

**Quiz #1**  
Chemistry, 7<sup>th</sup> ed., Zumdahl & Zumdahl, sections 1.3-1.6

Unless otherwise specified, each question is worth 5 points.

1. For each quantity, match the abbreviation for the units that we typically use in chemistry (using the S.I. or "metric" system): (3 points)

a. mass ..... (circle one:) (g) K L m

b. length ..... (circle one:) g K L (m)

c. volume ..... (circle one:) g K (L) m

2. Five different students made a volume measurement in a chemistry lab. The values they measured are:

21.31 mL, 21.28 mL, 21.33 mL, 21.40 mL, 21.29 mL

If they wanted to report one value (an average, for example), what would be a reasonable number of significant digits to report? BRIEFLY explain your answer.

THEY ALL AGREE TO 2 DIGITS +  
1 UNCERTAIN DIGIT = 3 SIG FIGS

— OR —

STRICTLY APPLYING RULES + TAKING  
AVERAGE → 4 SIG. FIGS

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3. Perform the following calculations, and report your answer to the appropriate number of significant figures. (Use your calculator to do the math!)

a.  $2.3 \times 3.22286 = \dots\dots\dots 7.4$

b.  $2.30 + 3.22286 = \dots\dots\dots 5.52$

c.  $2.000 \times 2.3 = \dots\dots\dots 4.6$

d.  $0.0031 + 9.28 = \dots\dots\dots 9.28$

e.  $9.2 \times 10^{-4} \times 1.23 \times 10^{+2} = \dots\dots\dots 0.11$

4. I have a car (okay, it's a truck – we all drive them in Gardnerville) that reports my gas mileage instantaneously. That is, there's a display in the instrument panel that constantly indicates how many miles per gallon I'm using. Surprisingly, at about 55 miles / hour, I'm getting 29 miles / gallon.

a. How many gallons am I using per hour at this speed?

$$\frac{1 \text{ GAL}}{29 \text{ mi}} \times \frac{55 \text{ mi}}{\text{hr}} = \boxed{1.9 \frac{\text{GAL.}}{\text{HR}}}$$

b. If one (assume 1.000 gallons) gallon of gasoline costs \$2.15, how many miles can I drive for \$5.00?

$$\$5.00 \times \frac{1 \text{ GAL}}{\$2.15} \times \frac{29 \text{ mi}}{\text{GAL.}} = \boxed{67 \text{ mi}}$$