

Measurement (Part 2)



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Objectives

- Converting **Length** Units – English and Metric Systems

Converting Length Units

- As discussed in the last class, there are many different ways of measuring and many different units. The majority of these are important in all areas of trades, but the most commonly used is converting length units, so we will start with these and then look at various different units to work with.
- See conversion sheet

Converting with Unity Fractions

- Since, 12 in = 1 ft we write this as $\frac{12 \text{ in}}{1 \text{ ft}}$ or $\frac{1 \text{ ft}}{12 \text{ in}}$.
- Or, since 1 in = 25.4 mm, we write $\frac{1 \text{ in}}{25.4 \text{ mm}}$ or $\frac{25.4 \text{ mm}}{1 \text{ in}}$.
- Or, since 1 cm = 10 mm, we write $\frac{1 \text{ cm}}{10 \text{ mm}}$ or $\frac{10 \text{ mm}}{1 \text{ cm}}$.
- To convert from one unit to another, multiply the value and unit you are given by one of the unity fractions so that you end up with the unit you are trying to convert to.
- Why are we allowed to multiply by the unity fraction?
- This may seem unnecessary with these two conversions, but as the conversions get more difficult, using this method can help us realize if we should be multiplying or dividing by the conversion factors.

Converting Units within the English System - Length

- Example: 30 in = ____ ft
- Example: 3.8 ft = ____ in (to nearest 16th)

Converting Units within the Metric System - Length

- Example: 2.5 cm = ____ mm
- Example: 540 mm = ____ cm

Converting Units between the English and Metric Systems - Length

► Example: 65.8 mm = ____ in (to the nearest 16th)

► Example: $7\frac{5}{8}$ " = ____ mm

Try Yourself

► 1) 2.45 ft = ____ in (to nearest 16th)

► 2) 125 mm = ____ cm

Try Yourself

► 1) Fill in the missing dimensions

	in (to nearest 16 th)	mm (nearest tenth)
A		345
B	$\frac{1}{2}$ "	
C	$14\frac{3}{16}$ "	
D		10
E	$3\frac{7}{8}$ "	

Try Yourself

► 2) Below are the lengths in inches of the parts from the fraction and decimal activities previously done. Convert the lengths to mm. If time allows, use the pee wee tape (soft measuring tape) to verify your conversions and measure in mm or cm.

Part	Length in inches	Length in mm (nearest mm)	Length in cm (tenth)
A1	$3\frac{1}{4}$ "		
A2	$4\frac{7}{16}$ "		
T1	$2\frac{5}{8}$ "		
T2	$3\frac{9}{16}$ "		
FB1	$1\frac{15}{16}$ "		
FB2	$3\frac{1}{2}$ "		
FB3	$5\frac{1}{8}$ "		