Number lines and Fractions

A number line is a convenient way to understand fractions especially negative fractions. We will see later, for example that:

\[-\frac{3}{4} = \frac{-3}{4} = \frac{3}{-4}\]

Since fractions are points on a number line, they can be:

• added
• subtracted
• multiplied
• divided

Integers can be written as fractions

Any integer \( m \) can be written as: \( \frac{m}{1} \)

For example,

\( 3 = \frac{3}{1}, \ \text{and} \ \ -5 = \frac{-5}{1} \)

The set of fractions includes the set of integers, written this way.
Equivalent Fractions

Before addition, subtraction, multiplication, and division of fractions can be defined, it is necessary to understand when two fractions represent the same point on a number line.

That is, when do two fractions represent the same number?

The next few slides help to answer this question.
Equivalent Fractions

Fractions of equal value

\[
\begin{align*}
\frac{1}{2} & \quad \frac{2}{4} \\
\frac{4}{8} & \\
\frac{1}{3} & \quad \frac{2}{6} \\
\frac{3}{9} & 
\end{align*}
\]