

Fractions (Part 1)



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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 $3\frac{42}{48}$ to its lowest terms.

Try Yourself

- ▶ 1. Reduce $\frac{96}{128}$ to its lowest terms.

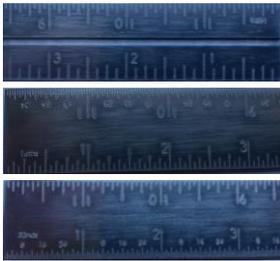
- ▶ 2. Reduce $2\frac{12}{64}$ to its lowest terms.

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^{ths} of an inch, $\frac{12}{16}$ " = $\frac{3}{4}$ " = $\frac{3}{4}$ " is still considered to be measured to the nearest 16th of an inch.

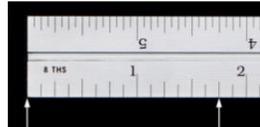
Most Common Use for Welding



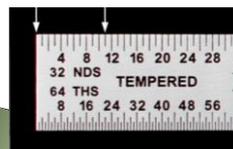
- ▶ This website will give you practice with reading a ruler to the nearest 16th of an inch: <http://www.rulergame.net/>

Reading a Steel Rule (Ruler)

- ▶ Example: Find the dimension between the arrows

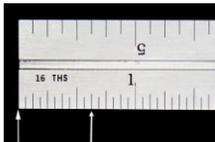


- ▶ Example: Find the dimension between the arrows

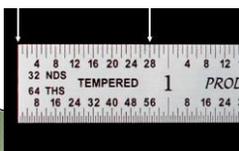


Reading a Steel Rule (Ruler)

- ▶ Example: Find the dimension between the arrows

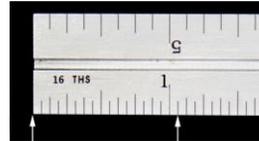


- ▶ Example: Find the dimension between the arrows

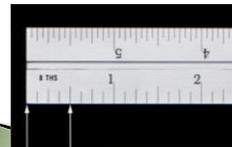


Try Yourself

- ▶ 1) Find the dimensions between the arrows:

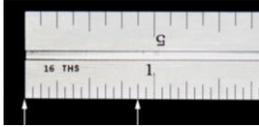


- ▶ 2) Find the dimensions between the arrows:

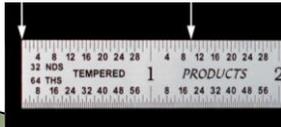


Try Yourself

- ▶ 3) Find the dimensions between the arrows:

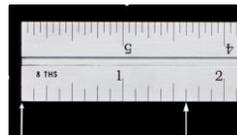


- ▶ 4) Find the dimensions between the arrows:

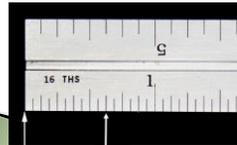


Try Yourself

- ▶ 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 fractions?

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 $\frac{9}{4}$ 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?

Writing Fractions with Higher Terms

- ▶ Write $2\frac{3}{4}$ with a denominator of 8:

- ▶ Write $2\frac{3}{4}$ with a denominator of 16:

- ▶ Write $2\frac{3}{4}$ with a denominator of 32:

- ▶ Write $2\frac{3}{4}$ with a denominator of 64:

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) $\frac{11}{16}$ $\frac{45}{64}$ ▶ 3) $\frac{5}{16}$ $\frac{9}{32}$

- ▶ 2) $\frac{14}{64}$ $\frac{3}{16}$ ▶ 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 16th 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^{ths} of a inch?