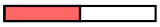
FRACTIONS

A DEFINITIONS

Discover: Hugo is very hungry after playing soccer. His dad baked two identical cakes.
Hugo eats one whole cake:

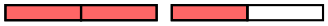
Then, Hugo is still hungry, so he eats half of the second cake:



How much cake does Hugo eat in total? Write your answer as a fraction.

Answer:

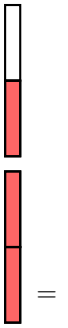
- Hugo eats one whole cake and half of another cake.



- The numerator (top number) shows how many parts Hugo eats: 3.
- The denominator (bottom number) shows how many equal parts make one cake: 2.
- So Hugo eats $\frac{3}{2}$ cakes in total.

Definition **Fraction**

A **fraction** includes two numbers: the **numerator** and the **denominator**, separated by a bar.



$= \frac{3}{2}$

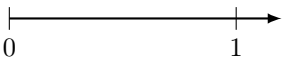
numerator: number of equal parts considered

denominator: number of equal parts the unit is divided

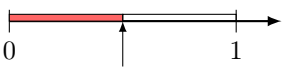
B ON THE NUMBER LINE

Discover:

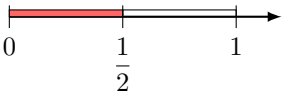
- Hugo is walking along a path.



- He stops and asks himself, "Where am I?"



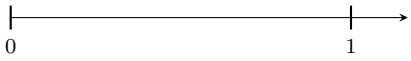
- His father says, "You are at half of the way that is $\frac{1}{2}$."



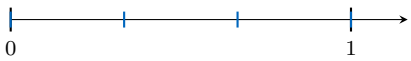
Method **Representing a Fraction on the Number Line**

To represent the fraction $\frac{2}{3}$ on a number line.

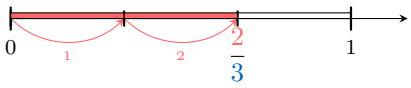
1. Draw a straight line and mark the points 0 and 1.



2. Divide the line between 0 and 1 into 3 equal parts.



3. Count 2 parts from 0 and mark the point.



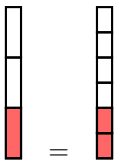
C EQUIVALENT FRACTIONS

Discover: Mr. Tariel has a cake that he cuts into **3 equal parts**. He plans to give **1 part** to his son, Louis.

Louis says, "I want **2 pieces**!"
His dad replies, "Alright," and cuts each of the **3 parts** in half, making **6 smaller equal parts**. He then gives Louis **2 of these smaller pieces**.

Louis looks at his plate and feels disappointed.
Why is Louis still not happy?

Answer: Even though Louis got **2 pieces** instead of 1, the total amount of cake he received is the same as before. His dad just cut the cake into smaller pieces.

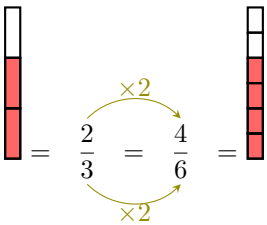


In fractions:

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

Definition **Equivalent Fractions**

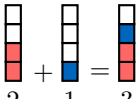
When you multiply the numerator and the denominator by the same number, the fractions are equals.



D ADDITION AND SUBTRACTION

Discover: Hugo eats $\frac{2}{4}$ of a cake:  and Louis eats $\frac{1}{4}$ of the same cake: 
Which fraction of the cake have Hugo and Louis eaten together?

Answer:

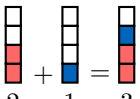


$$\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$$

So Hugo and Louis eat $\frac{3}{4}$ of the cake together: 

Definition **Addition of Fractions with Common Denominators**

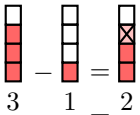
When we **add** fractions with common denominators, we keep the denominator the same and add the numerators:



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

Definition **Subtraction of Fractions with Common Denominators**

When we **subtract** fractions with common denominators, we keep the denominator the same and subtract the numerators:



$$\frac{3}{4} - \frac{1}{4} = \frac{2}{4}$$