

**Lesson 8-7 Multiply Mixed Numbers**

Look at the ingredients needed to make Joshi's pancake mix. How much of each ingredient will you need to make 20 pancakes? To solve this problem, you will multiply mixed numbers.

**Consider:** How can you use what you know about multiplying fractions to help you multiply mixed numbers?

**Joshi's Pancake Recipe**

- 2 cups pancake mix
- 1 egg
- 1/2 cups milk
- 1 teaspoon vanilla

**Look Back!** Write a number sentence you can write using repeated addition to show how much pancake mix is needed if the recipe is tripled.

$$2\frac{1}{2} \times 3 = 2\frac{1}{2} + 2\frac{1}{2} + 2\frac{1}{2} = 6\frac{3}{2}$$

6 1/2 c. of mix

**Prep:** 5 mins  
**Cook:** 15 mins  
**Total:** 20 mins  
**Servings:** 8  
**Yield:** 8 servings

**Joshi's Pancake Recipe**

- 2 cups pancake mix
- 1 egg
- 1/2 cups milk
- 1 teaspoon vanilla

To serve 20 people you would need to multiply the ingredients by 2 1/2. How much pancake mix, milk, and vanilla will you need to make pancakes for 20 people?

$$2\frac{1}{2} \times 2\frac{1}{4} = m \quad 3 \times 2 = 6$$

$$\frac{5}{2} \times \frac{9}{4} = \frac{45}{8} = 5\frac{5}{8} \text{ cups}$$

$$8 \overline{)45} \begin{array}{r} 5 \text{ r } 5 \\ -40 \\ \hline 5 \end{array}$$

**How Can You Find the Product of Mixed Numbers?**

A clothing factory has machines that make jackets. The machine operates for 2 hours each day. How many jackets can Machine A and Machine B make?

**Machine A: Machine B**

7 1/2 jackets in about 2 hours  
16 jackets in about 2 hours

**One Way:** You can use an area model to find the partial products. Then add to find the final product.

**Another Way:** You can also use an equation to find the product. Rename the mixed numbers, then multiply.

**Machine A makes 25 jackets each day.**

**Machine B makes 20 jackets each day.**

**Consider:** How can you use what you know about multiplying fractions to help you multiply mixed numbers?

**Write an equation to model your work.**

$$7\frac{1}{2} \times 3\frac{1}{2} = 25$$

$$8 \times 3 = 24$$

$$\frac{15}{2} \times \frac{7}{2} = \frac{105}{2} = 52\frac{1}{2}$$

$$24 + 52\frac{1}{2} = 76\frac{1}{2}$$

$$1\frac{1}{3} \times 2\frac{1}{2} = c$$

	1	1/3
2	1 x 2 = 2	2/1 x 1/3 = 2/3
1/2	1 x 1/2 = 1/2	1/2 x 1/3 = 1/6

$$2\frac{1}{3} \times 2\frac{1}{2} = 3\frac{2}{6} + \frac{2}{6} = 3\frac{4}{6} = 3\frac{2}{3}$$

3 2/3 cups

**Guided Practice**

**Do You Understand?**

- Write an equation to model the problem. Explain how you solved the problem.
- Write an equation to model the problem. Explain how you solved the problem.

**Do You Know How?**

Write an equation to model the problem. Explain how you solved the problem.

Complete 12, 14, 21, 22, 24

**Independent Practice**

Write an equation to model the problem. Explain how you solved the problem.

Complete 12, 14, 21, 22, 24

**Math Practices and Problem Solving**

Write an equation to model the problem. Explain how you solved the problem.

Complete 12, 14, 21, 22, 24

$$3\frac{3}{4} \times 2\frac{1}{2} = v$$

$$\frac{3}{4} \times \frac{5}{2} = \frac{15}{8} = 1\frac{7}{8} \text{ tsp}$$

$$2\frac{2}{3} \times 9\frac{3}{8} = m$$

$$3 \times 9 = 27$$

$$8 \times \frac{75}{8} = \frac{600}{8} = 75$$

Bernie hiked 25 miles

$$\begin{array}{r} 75 \\ \times 8 \\ \hline 600 \\ \hline 480 \\ \hline 120 \\ \hline 120 \\ \hline 0 \end{array}$$

$$18 \times 25 = 25 \times 15 \text{ miles}$$

Common Core Assessment

28. Choose all that are true.

- $\frac{1}{2} \times \frac{2}{3} = \frac{2}{6}$
- $\frac{1}{2} \times \frac{2}{3} = \frac{1}{3}$
- $\frac{1}{2} \times \frac{2}{3} = \frac{1}{6}$
- $\frac{1}{2} \times \frac{2}{3} = \frac{1}{9}$
- $\frac{1}{2} \times \frac{2}{3} = \frac{1}{12}$

29. Choose all that are true.

- $\frac{1}{2} \times \frac{2}{3} = \frac{2}{3}$
- $\frac{1}{2} \times \frac{2}{3} = 1$
- $\frac{1}{2} \times \frac{2}{3} = \frac{2}{9}$
- $\frac{1}{2} \times \frac{2}{3} = \frac{2}{6}$
- $\frac{1}{2} \times \frac{2}{3} = \frac{2}{12}$

25 miles

$$\frac{18}{13} \times \frac{75}{81} = \frac{25}{1} = 25 \text{ miles}$$