

## Handout 2.3

## Dimensional Analysis

SHOW ALL WORK AND SOLVE EACH PROBLEM WITH CORRECT UNITS AND SIG FIGS!

### Some Useful Conversions Factors

1 nautical mile = 6076.11549 feet	1 inch = 2.54 cm
1 league = 5 280 yards	1 cable = 120 fathoms
1 fathom = 6 feet	1 degree = 69.047 miles
1 mile = 5280 feet	1 hand = 4 inches
1 township = 36 square miles	144 square inch = 1 square foot
4 gills = 1 pint	2 pints = 1 quart
1 liter = 1.0567 quarts	1 bushel = 4 pecks = 32 quarts
1 gallon = 4 quarts	

### 1. Simple Conversions:

- How many seconds old are you? (Express with 2 sig figs in scientific notation.)
- Convert your distance from school to home from miles to inches. (Express in scientific notation with 2 sig figs.)
- How many kilometers is it from your house to school? (Express in scientific notation with 2 sig figs.)
- A person's weight is 154 pounds. Convert this to kilograms. (1 lbs. = 454 grams)
- An aspirin tablet contains 325 mg of acetaminophen. How many grains is this equivalent to? (1 gram = 15.432 grains)

### 2. Changes in Latitude, Changes in Attitude.

Each problem requires conversion factors that are listed in the table above.

- Your cruise ship is leaving for a 610-league adventure. How many nautical miles is this?
- Later the ship is discovered at 38 fathoms deep under water. Convert this to meters.
- Fortunately you survived! You are stranded on a deserted island that is located 12.5 degrees north of the equator. How many kilometers is this?
- If you are rationed to 32 gills of fresh water a day. How many liters is this?
- The island has an area of 3.5 townships. How many square yards is this? (Please use scientific notation.)
- To reach the top of a palm tree for a coconut you will have to climb 7.4 meters. How many hands is this?
- The island is rich with hot chile peppers. You can collect 1.6 pecks a day. How many liters could you collect in 1 week?