C. $4\frac{3}{5} + 2\frac{9}{12} =$ D. $5\frac{12}{16} + 1\frac{7}{8}$

4. Explain how you know your answer for Question 3D is reasonable.

Use mental math or paper and pencil to solve the problems. Use an estimate or fraction circle pieces to check the reasonableness of your answers. Write your answers in simplest form. Do not leave any improper fractions.

5. Ana ran $1\frac{3}{5}$ miles at soccer practice on Monday and $1\frac{2}{3}$ miles on Tuesday. How many miles did she run in total? Did she run closer to 2, 3, or 4 miles?
6. Rosa has $3\frac{3}{4}$ inches of ribbon. Luis has $2\frac{5}{6}$ inches of ribbon. They need 6 inches for a project. Will they have enough if they combine ribbons? Explain how you decided.
7. Jerome had leftover snacks to add to a snack mix. He put $3\frac{6}{7}$ cups of pretzels together with $1\frac{1}{4}$ cups of peanuts. How many cups did he have to add to the snack mix? Did he add about 4, 5, or 6 cups to the mix?

Discuss

8. Describe a method for adding mixed numbers to a partner. You may need to use some of these words: equivalent, common denominator, mixed number, improper fraction, and simplest form. Use $1\frac{1}{2} + 2\frac{5}{6}$ as an example to help explain this method.

✓ Check-In: Questions 9-13

Solve the following problems using paper and pencil or mental math. Write your answers in simplest form. Do not leave any improper fractions.

9. $2\frac{2}{5} + 4\frac{3}{5} =$ 10. $4\frac{3}{4} + 1\frac{5}{6} =$ 11. $1\frac{7}{10} + 3\frac{1}{2} =$
12. Look back at Question 10. Is your answer reasonable? Should it be more than 6 or less than 6? Explain.
13. Show how to solve the problem in Question 11 with fraction circle pieces. Does your answer make sense?

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Add Mixed Numbers (SG pp. 471–472) Questions 1–13

Strategies will vary.

1. A. $2\frac{2}{3}$ B. $3\frac{5}{12}$ C. $3\frac{5}{12}$ D. $3\frac{5}{6}$
2. Possible response: 1 + 1 = 2; $\frac{2}{3}$ and $\frac{3}{4}$ are both more than $\frac{1}{2}$, and less than 1. Together they will be more than 1 and less than 2. So, the sum will be between 3 and 4.
3. A. 6 B. $4\frac{2}{21}$ C. $7\frac{7}{20}$ D. $7\frac{5}{8}$
4. Possible response: $5\frac{12}{16}$ is more than $5\frac{8}{16}$, so I know it is more than $5\frac{1}{2}$. $1\frac{7}{8}$ is close to 2. The sum will be about $5\frac{1}{2} + 2 = 7\frac{1}{2}$. $7\frac{5}{8}$ is very close to $7\frac{1}{2}$, so I know it is reasonable.
5. $3\frac{4}{15}$ miles; closer to 3 miles
6. Yes, they will have more that 6 inches of ribbon. $3\frac{3}{4} = 3\frac{9}{12}$. $2\frac{5}{6} = 2\frac{10}{12}$. $3\frac{9}{12} + 2\frac{10}{12} = 5\frac{19}{12}$ or $6\frac{7}{12}$ inches.
7. $5\frac{3}{28}$ cups; closer to 5 cups
8.* Answers will vary. The common denominator for the fractions $\frac{1}{2}$ and $\frac{5}{6}$ is 12. Find equivalent fractions with denominator 12. $\frac{1}{2}$ is equivalent to $\frac{6}{12}$ and $\frac{5}{6}$ is equivalent to $\frac{10}{12}$. Add the whole numbers 1 and 2 to get 3. Now, add the fractions $\frac{6}{12}$ and $\frac{10}{12}$ to get $\frac{6}{12}$. Converting this to mixed numbers, we get $1\frac{4}{12}$. Adding this to 3 we get $4\frac{4}{12}$. Reducing to simplest form the answer is $4\frac{1}{3}$.
9. 7 10. $6\frac{7}{12}$ 11. $5\frac{1}{5}$
12. Possible response: It will be more than 6. 4 + 1 = 5; $\frac{3}{4}$ and $\frac{5}{6}$ are each more than $\frac{1}{2}$. So $\frac{3}{4} + \frac{5}{6}$ is more than 1. So the sum is more than 5 + 1, which is 6.
13. 

$1\frac{7}{10}$ + $3\frac{1}{2}$

$\frac{17}{10} + \frac{35}{10} = \frac{52}{10} = 5\frac{2}{10} = 5\frac{1}{5}$

* Answers and/or discussion are included in the lesson.

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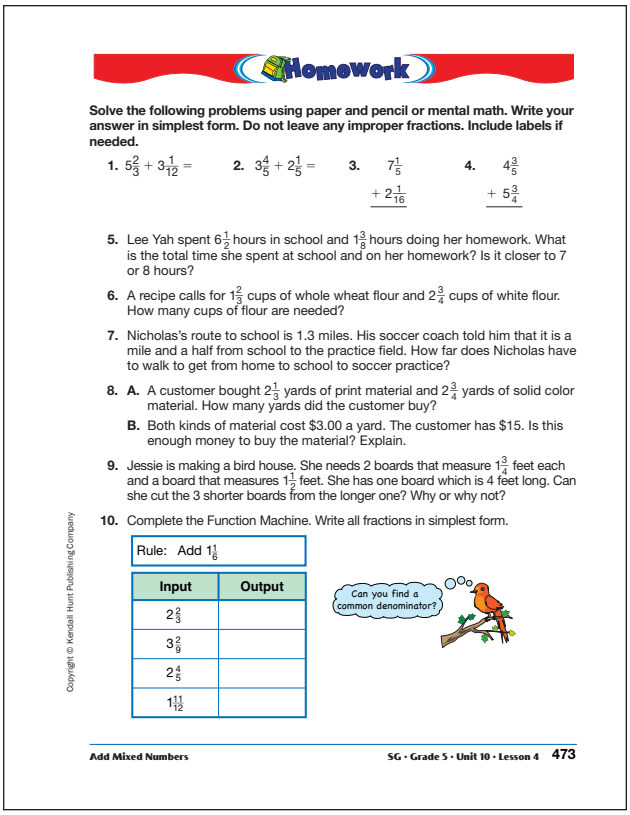
Homework (SG p. 473)
Questions 1–10

1. $8\frac{3}{4}$
2. 6
3. $9\frac{21}{80}$
4. $10\frac{7}{20}$
5. $7\frac{7}{8}$ hours; Closer to 8 hours
6. $4\frac{5}{12}$ cups
7. 2.8 miles or $2\frac{4}{5}$ miles
8. **A.** $5\frac{1}{12}$ yards

   B. No; since the material costs \$3.00 per yard, the customer can only buy 5 yards with \$15. The total amount of material is more than 5 yards, so the customer won't have enough money.
9. No. $1\frac{3}{4} + 1\frac{3}{4} = 3\frac{1}{2}$ ft.; $3\frac{1}{2} + 1\frac{1}{2} > 4$ ft.
10. Rule: Add $1\frac{1}{6}$

Input	Output
$2\frac{2}{3}$	$3\frac{5}{6}$
$3\frac{2}{9}$	$4\frac{7}{18}$
$2\frac{4}{5}$	$3\frac{29}{30}$
$1\frac{11}{12}$	$3\frac{1}{12}$



Homework

Solve the following problems using paper and pencil or mental math. Write your answer in simplest form. Do not leave any improper fractions. Include labels if needed.

1. $5\frac{2}{3} + 3\frac{1}{12} =$
2. $3\frac{4}{5} + 2\frac{1}{5} =$
3. $7\frac{1}{5} + 2\frac{1}{16}$
4. $4\frac{3}{5} + 5\frac{3}{4}$
5. Lee Yah spent $6\frac{1}{2}$ hours in school and $1\frac{3}{8}$ hours doing her homework. What is the total time she spent at school and on her homework? Is it closer to 7 or 8 hours?
6. A recipe calls for $1\frac{2}{3}$ cups of whole wheat flour and $2\frac{3}{4}$ cups of white flour. How many cups of flour are needed?
7. Nicholas's route to school is 1.3 miles. His soccer coach told him that it is a mile and a half from school to the practice field. How far does Nicholas have to walk to get from home to school to soccer practice?
8. **A.** A customer bought $2\frac{1}{3}$ yards of print material and $2\frac{3}{4}$ yards of solid color material. How many yards did the customer buy?

   B. Both kinds of material cost \$3.00 a yard. The customer has \$15. Is this enough money to buy the material? Explain.
9. Jessie is making a bird house. She needs 2 boards that measure $1\frac{3}{4}$ feet each and a board that measures $1\frac{1}{2}$ feet. She has one board which is 4 feet long. Can she cut the 3 shorter boards from the longer one? Why or why not?
10. Complete the Function Machine. Write all fractions in simplest form.

Rule: Add $1\frac{1}{6}$

Input	Output
$2\frac{2}{3}$	
$3\frac{2}{9}$	
$2\frac{4}{5}$	
$1\frac{11}{12}$	

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