Math 1030 #4a
Solving Problems with Units
US vs Metric Units

mpg

ppm

ft/sec

$/lb
What quantities do we measure and what units do we use?

<table>
<thead>
<tr>
<th></th>
<th>Customary units</th>
<th>Metric system</th>
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<tbody>
<tr>
<td>length &amp; distance</td>
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<tr>
<td>volume</td>
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<tr>
<td>weight (mass)</td>
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Here are a few commonly used conversions between Metric and USCS measurements:

1 in ≈ 2.540 cm    1 oz ≈ 28.3495 g    1 qt ≈ 0.9464 liter
1 yd ≈ 0.9144 m    1 lb ≈ 0.4536 kg
1 mi ≈ 1.6093 km

EX 1:
  a) How many liters are in a 6-pack of 12-oz cans of pop?

  b) If you go 100 km/hr in your Porsche, what is the speed in mph?

  c) If water sells for $2.00 per quart and soda sells for $0.99 per 2-liter bottle, how much more expensive is water?
Formulas:

\[ F = 1.8C + 32 \quad \Leftrightarrow \quad C = \frac{F-32}{1.8} = \frac{5}{9}(F-32) \]

\[ K = C + 273.5 \quad \Leftrightarrow \quad C = K - 273.5 \]

EX 2:

a) Our normal body temperature is 98.6º F. What is this in Centigrade?

b) The average temperature of Madrid, Spain ranges from 0º C to 32º C. How do these compare with Salt Lake City (21º F to 91º F) which is close to the same latitude of 41ºN?