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1. **A.** Alberta used fraction circle pieces to solve $4 \times \frac{3}{4}$. Show how to use fraction circle pieces to solve $\frac{3}{4} \times 4$. Do you get the same answer?

   B. Is the product of $\frac{3}{4}$ and 4 greater or less than 4? Why?

2. Imagine you are making this recipe for a party. The recipe serves 4 people and you need to serve 12 people.

   A. How does the recipe need to change?

   B. Use any strategy you like to change the amount of each ingredient to make a recipe that serves 12 people. Write a number sentence to show how you found the amount of each ingredient.

   Spicy Cheese Dip
   Serves 4
   - $\frac{1}{8}$ cup of flour
   - $\frac{1}{4}$ teaspoon of garlic powder
   - $\frac{3}{4}$ cup of milk
   - $\frac{1}{2}$ cup of chicken broth
   - $1\frac{1}{4}$ cups of shredded cheese
   - $\frac{2}{3}$ cup of salsa

3. One serving of Alberta's peanut butter cookies is $\frac{1}{4}$ dozen or $\frac{1}{4} \times 12$. Alberta used a diagram to determine how many cookies are in each serving.

   A. Copy and complete the table. Look for patterns.

Number of Servings	Number of Cookies
1	$\frac{1}{4} \times 12 =$
2	$\frac{2}{4} \times 12 =$
3	$\frac{3}{4} \times 12 =$
4	$\frac{4}{4} \times 12 =$
5	$\frac{5}{4} \times 12 =$
6	$\frac{6}{4} \times 12 =$
7	$\frac{7}{4} \times 12 =$
8	$\frac{8}{4} \times 12 =$
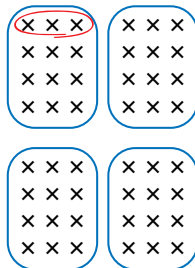
Multiply Fractions by a Whole   SG · Grade 5 · Unit 10 · Lesson 7   **493**

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   B. How many people can she serve with one dozen cookies?

   C. How many people can she serve with two dozen cookies?

   D. How many people can she serve with four dozen cookies?

   E. What does $\frac{8}{4}$ mean in this problem?

   F. What does $\frac{20}{4}$ mean in this problem?

   G. Which products are greater than 12?

   H. Which products are less than 12?

   I. Which products are equal to 12?

4. Show or tell how you know the difference in meaning between $\frac{1}{4}$ and $\frac{4}{1}$.

   1 cup
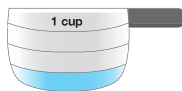
5. Complete the recipe conversion table. Find the amount of milk needed for 4, 8, 12, 16, 20, and 24 servings. Look for patterns.

   Cups of Milk in Spicy Cheese Dip

A. Serves 4	$1 \times \frac{3}{4} =$
B. Serves 8	$2 \times \frac{3}{4} =$
C. Serves 12	$3 \times \frac{3}{4} =$
D. Serves 16	$4 \times \frac{3}{4} =$
E. Serves 20	$5 \times \frac{3}{4} =$
F. Serves 24	$6 \times \frac{3}{4} =$

   $\frac{3}{4}$ Cup
   $\frac{3}{4}$ Cup
   $\frac{3}{4}$ Cup

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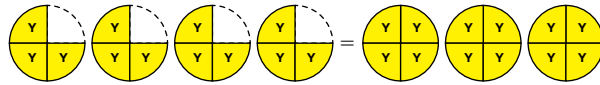

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Multiply Fractions by a Whole
(SG pp. 493–496)
Questions 1–16

1. **A.** * Yes; $\frac{3}{4} \times 4$:

   B. * The product of $\frac{3}{4}$ and 4 is less than 4 because you are only finding a part of 4.

2. **A.** * The amount of each ingredient needs to be multiplied by 3.

   B. * $\frac{1}{8} \times 3 = \frac{3}{8}$ cup of flour

   $\frac{1}{4} \times 3 = \frac{3}{4}$ teaspoon of garlic powder

   $\frac{3}{4} \times 3 = \frac{9}{4}$ or $2\frac{1}{4}$ cup of milk

   $\frac{1}{2} \times 3 = \frac{3}{2}$ or $1\frac{1}{2}$ cup of chicken broth

   $1\frac{1}{4} \times 3 = 3\frac{3}{4}$ cup of shredded cheese

   $\frac{2}{3} \times 3 = \frac{6}{3}$ or 2 cups of salsa

3. **A.**

Number of Servings	Number of Cookies
1	$\frac{1}{4} \times 12 = $ 3
2	$\frac{2}{4} \times 12 = $ 6
3	$\frac{3}{4} \times 12 = $ 9
4	$\frac{4}{4} \times 12 = $ 12
5	$\frac{5}{4} \times 12 = $ 15
6	$\frac{6}{4} \times 12 = $ 18
7	$\frac{7}{4} \times 12 = $ 21
8	$\frac{8}{4} \times 12 = $ 24

   B. 4

   C. 8

   D. 16

   E. $\frac{8}{4}$ means $\frac{8}{4}$ of a dozen or 2 times a dozen

   F. $\frac{20}{4}$ means $\frac{20}{4}$ of a dozen or 5 times a dozen

   G. * $\frac{5}{4} \times 12$, $\frac{6}{4} \times 12$, $\frac{7}{4} \times 12$, and $\frac{8}{4} \times 12$

   H. * $\frac{1}{4} \times 12$, $\frac{2}{4} \times 12$, $\frac{3}{4} \times 12$

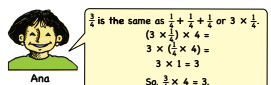   **I.** $\frac{4}{4} \times 12$

4. * See Figure 4 in the lesson.

5.

   Cups of Milk in Spicy Cheese Dip

A. Serves 4	$1 \times \frac{3}{4} = \frac{3}{4}$
B. Serves 8	$2 \times \frac{3}{4} = \frac{6}{4}$
C. Serves 12	$3 \times \frac{3}{4} = \frac{9}{4}$
D. Serves 16	$4 \times \frac{3}{4} = \frac{12}{4}$
E. Serves 20	$5 \times \frac{3}{4} = \frac{15}{4}$
F. Serves 24	$6 \times \frac{3}{4} = \frac{18}{4}$

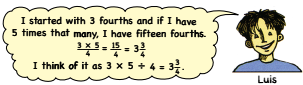***Answers and/or discussion are included in the lesson.**

6. A. Yes, Ana is correct. $\frac{3}{4} = 3 \times \frac{1}{4}$

   B. Yes, Ana is correct.

   $(3 \times \frac{1}{4}) \times 4 = 3 \times (\frac{1}{4} \times 4)$.

   C. The answers are both 3.

7. A. They are both $3\frac{3}{4}$

   B. $\frac{3 \times 6}{4} = \frac{16}{4} = 4$; our answers are the same.

8. A. Kim shows 6 rectangles.

   B. $\frac{1}{4}$

   C. Kim shaded 3 small squares to show $\frac{3}{4}$.

   D. 18

   E. $\frac{3}{4} \times 6 = \frac{18}{4}$

9. A. $\frac{2}{3} \times 6 = \frac{12}{4} = 4$

   B. $5 \times \frac{4}{5} = \frac{20}{5} = 4$

   C. $\frac{5}{6} \times 8 = \frac{40}{6} = 6\frac{4}{6} = 6\frac{2}{3}$

10. $\frac{3}{5}$

11. 15 cups. There are $18 \times \frac{1}{6} = 3$ cups. left. Therefore, the guests drank $18 - 3 = 15$ cups of lemonade.

12. 10 balloons; 1 bag has 8 balloons: $\frac{1}{4}$ bag has $\frac{1}{4} \times 8 = 2$ balloons. So, $1\frac{1}{4}$ bags have $8 + 2 = 10$ balloons.

13. 6 sandwiches: $9 \times \frac{2}{3} = 6$

14. 24 times

15.* $20 \times 3 \div 4 = 15$ guests were male. 5 guests were female. See Figure 5 in the lesson.

16.* $\frac{2}{3} + \frac{2}{3} + \frac{2}{3} = \frac{6}{3} = 2$ miles. See Figure 6 in the lesson.

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

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Homework (SG p. 497) Questions 1–4

1.

Rule: Multiply by 6

Input	Output
$\frac{2}{3}$	$\frac{12}{3} = 4$
$\frac{1}{5}$	$\frac{6}{5} = 1\frac{1}{5}$
$\frac{3}{4}$	$\frac{18}{4} = 4\frac{2}{4} = 4\frac{1}{2}$
$1\frac{1}{2}$	$\frac{18}{2} = 9$
$\frac{5}{2}$	$\frac{30}{2} = 15$

2.

Rule: Multiply by 3

Input	Output
$\frac{1}{7}$	$\frac{3}{7}$
$\frac{4}{5}$	$\frac{12}{5} = 2\frac{2}{5}$
$\frac{3}{3}$	$\frac{9}{3} = 3$
$\frac{7}{3}$	$\frac{21}{3} = 7$
$\frac{5}{8}$	$\frac{15}{8} = 1\frac{7}{8}$

3.

Rule: Multiply by $\frac{2}{9}$

Input	Output
27	$\frac{54}{9} = 6$
9	$\frac{18}{9} = 2$
3	$\frac{6}{9} = \frac{2}{3}$
7	$\frac{14}{9} = 1\frac{6}{9} = 1\frac{2}{3}$
10	$\frac{20}{9} = 2\frac{2}{9}$

4.

Rule: Multiply by $\frac{1}{5}$

Input	Output
25	5
20	4
15	3
10	2
5	1

Student Activity Book

Student Activity Book - Page 421

Family Recipe (SAB p. 421)
Homework
Recipe and ingredient amounts will vary.