## Lesson 6: Problems with Equal Groups of Fractions

* Let’s solve problems with fractions.

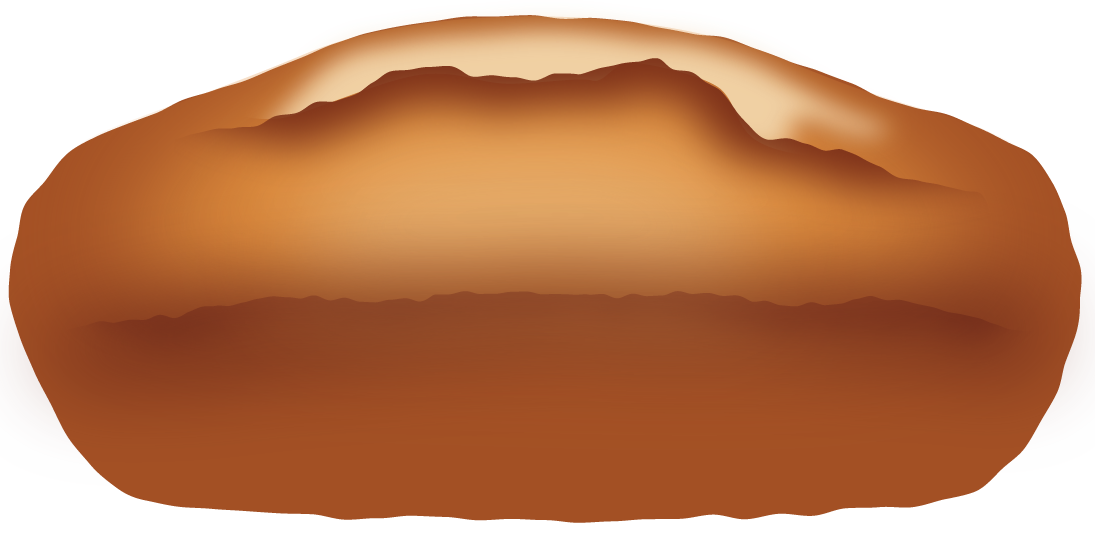
### Warm-up: True or False: Two and Three Factors

Decide whether each statement is true or false. Be prepared to explain your reasoning.

### 6.1: Banana Bread Recipe

A bakery is making banana bread. Here is the recipe for 1 batch.

|  |
| --- |
| Recipe:   * 1 banana * cup butter * teaspoons baking soda * cup sugar * 2 large eggs * cups of all-purpose flour |



1. The bakery makes 2 batches of banana bread on Monday. Complete the table to show how much of each ingredient is used.

* Monday’s banana bread

| * ingredient | * expression | * amount of ingredient |
| --- | --- | --- |
| * bananas |  | * \_\_\_\_\_\_\_ |
| * butter |  | * \_\_\_\_\_\_\_ cup(s) |
| * baking soda |  | * \_\_\_\_\_\_\_ teaspoon(s) |
| * sugar |  | * \_\_\_\_\_\_\_ cup(s) |
| * eggs |  | * \_\_\_\_\_\_\_ |
| * flour |  | * \_\_\_\_\_\_\_ cup(s) |

1. On Tuesday, the bakery needs cups of butter to make enough banana bread for the day. How many batches were made? Explain or show your reasoning.

|  |
| --- |
| * Recipe:   + 1 banana   + cup butter   + teaspoons baking soda   + cup sugar   + 2 large eggs   + cups of all-purpose flour |

1. Based on the number of the batches made on Tuesday, complete the table for each ingredient.

* Tuesday’s banana bread

| * ingredient | * expression | * amount of ingredient |
| --- | --- | --- |
| * bananas |  | * \_\_\_\_\_\_\_ |
| * butter |  | * cups |
| * baking soda |  | * \_\_\_\_\_\_\_ teaspoon(s) |
| * sugar |  | * \_\_\_\_\_\_\_ cup(s) |
| * eggs |  | * \_\_\_\_\_\_\_ |
| * flour |  | * \_\_\_\_\_\_\_ cup(s) |

### 6.2: How Much Milk Was Used?

The bakery that sells banana bread also sells fresh milkshakes. Each serving uses liter of milk.

Here are five descriptions of the milkshakes sold in a week and five expressions that represent the liters of milk used.



Match each description to an expression that represents it.

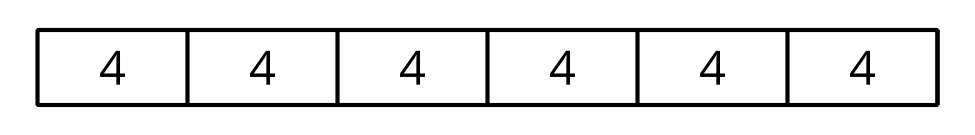
1. On Monday, the bakery sold 8 servings of milkshake. How much milk was used?
2. On Tuesday, two customers bought 4 servings of milkshake each. How much milk was used?
3. On Wednesday, four customers bought 2 servings of milkshake each. How much milk was used?
4. On Thursday, two customers each bought a serving of milkshake. They placed the same order three more times for their friends that day. How much milk was used?
5. On Saturday, four friends each purchased a serving of milkshake for breakfast. They came back for the same after dinner. How much milk was used?

### Section Summary

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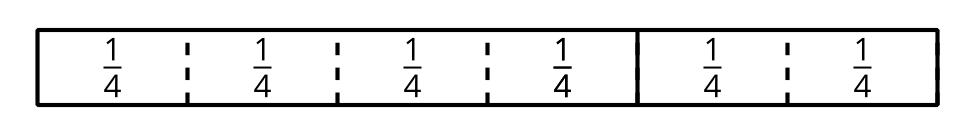
In this section, we learned to multiply a whole number and a fraction by thinking about equal-size groups, just as we did when multiplying two whole numbers.

For instance, we can think of as 6 groups of 4. A diagram like this can help to show that the product is 24:



Likewise, we can think of as 6 groups of . Diagrams can help us see that the product is :





After studying patterns, we saw that when we multiply a whole number and a fraction, the whole number is multiplied only by the numerator of the fraction and the denominator stays the same. For example:

We also learned that:

* Every fraction can be written as a product of a whole number and a unit fraction. For example, can be written as .
* We can write different multiplication expressions for the same fraction. For example, can be written as:



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