# Reading a Ruler

The ability to take measurements quickly and accurately is a skill that is beneficial to students and professionals in a wide variety of areas. Carpentry and construction, landscaping, farming, and laboratory work are just a few of the many activities that require the efficient use of measuring instruments. Some of these instruments allow individuals to take linear measurements. Tape measures, scales, and rulers are examples of linear measurement tools.

Correctly reading and recording measurements using these tools is a skill that takes practice to master. However, once an individual becomes proficient at using one linear measuring device, this proficiency can be applied to other linear measuring tools. The Standard English ruler will be used to illustrate and explain the steps to becoming an efficient measurer. Rulers are generally one foot long. One foot equals twelve inches, so rulers are divided into twelve equal sections. Each of these inch sections is divided into smaller units.

Each inch is marked with a vertical line and a number.
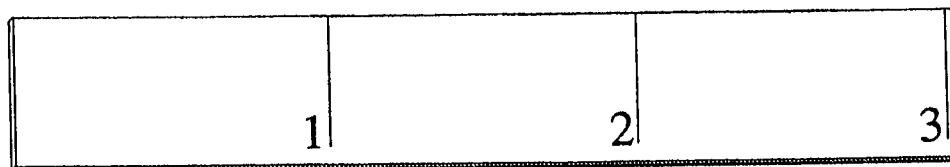
Every inch is divided into smaller sections that are referred to in fractions. The largest unit into which an inch is divided is $\frac{1}{2}$ inch. The bottom number of the fraction tells us how many units per inch—two, $\frac{1}{2}$- inch units per inch.
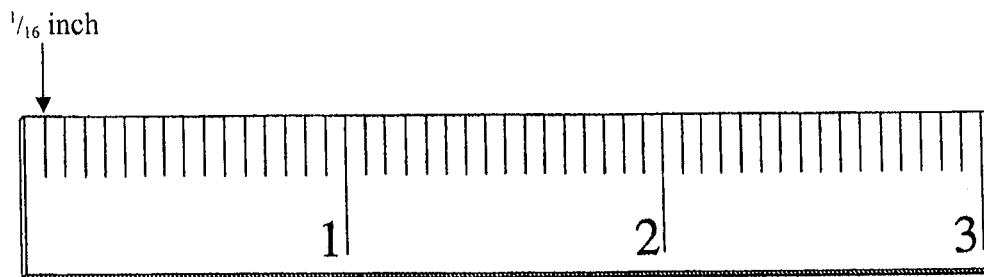
$\frac{1}{2}$ inch
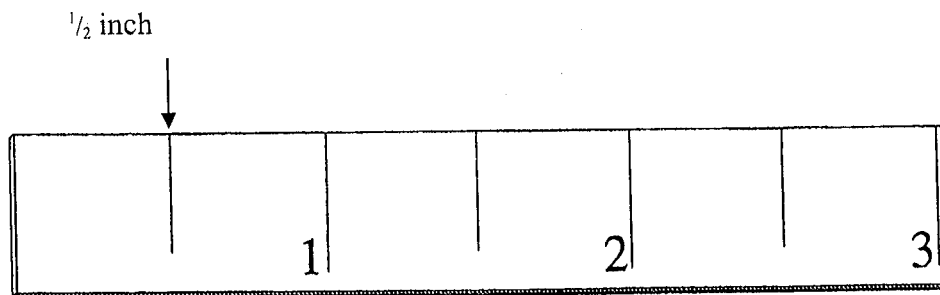
The next unit into which an inch is divided is $\frac{1}{4}$ inch. There are four $\frac{1}{4}$- inch units in each inch.

$\frac{1}{4}$ inch
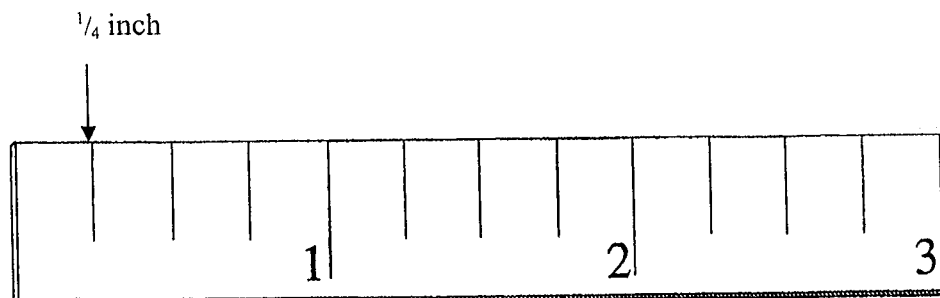
Inches are also divided into $\frac{1}{8}$ - inch units. There are eight $\frac{1}{8}$ units in every inch.

$\frac{1}{8}$ inch
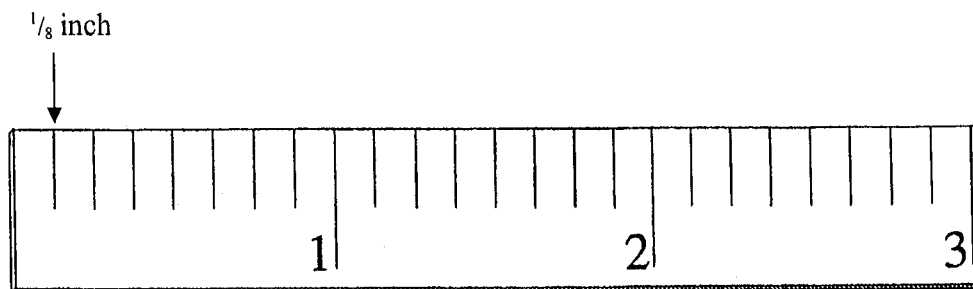
The smallest and most accurate units that an inch is divided into are $\frac{1}{16}$ - inch units. There are sixteen $\frac{1}{16}$ - inch units in every inch.

$\frac{1}{16}$ inch

All of the units of an inch are shown on a ruler simultaneously. The vertical lines marking each unit are of varying lengths. The inch lines are the longest, $\frac{1}{2}$ - inch lines are the second longest, $\frac{1}{4}$ - inch lines are the third longest, $\frac{1}{8}$ - inch lines are the fourth longest, and $\frac{1}{16}$ - inch lines are the shortest.
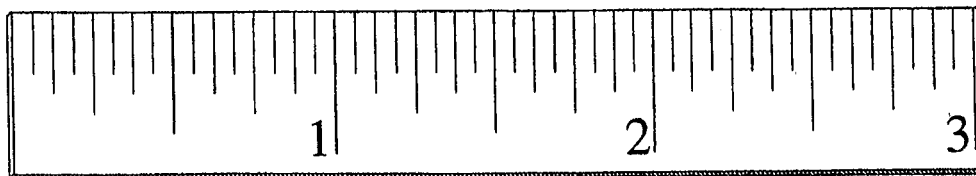
Measuring Procedure

Step 1: Line up the left end of the ruler with the left edge of the material to be measured.

Example 1
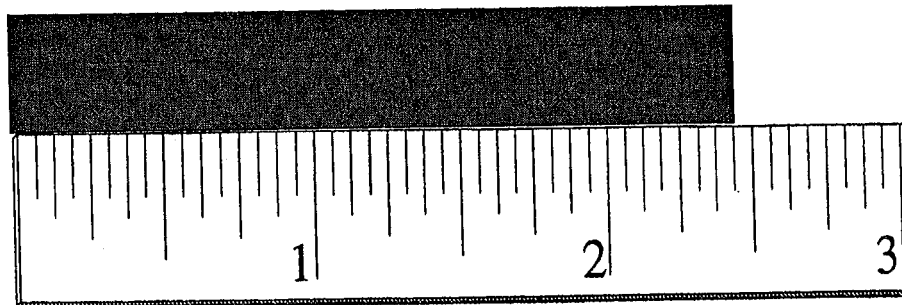
Step 2: Record the largest inch number included in the length of the material.

Example 1 = 2 inches

Step 3: Determine the vertical line closest to the ending edge of the material being measured. Note the length of the line in comparison to the other vertical lines on the ruler.

Example 1 = Vertical line is the shortest when compared to other lines. The $^1/_{16}$- inch units are marked with the shortest vertical lines.

Step 4: Count how many of the vertically marked units are included in the length of the material from the largest inch number determined in step 2.

Example 1 = 7 units from the 2- inch mark

Step 5: Determine what fraction to use. The top number of the fraction (numerator) is the number of units determined in step 4. The bottom number in the fraction (denominator) is determined by the length of the lines (step 3) or by counting how many of the units are in an entire inch.
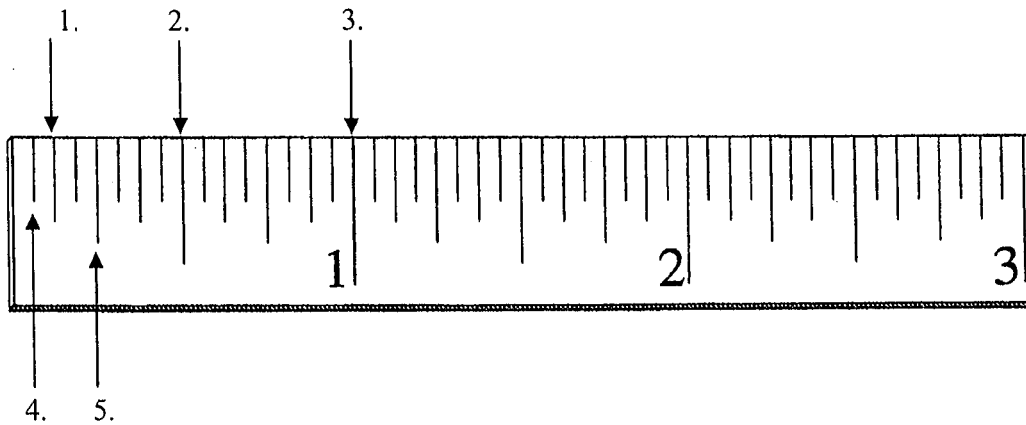
Example 1 = $^7/_{16}$

Step 6: Record entire measurement.

Example 1 = 2 $^7/_{16}$ inches

**All fractions should be reduced to their lowest term. For example, $^4/_8$ should be reduced to $^1/_2$.

Classroom Exercise

1. Identify the units marked on the ruler shown below.

1. _____

2. _____

3. _____

4. _____

5. _____

2. How many inches are in one foot? _____

3. How many $\frac{1}{4}$ - inch sections are in one inch? _____

4. How many $\frac{1}{4}$ - inch sections are in one foot? _____

5. Fractions are frequently used when determining a linear measurement with a ruler.

   How is the numerator or top number of the fraction determined?

   _____

   How is the denominator or bottom number of the fraction determined?

   _____

6. If a sheet of metal measured $^{14}/_{16}$ inch, how many $^1/_8$ - inch sections would this equal?

   _____

7. Reduce the following measurements to their lowest term.

   $^4/_8$ inch = _____

   $^{12}/_{16}$ inch = _____

   $^4/_{16}$ inch = _____

   $^2/_4$ inch = _____

8. Indicate on the ruler below with an arrow and corresponding number where each of the following measurements are located.

   1. 2 inches
   2. 1 $^1/_2$ inches
   3. $^1/_4$ inch
   4. 2 $^3/_8$ inches
   5. $^{15}/_{16}$ inches