## Homework Set 1

(Distributed 8/29/16; Due on 9/7/16)
Read Chapters 1 \& 2 (sections 2.1-2.5) in Zumdahl \& DeCoste and complete the listed questions from the text: Chapter 1: 3; Chapter 2: 7, 11, 25, 33, 40, 44, 47; as well as the following problems:
A. Convert each of the indicated quantities to the new units:

| Volume of a single teardrop 0.00721 mL |  | microliters |  |
| :---: | :---: | :---: | :---: |
| Mass of one sugar crystal 0.000625 g | > | -6.25 $\times 10^{5}$ | ng |
| Height of Irvine's 200 Spectrum Center | km | 9840 |  |

B. How many significant figures are there in each of the following quantities?
i. 0.00104 g 3 sig figs
ii. 12010 m 4 sig figs
iii. 0.09206
4 sig figs
C. Write each of the quantities in part B in standard scientific notation.
$1.04 \times 10^{-3} \mathrm{~g}$
$1.201 \times 10^{5} \mathrm{~m}$
$9.206 \times 10^{-2}$
D. Complete the following calculations and express each answer with the correct number of significant figures and units:

1. $205.36 \mathrm{~mL}+72.5 \mathrm{~mL}=\ldots 277.9 \mathrm{~mL}$
ii. $3.55 \mathrm{~cm} \times 12.7 \mathrm{~cm} \times 0.15 \mathrm{~cm}=$ $\qquad$ $6.8 \mathrm{~cm}^{3}$
iii. $24.01 \mathrm{~cm}-6.1 \mathrm{~cm}=$ $\qquad$ 17.9 cm

## Problems from Zumdahl/DeCoste:

## Chapter 1

3. Some possibilities might include the refined petroleum products that fuel your car; burning natural gas or oil heats our homes and the many readily available pharmaceuticals like aspirin or ibuprofen.

## Chapter 2:

7 a. $5.012 \times 10^{-1}$
b. $5.012 \times 10^{6}$
c. $5.012 \times 10^{-6}$
d. $5.012 \times 10^{0}$
e. $5.012 \times 10^{3}$
f. $5.012 \times 10^{-3}$
11. a. $9.782 \times 10^{4}$
b. $4.214 \times 10^{4}$
c. $8.214 \times 10^{-5}$
d. $3.914 \times 10^{-4}$
e. $9.271 \times 10^{2}$
f. $4.781 \times 10^{-1}$
25. a. kilometers
b. meters
c. centimeters
d. micrometers or millimeters
33. (a) 3
(b) 2
(c) 2
(d) 4
40. a. $8.8 \times 10^{-4}$
b. $9.375 \times 10^{4}$
c. $8.97 \times 10^{-1}$
d. $1.00 \times 10^{3}$
44. $b, c$ and $d$ have one significant figure; $a$ has three.
47.a. 52.36
b. 10.90
c. 5.25
d. 6.5

