**Mathematics 1**

**Fraction, Ratio, Percentage**

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**Fraction**

The definition of a fraction is part of a whole of a certain quantity.

Mathematically, fractional numbers can be symbolized by "a/b". The number a/b can be read as "a per b".

**Part of a fraction**

**The kind of fraction**

**- Ordinary Fractions**

Common fractions are divided into two types, namely

1. A true fraction is a fraction whose numerator is smaller than the denominator.
2. the fraction is not true is the opposite whose numerator is bigger than the denominator.

**-Mixed Fraction**

improper fractions with porogapite division remaining.

**Structure**

*C*

C = whole number

a = numerator

b = denominator

**convert mixed fractions to improper fractions**

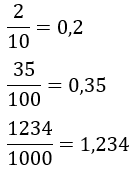


Example:



**- Decimal Fraction**

A decimal fraction is a number whose denominator is a multiple of 10, i.e. 10, 100, 100, and so on.



**- Equality Fraction**

Equality fraction are two or more fractions that have the same ratio between the numerator and denominator.

Example:

1/2 is equal to 4/8, because the ratio of the numerator and denominator is the same, which is 1/2.

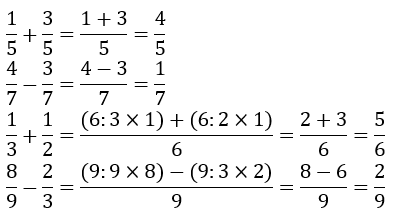
**Fraction Operation**

In the operation of fractions, there are rules that need to be considered, namely addition, subtraction, multiplication, and division

**Addition and Subtraction**

In addition and subtraction of fractions that have the same denominator, only the numbers in the numerator are added. Meanwhile, addition and subtraction of fractions with different denominators cannot be done directly.

However, you must first equate the denominators by using the least common multiple (LCM) of the denominators.



**Multiplication**

Multiplication is done directly between numerators and between denominators.



Example:



**Distribution/ Divided**

The division of fractions can be converted into the form of multiplication of fractions.



Example:



**Ratio**

The definition of a ratio is seen as a comparison of two or more numbers that show their size and relationship to each other. The two quantities that are compared by dividing use a number called the antecedent (which is divided) and the consequent (which divides).

For example, we survey 20 people in a group and find out that 13 of them prefer cake to ice cream while the remaining 7 people prefer ice cream to cake. The use of the ratio in this case is 13:7, which means 13 is the antecedent and 7 is the consequent.

**Examples of ratios in everyday life**

• The sedan was traveling at 60 miles per hour, or 60 miles in 1 hour.

• There are enough cakes for each of 78 students to have two, or 2 cakes per 78 students.

**Examples of ratios in Accounting**

Ratios in accounting include various ratios that are often used by accountants as indicators of profitability, liquidity, and financial potential in the company.

**There are several different ways to express ratios.**

However, one of the most common ways is to use a colon to compare two or more different things. For example, the difference between the number of pink sticky notes totaling 7 and yellow sticky notes totaling 4 is 7:4.

**How to calculate ratio**

For example, if 15 cups of flour and 20 cups of sugar are needed to make fluffy pancakes, let's calculate the ratio of flour to sugar used in the recipe.

• Step 1: Find the sum of the two objects whose ratio we will determine. In this case, they are both 15 and 20.

• Step 2: Write in the form of a/b fraction. So, we write it as 15/20.

• Step 3: Simplify the fraction further, if possible. The simplified fraction will give the final ratio. Here, 15/20 can be simplified to 3/4 by dividing them by 5.

• Step 4: Therefore, the ratio of flour to sugar can be expressed as 3: 4.

**Percentage**

Percentage is a comparison "ratio" which states a fraction of one hundred and is indicated by the symbol of the unit %.

**Formula**

Percent (%) = (number of parts) / (total amount) x 100%

**Example**

A bottle contains 200 ml of oil, then 20 ml of oil is added to the bottle. What is the percent increase in the volume of oil in the bottle after it is added?

So, the percentage of added oil in the bottle is:

Percentage (%) = (number of parts) / (total amount) x 100%

Percentage (%) = 20 / 200 x 100%

Percentage (%) = 0.1 x 100%

Percentage (%) = 10%

So, the increase in the volume of oil in a 200 ml bottle, after adding 20 ml of oil is 10%.