Simplifying Fractions

How can you simplify $\frac{9}{81}$?

As you read through this lesson, think about how this skill can make problem solving simpler.

Anatomy of a Fraction

The top number of the fraction is known as the numerator. The bottom number is the denominator. A fraction is used to express numbers that are not whole. Think of a fraction as a part. When evaluating a fraction, you divide the numerator by the denominator. If a fraction is less than 1, the numerator will be less than the denominator. If the fraction is greater than 1, the numerator will be greater than the denominator.

Consider the fraction $\frac{9}{81}$. In this example, the numerator is 9, and the denominator is 81.

Now if you are asked to simplify this fraction, do not panic. You'll just need to follow a few basic steps:

1. Find the greatest common factor (GCF) between the numerator and the denominator. This means that you want to find the largest number that divides into each number evenly. Let's look at an example:

Fraction: $\frac{9}{81}$

Numerator: 9
Denominator: 81
GCF: 9

The GCF in this case is 9 because it is the largest number that divides into 81 and 9 evenly.

2. Divide the numerator and the denominator by the GCF.

Numerator: 9 / 9 = 1
Denominator: 81 / 9 = 9

3. Write the new fraction in its simplest form: $\frac{1}{9}$.

When using this method, it is important to make sure that you have used the correct GCF. When you have your new fraction, make sure that there is no remaining number that can evenly divide into the numerator and denominator.

You can use these examples for practice, and scroll down to check the answers once you have completed them.

1. $\frac{6}{24}$

2. $\frac{8}{32}$

3. $\frac{14}{56}$

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Solutions

1. $\frac{6}{24}$

Numerator: 6
Denominator: 24
GCF: 6

Simplified Fraction: $\frac{1}{4}$

2. $\frac{8}{32}$

Numerator: 8
Denominator: 40
GCF: 8

Simplified Fraction: $\frac{1}{5}$

3. $\frac{14}{63}$

Numerator: 14
Denominator: 63
GCF: 7

Simplified Fraction: $\frac{2}{9}$