



## How to Find Least Common Denominators

Finding a Least Common Denominator is an important tool when working with fractions. To find least common denominators, we will use multiples of our numbers.

### What is a Multiple?

When finding the least common denominator, we will be using multiples. **Multiples** are the products of a given number. For example, the multiples of 2 would be 2, 4, 6, 8, 10, etc... We often call the **least common denominator the least common multiple or the LCM**.

### Finding a Least Common Denominator Using Multiples

Using these multiples, we can now find a common denominator. The **least common denominator** is the smallest common multiple of both denominators. To begin, let's look at two fractions,  $\frac{2}{4}$  and  $\frac{6}{9}$ .

We can see that our denominators are 4 and 9. The first thing we need to do is to list out several multiples of each number. A good amount to start with is 10 of each.

The first 10 multiples of 4 are

4, 8, 12, 16, 20, 24, 28, 32, 36, and 40.

The first 10 multiples of 9 are

9, 18, 27, 36, 45, 54, 63, 72, 81, and 90.

Starting with the multiples of the smallest number, 4, we are looking to see if there is a common multiple within the multiples of 9. We can see that both 4 and 9 have the multiple of 36.

Since 36 is the smallest common multiple, it is called our least common multiple, or LCM; so the LCM of 4 and 9 is 36.

## Example

Jerry and Tom both collect baseball cards. Jerry puts his cards into pages that contain 16 cards each, and Tom puts his cards into pages that contain 12 cards each. Both Jerry and Tom are curious about how many full pages of cards that they will need to have the same number of cards.

Jerry and Tom know that they must find the least common denominator to see at what number they will have the same number of cards. To begin, Jerry lists the first 10 multiples of 16, which are 16, 32, 48, 64, 80, 96, 112, 128, 144, and 160. Next, Tom lists the first 10 multiples of 12, which are 12, 24, 36, 48, 60, 72, 84, 96, 108, and 120.

Tom and Jerry can see that both of their sets contain the numbers 48 and 96. Since 48 is the smallest number, it is called the least common denominator.

## Example 2

Jerry and Tom now know that they will have the same number of cards when they both reach full pages containing 48 cards. As the boys finish putting away their cards into the collector's books, they suddenly realize that they are hungry. The boys decided to snack on some chips. Tom chose to eat the Doritos, which he could eat 4 at a time. Jerry chose to eat the Cheetos, which are smaller. He could eat 9 Cheetos at a time.

The boys want to know how many handfuls of chips they must eat to eat the same number of chips. To begin, Tom lists the first 10 multiples of 4, which are 4, 8, 12, 16, 20, 24, 28, 32, 36, and 40. Jerry now lists the first 10 multiples of 9, which are 9, 18, 27, 36, 45, 54, 63, 72, 81, and 90.

The boys can see that they must eat handfuls totaling 36 chips in order to eat the same amount.

## Lesson Summary

So in review, to find the least common denominator, we will be using multiples. **Multiples** are the products of a given number. We often call the least common denominator the least common multiple or the LCM. Using these multiples, we can find a common denominator. The **least common denominator** is the smallest common multiple of both denominators.

## Learning Outcome

After watching this lesson, you should know how to define a least common denominator (LCD) and be able to apply multiples of numbers in order to find the least common denominator.