Fractions (Part 1)

Objectives
- Fractions and Fractional Inches
- Types of fractions
- Writing fractions with higher terms
- Reducing fractions

Uses of Fractions
- How do you use fractions? How do you think you will use them in your current or future job?

What is a fraction
- Used to represent part of a whole
- What basic operation is closely related to fractions?

Fractions are denoted, \( \frac{\text{numerator}}{\text{denominator}} \), where the numerator and denominator are whole numbers.

Reducing Fractions
- We can reduce a fraction by dividing the numerator and denominator by any number as long as we break them down by the same number on top and bottom. This is called reducing a fraction to its lowest terms.
- Example: Reduce \( \frac{8}{32} \) to its lowest terms.

Reducing Fractions
- Example: Reduce \( \frac{10}{16} \) to its lowest terms.
- Example: Reduce \( \frac{52}{64} \) to its lowest terms.
- Example: Reduce \( \frac{34}{48} \) to its lowest terms.
1. Reduce \(\frac{96}{128}\) to its lowest terms.

2. Reduce \(2\frac{12}{64}\) to its lowest terms.

Most Common Use for Welding

- Measuring fractions of an inch – not all measurements are a nice whole number
- How are measurements of a fraction of an inch commonly split?

- When measuring in inches, always reduce fractions to lowest terms. For example, when measuring to 16\(\text{ths}\) of a inch, \(\frac{12}{16} = \frac{3}{4}\), is still considered to be measured to the nearest 16\(\text{th}\) of an inch.

This website will give you practice with reading a ruler to the nearest 16\(\text{th}\) of an inch: [http://www.rulergame.net/](http://www.rulergame.net/)

Try Yourself

1) Find the dimension between the arrows:

2) Find the dimensions between the arrows:
Try Yourself

3) Find the dimensions between the arrows:

4) Find the dimensions between the arrows:

Try Yourself

5) Find the dimensions between the arrows:

6) Find the dimensions between the arrows:

Types of fractions

- Proper fractions – a fraction that is less than one
  - What would be some examples?

- What is a way that we would know that a fraction is a proper fraction?

Types of fractions

- Improper fractions – a fraction that is greater than one and written as a whole number over another whole number
  - Examples:

- What is a way that we would know that a fraction is an improper fraction?

Types of fractions

- Mixed number – a number written with a whole number value and the remainder as a proper fraction
  - Examples:

Improper Fractions/Mixed Numbers

- Example: Change $\frac{3}{4}$ to a mixed number
Improper Fractions/Mixed Numbers

› Example: Change $3 \frac{5}{8}$ to an improper fraction.

› Example: Write 5 as an improper fraction.

Try Yourself

› 1. Change $\frac{55}{16}$ to a mixed number.

› 2. Change $5 \frac{7}{8}$ to an improper fraction.

Writing Fractions With Higher Terms

› If an inch is split into two parts we have $\frac{1}{2}$ inch. If the same inch is split into four parts and two parts are chosen, $\frac{2}{4}$ is chosen which is equivalent to $\frac{1}{2}$.

› What are other ways of writing $\frac{1}{2}$ with different denominators?

Try Yourself

› Write $3 \frac{7}{8}$ with a denominator of 16:

› Write $3 \frac{7}{8}$ with a denominator of 32:

› Write $3 \frac{7}{8}$ with a denominator of 64:

Try Yourself

Which is larger?

› 1) $\frac{11}{16}$, $\frac{45}{64}$

› 2) $\frac{14}{64}$, $\frac{3}{16}$

› 3) $\frac{5}{16}$, $\frac{9}{32}$

› 4) $\frac{29}{8}$, $3 \frac{19}{32}$
Writing Fractions with Higher Terms

Why are we allowed to multiply a fraction by a number over itself?

Application Problem

A \(\frac{3}{4}\) in drill bit is too large for a job, and an \(\frac{11}{16}\) in bit is too small. What size should be used next?

Try Yourself

You are reading a measurement that needs to be very accurate. You are using a 16\(^{th}\) inch steel rule. The measurement seems to be exactly in-between \(\frac{5}{8}\) and \(\frac{11}{16}\). What measurement should you use if you are going to be more accurate than 16\(^{th}\)s of an inch?