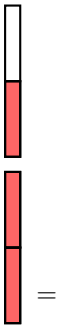
FRACTIONS

A DEFINITIONS

Definition Fraction

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



$= \dfrac{3}{2}$

numerator: number of equal parts considered

denominator: number of equal parts the unit is divided

B ON THE NUMBER LINE

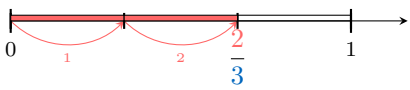
Method Representing a Fraction on the Number Line

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.

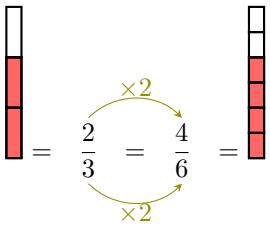
3. Count 2 parts from 0 and mark the point.



C EQUIVALENT FRACTIONS

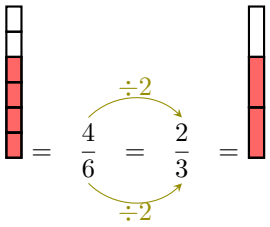
Definition Equivalent Fractions

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



$$\frac{2}{3} = \frac{4}{6}$$

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



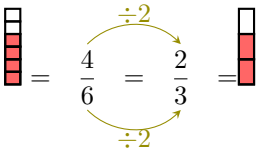
$$\frac{4}{6} = \frac{2}{3}$$

D SIMPLIFICATION

Method Simplifying a fraction

To simplify a fraction, we find an equivalent fraction with the smallest possible numerator and denominator.

Ex: Simplify $\frac{4}{6}$

Answer: 

$$\frac{4}{6} = \frac{2}{3}$$

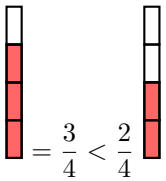
E ORDERING FRACTIONS

Definition Ordering Fractions with the Same Denominator

For two fractions with the same denominator, the fraction with the larger numerator is larger.

Ex: Compare $\frac{3}{4}$ and $\frac{2}{4}$.

Answer:



$$\frac{3}{4} < \frac{2}{4}$$

Method Comparing Fractions with Different Denominators

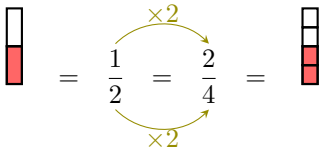
To compare two fractions with different denominators:

- Find a **common denominator**.
- Convert each fraction to an equivalent fraction with that denominator.
- Compare the numerators.

Ex: Compare $\frac{1}{2}$ and $\frac{3}{4}$.

Answer:

- Since $\frac{1}{2}$ and $\frac{3}{4}$ have different denominators, we change $\frac{1}{2}$ into an equivalent fraction with denominator 4:



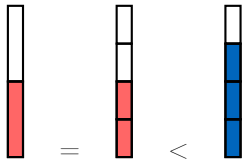
- Compare the numerators:

$$\frac{2}{4} < \frac{3}{4}$$

- Therefore,

$$\frac{1}{2} < \frac{3}{4}$$

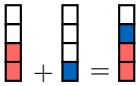
- In pictures:



F ADDITION AND SUBTRACTION WITH COMMON DENOMINATORS

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:

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

G ADDITION AND SUBTRACTION WITH DIFFERENT DENOMINATORS

Method Addition or Subtraction of Fractions with Different Denominators

To add or subtract fractions with different denominators:

- **Find a common denominator**: Choose a common multiple of the denominators.
- **Convert each fraction**: Rewrite each fraction so it has the common denominator.
- **Add or subtract the numerators**: Add or subtract the numerators and keep the denominator the same.