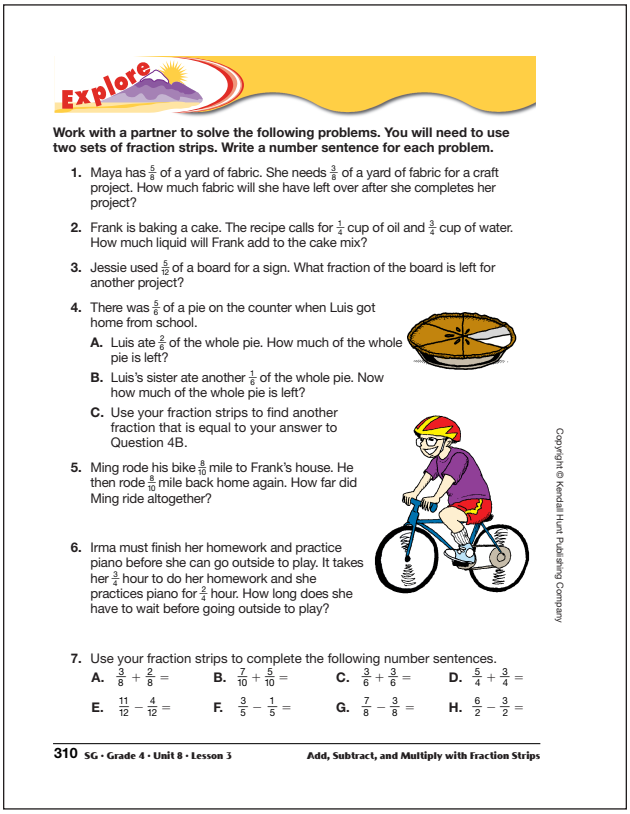

Explore

Work with a partner to solve the following problems. You will need to use two sets of fraction strips. Write a number sentence for each problem.

1. Maya has $\frac{5}{8}$ of a yard of fabric. She needs $\frac{3}{8}$ of a yard of fabric for a craft project. How much fabric will she have left over after she completes her project?
2. Frank is baking a cake. The recipe calls for $\frac{1}{4}$ cup of oil and $\frac{3}{4}$ cup of water. How much liquid will Frank add to the cake mix?
3. Jessie used $\frac{5}{12}$ of a board for a sign. What fraction of the board is left for another project?
4. There was $\frac{5}{6}$ of a pie on the counter when Luis got home from school.
   - **A.** Luis ate $\frac{2}{6}$ of the whole pie. How much of the whole pie is left?
   - **B.** Luis's sister ate another $\frac{1}{6}$ of the whole pie. Now how much of the whole pie is left?
   - **C.** Use your fraction strips to find another fraction that is equal to your answer to Question 4B.
5. Ming rode his bike $\frac{8}{10}$ mile to Frank's house. He then rode $\frac{8}{10}$ mile back home again. How far did Ming ride altogether?
6. Irma must finish her homework and practice piano before she can go outside to play. It takes her $\frac{3}{4}$ hour to do her homework and she practices piano for $\frac{2}{4}$ hour. How long does she have to wait before going outside to play?
7. Use your fraction strips to complete the following number sentences.
   - **A.** $\frac{3}{8} + \frac{2}{8} =$ **B.** $\frac{7}{10} + \frac{5}{10} =$ **C.** $\frac{3}{6} + \frac{3}{6} =$ **D.** $\frac{5}{4} + \frac{3}{4} =$
   - **E.** $\frac{11}{12} - \frac{4}{12} =$ **F.** $\frac{3}{5} - \frac{1}{5} =$ **G.** $\frac{7}{8} - \frac{3}{8} =$ **H.** $\frac{6}{2} - \frac{3}{2} =$

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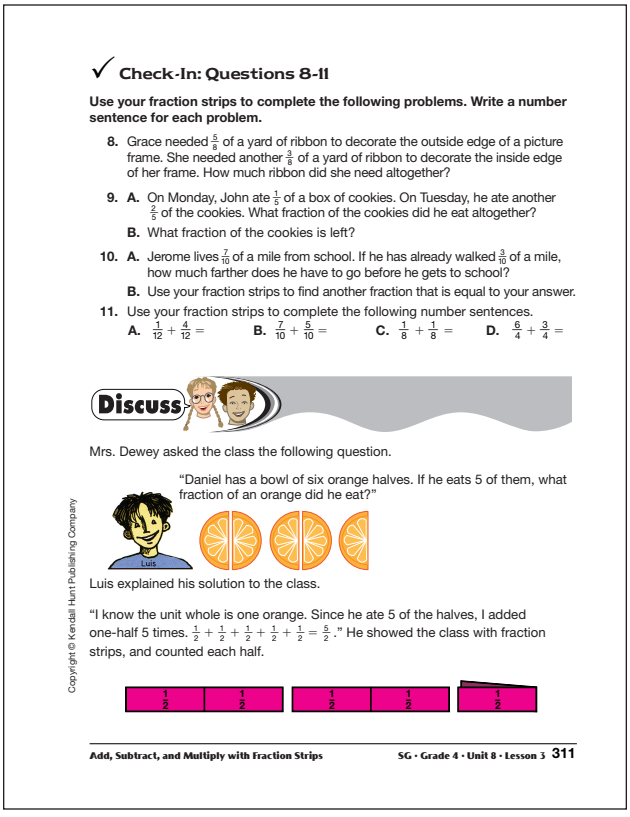

✓ Check-In: Questions 8–11

Use your fraction strips to complete the following problems. Write a number sentence for each problem.

8. Grace needed $\frac{5}{8}$ of a yard of ribbon to decorate the outside edge of a picture frame. She needed another $\frac{3}{8}$ of a yard of ribbon to decorate the inside edge of her frame. How much ribbon did she need altogether?
9. **A.** On Monday, John ate $\frac{1}{5}$ of a box of cookies. On Tuesday, he ate another $\frac{2}{5}$ of the cookies. What fraction of the cookies did he eat altogether?
   - **B.** What fraction of the cookies is left?
10. **A.** Jerome lives $\frac{7}{10}$ of a mile from school. If he has already walked $\frac{3}{10}$ of a mile, how much farther does he have to go before he gets to school?
    - **B.** Use your fraction strips to find another fraction that is equal to your answer.
11. Use your fraction strips to complete the following number sentences.
    A. $\frac{1}{12} + \frac{4}{12} =$ **B.** $\frac{7}{10} + \frac{5}{10} =$ **C.** $\frac{1}{8} + \frac{1}{8} =$ **D.** $\frac{6}{4} + \frac{3}{4} =$

Discuss

Mrs. Dewey asked the class the following question.

"Daniel has a bowl of six orange halves. If he eats 5 of them, what fraction of an orange did he eat?"

Luis

Luis explained his solution to the class.

"I know the unit whole is one orange. Since he ate 5 of the halves, I added one-half 5 times. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{5}{2}$." He showed the class with fraction strips, and counted each half.

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Student Guide

Questions 1–19 (SG pp. 310–313)

1.* $\frac{2}{8}$ yd; $\frac{5}{8} - \frac{3}{8} = \frac{2}{8}$

2.* $\frac{4}{4}$ or 1 cup; $\frac{3}{4} + \frac{1}{4} = 1$ or $\frac{3}{4} + \frac{1}{4} = \frac{4}{4}$

3.* $\frac{7}{12}$ board; $1 - \frac{5}{12} = \frac{7}{12}$ or $\frac{12}{12} - \frac{5}{12} = \frac{7}{12}$

4.* **A.** $\frac{3}{6}$ pie; $\frac{5}{6} - \frac{2}{6} = \frac{3}{6}$

B. $\frac{2}{6}$ pie; $\frac{3}{6} - \frac{1}{6} = \frac{2}{6}$

C. $\frac{1}{3}$, $\frac{3}{9}$, or $\frac{4}{12}$

5.* $\frac{16}{10}$ or $1\frac{6}{10}$ miles; $\frac{8}{10} + \frac{8}{10} = \frac{16}{10}$ or $\frac{8}{10} + \frac{8}{10} = 1\frac{6}{10}$

6.* $\frac{5}{4}$ hours or $1\frac{1}{4}$ hours; $\frac{3}{4} + \frac{2}{4} = \frac{5}{4}$ or $\frac{3}{4} + \frac{2}{4} = 1\frac{1}{4}$

7. **A.** $\frac{5}{8}$ **B.** $\frac{12}{10}$ or $1\frac{2}{10}$ **C.** $\frac{6}{6}$ or 1 **D.** $\frac{8}{4}$ or 2
   E. $\frac{7}{12}$ **F.** $\frac{2}{5}$ **G.** $\frac{4}{8}$ **H.** $\frac{3}{2}$

8. $\frac{8}{8}$ or 1 yard; $\frac{5}{8} + \frac{3}{8} = \frac{8}{8}$ or $\frac{5}{8} + \frac{3}{8} = 1$

9. **A.** $\frac{3}{5}$ of a box; $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$

B. $\frac{2}{5}$ of a box; $1 - \frac{3}{5} = \frac{2}{5}$ or $\frac{5}{5} - \frac{3}{5} = \frac{2}{5}$

10. **A.** $\frac{4}{10}$ of a mile; $\frac{7}{10} - \frac{3}{10} = \frac{4}{10}$ **B.** $\frac{2}{5}$

11. **A.** $\frac{5}{12}$ **B.** $\frac{2}{10}$ **C.** $\frac{2}{8}$ **D.** $\frac{9}{4}$

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

12.* They need $\frac{1}{4}$ more jars. $1\frac{1}{4} + \frac{2}{4} = 1\frac{3}{4}$ jars

13.* The groups ate the same amount of pizza.

Girls ate $\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}=\frac{6}{3}$ or 2 pizzas (or $6 \times \frac{1}{3}=\frac{6}{3}$ or 2)

Boys ate $\frac{2}{3}+\frac{2}{3}+\frac{2}{3}=\frac{6}{3}$ or 2 pizzas (or $3 \times \frac{2}{3}=\frac{6}{3}$ or 2).

14. A. $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}=\frac{3}{5}$ or $1\frac{1}{2}$ hour

B. $3 \times \frac{1}{2}=\frac{3}{2}$ or $1\frac{1}{2}$ hour

15. No, $\frac{7}{6}+\frac{3}{6}$ is not a true number sentence because both sides of the equal sign do not show the same amount. $\frac{7}{6}+\frac{3}{6}$ is greater than 1, but $\frac{10}{12}$ is less than 1. $\frac{7}{6}+\frac{3}{6}=\frac{10}{6}$.

16. A. $\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}=\frac{7}{4}$ or $1\frac{3}{4}$ hours

B. $\frac{1}{4} \times 7=\frac{7}{4}$ or $1\frac{3}{4}$ hours

17. A. $\frac{4}{2}$ or 2 **B.** $\frac{3}{5}$ **C.** $\frac{2}{9}$ **D.** $\frac{9}{3}$ or 3

E. $1\frac{2}{3}$ **F.** $1\frac{7}{8}$ **G.** $1\frac{2}{6}$ **H.** 1

18. A. $\frac{5}{9}$ **B.** $\frac{5}{3}$ or $1\frac{2}{3}$ **C.** $\frac{3}{2}$ or $1\frac{1}{2}$ **D.** $\frac{6}{6}$ or 1

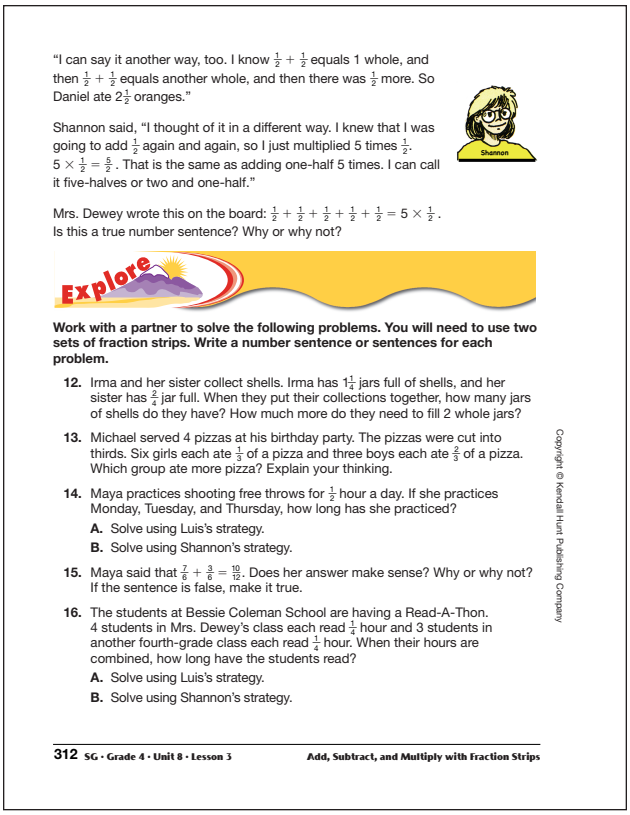
E. $\frac{9}{5}$ or $1\frac{4}{5}$ **F.** $\frac{8}{10}$ **G.** $\frac{7}{4}$ or $1\frac{3}{4}$ **H.** $\frac{4}{12}$

19. A. $\frac{1}{10}+\frac{1}{10}+\frac{1}{10}+\frac{1}{10}+\frac{1}{10}+\frac{1}{10}+\frac{1}{10}=\frac{7}{10}$; $7 \times \frac{1}{10}=\frac{7}{10}$

B. $\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}+\frac{1}{4}=\frac{7}{4}$ or $1\frac{3}{4}$; $\frac{1}{4} \times 7=\frac{7}{4}$ or $1\frac{3}{4}$ hours

C. $\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}=\frac{6}{6}$ or 1; $6 \times \frac{1}{6}=\frac{6}{6}$ or 1

D. $\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}=\frac{4}{5}$; $\frac{1}{5} \times 4=\frac{4}{5}$



"I can say it another way, too. I know $\frac{1}{2}+\frac{1}{2}$ equals 1 whole, and then $\frac{1}{2}+\frac{1}{2}$ equals another whole, and then there was $\frac{1}{2}$ more. So Daniel ate $2\frac{1}{2}$ oranges."

Shannon said, "I thought of it in a different way. I knew that I was going to add $\frac{1}{2}$ again and again, so I just multiplied 5 times $\frac{1}{2}$. $5 \times \frac{1}{2}=\frac{5}{2}$. That is the same as adding one-half 5 times. I can call it five-halves or two and one-half."

Shannon

Mrs. Dewey wrote this on the board: $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}=5 \times \frac{1}{2}$. Is this a true number sentence? Why or why not?

Explore

Work with a partner to solve the following problems. You will need to use two sets of fraction strips. Write a number sentence or sentences for each problem.

12. Irma and her sister collect shells. Irma has $1\frac{1}{2}$ jars full of shells, and her sister has $\frac{2}{3}$ jar full. When they put their collections together, how many jars of shells do they have? How much more do they need to fill 2 whole jars?

13. Michael served 4 pizzas at his birthday party. The pizzas were cut into thirds. Six girls each ate $\frac{1}{3}$ of a pizza and three boys each ate $\frac{2}{3}$ of a pizza. Which group ate more pizza? Explain your thinking.

14. Maya practices shooting free throws for $\frac{1}{2}$ hour a day. If she practices Monday, Tuesday, and Thursday, how long has she practiced?
   A. Solve using Luis's strategy.
   B. Solve using Shannon's strategy.

15. Maya said that $\frac{7}{6}+\frac{3}{6}=\frac{10}{12}$. Does her answer make sense? Why or why not? If the sentence is false, make it true.

16. The students at Bessie Coleman School are having a Read-A-Thon. 4 students in Mrs. Dewey's class each read $\frac{1}{4}$ hour and 3 students in another fourth-grade class each read $\frac{1}{4}$ hour. When their hours are combined, how long have the students read?
   A. Solve using Luis's strategy.
   B. Solve using Shannon's strategy.

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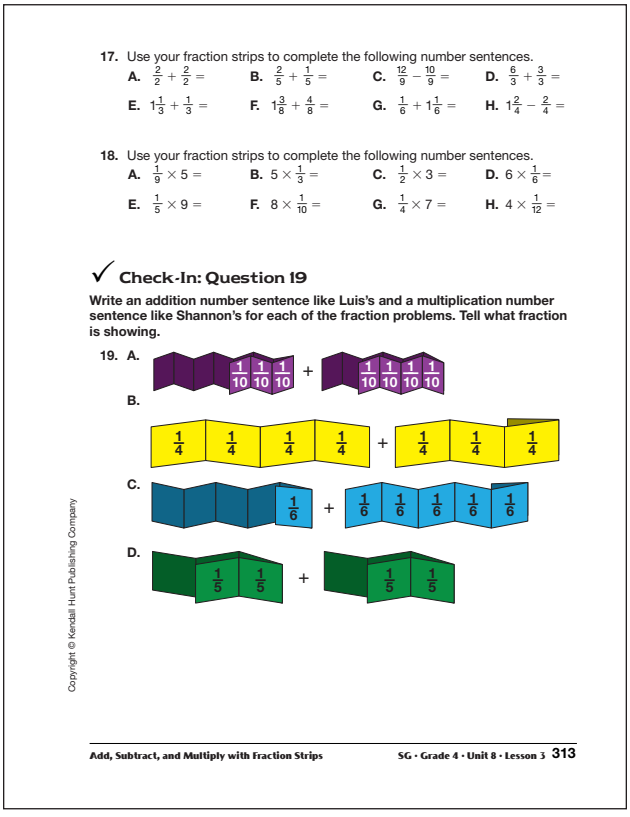

17. Use your fraction strips to complete the following number sentences.
   A. $\frac{2}{2}+\frac{2}{2}=$ B. $\frac{2}{5}+\frac{1}{5}=$ C. $\frac{12}{9}-\frac{10}{9}=$ D. $\frac{6}{3}+\frac{3}{3}=$
   E. $1\frac{1}{3}+\frac{1}{3}=$ F. $1\frac{3}{8}+\frac{4}{8}=$ G. $\frac{1}{6}+1\frac{1}{6}=$ H. $1\frac{2}{4}-\frac{2}{4}=$

18. Use your fraction strips to complete the following number sentences.
   A. $\frac{1}{9} \times 5=$ B. $5 \times \frac{1}{3}=$ C. $\frac{1}{2} \times 3=$ D. $6 \times \frac{1}{6}=$
   E. $\frac{1}{5} \times 9=$ F. $8 \times \frac{1}{10}=$ G. $\frac{1}{4} \times 7=$ H. $4 \times \frac{1}{12}=$

✓ **Check-In: Question 19**

Write an addition number sentence like Luis's and a multiplication number sentence like Shannon's for each of the fraction problems. Tell what fraction is showing.

19. A.
B.
C.
D.

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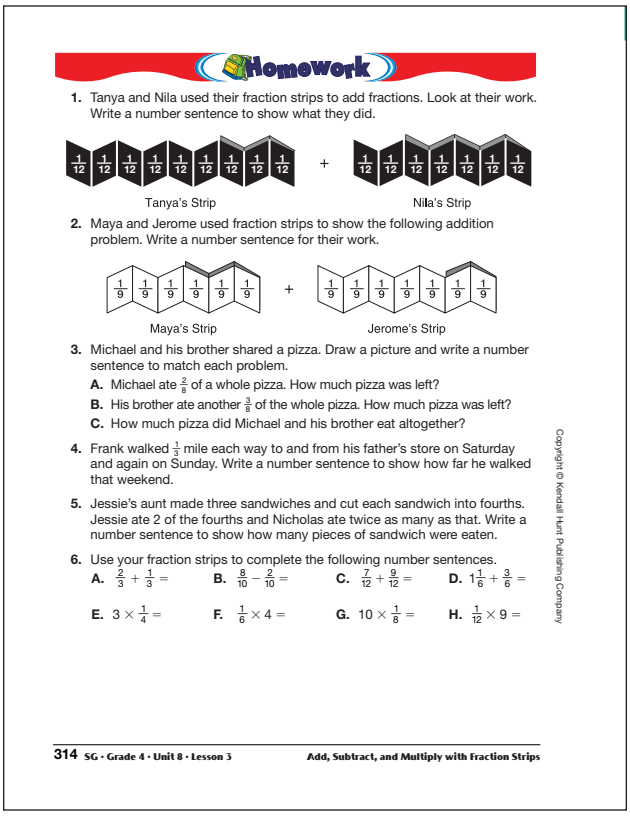
***Answers and/or discussion are included in the lesson.**



Homework

1. Tanya and Nila used their fraction strips to add fractions. Look at their work. Write a number sentence to show what they did.

Tanya's Strip + Nila's Strip

2. Maya and Jerome used fraction strips to show the following addition problem. Write a number sentence for their work.

Maya's Strip + Jerome's Strip

3. Michael and his brother shared a pizza. Draw a picture and write a number sentence to match each problem.
   - **A.** Michael ate $\frac{2}{8}$ of a whole pizza. How much pizza was left?
   - **B.** His brother ate another $\frac{3}{8}$ of the whole pizza. How much pizza was left?
   - **C.** How much pizza did Michael and his brother eat altogether?
4. Frank walked $\frac{1}{3}$ mile each way to and from his father's store on Saturday and again on Sunday. Write a number sentence to show how far he walked that weekend.
5. Jessie's aunt made three sandwiches and cut each sandwich into fourths. Jessie ate 2 of the fourths and Nicholas ate twice as many as that. Write a number sentence to show how many pieces of sandwich were eaten.
6. Use your fraction strips to complete the following number sentences.
   - **A.** $\frac{2}{3} + \frac{1}{3} =$ **B.** $\frac{8}{10} - \frac{2}{10} =$ **C.** $\frac{7}{12} + \frac{9}{12} =$ **D.** $1\frac{1}{6} + \frac{3}{6} =$
   - **E.** $3 \times \frac{1}{4} =$ **F.** $\frac{1}{6} \times 4 =$ **G.** $10 \times \frac{1}{8} =$ **H.** $\frac{1}{12} \times 9 =$

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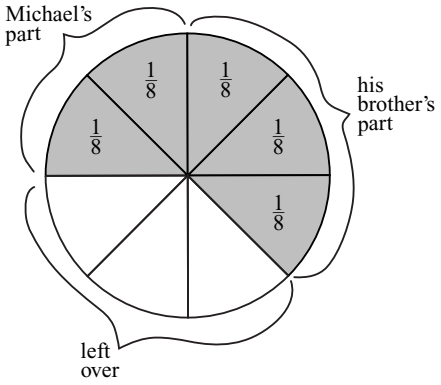
Homework (SG p. 314)

Questions 1–6

1. $\frac{9}{12} + \frac{7}{12} = \frac{16}{12}$ or $1\frac{4}{12}$ (Accept answers as either the improper fraction or mixed number.)
2. $\frac{6}{9} + \frac{7}{9} = \frac{13}{9}$ or $1\frac{4}{9}$
3. **A.** $\frac{6}{8}$ pizza; $1 - \frac{2}{8} = \frac{6}{8}$
   B. $\frac{3}{8}$ pizza; $\frac{6}{8} - \frac{3}{8} = \frac{3}{8}$
   C. $\frac{5}{8}$ pizza; $\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$



4. $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{4}{3}$ or $1\frac{1}{3}$ miles
   or $\frac{1}{3} \times 4 = \frac{4}{3}$ or $1\frac{1}{3}$ miles
5. $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{6}{4}$ or $1\frac{2}{4}$ sandwiches
6. **A.** $\frac{3}{3}$ or 1 **B.** $\frac{6}{10}$ **C.** $\frac{16}{12}$ or $1\frac{4}{12}$ **D.** $1\frac{4}{6}$
   E. $\frac{3}{4}$ **F.** $\frac{4}{6}$ **G.** $\frac{10}{8}$ or $1\frac{2}{8}$ **H.** $\frac{9}{12}$