

Complete each of the following problems. For numerical problems, you must show your work in order to possibly earn full credit.

1. Identify the following as either *chemical* (C) or *physical* (P) changes or properties by circling the appropriate letter. (1 pt. ea.)

<u>C</u>	P	a. Vinegar and baking soda produce a gas when mixed.
C	<u>P</u>	b. Chocolate melts if you leave it in the sun.
<u>C</u>	P	c. Cars rust after driving on salted roads.

2. Convert the following table of metric prefixes. The first row is completed as an example. (1 pt. per blank.)

Prefix	Symbol	Exponential Multiplier
milli-	m	$10^{-3}$
<b>micro</b>	$\mu$	<b><math>10^{-6}</math></b>
<b>kilo</b>	<b>k</b>	$10^3$

3. You are driving 113 km per hour (113 km/h), which is roughly 70 miles per hour (70 mi/h). How many meters do you travel in one second? (3 pts.)

There are several approaches to this problem. Regardless of approach, you need to convert kilometers to meters and hours to seconds.

$$\frac{113 \cancel{\text{km}}}{\text{h}} \times \frac{10^3 \text{ m}}{1 \cancel{\text{km}}} = \frac{113,000 \text{ m}}{\text{h}}$$
$$\frac{113,000 \text{ m}}{\text{h}} \times \frac{1 \text{ h}}{60 \cancel{\text{min}}} \times \frac{1 \cancel{\text{min}}}{60 \text{ sec}} = \frac{31.4 \text{ m}}{\text{sec}}$$

So, at 113km per hour, you are travelling at 31.4 meters per second.