

This quiz is take-home and open book, and it is intended that all members of the group contribute to completing it. It is a violation of the Academic Honor Code to sign a quiz that you did not work on. **The quiz is due at the beginning of class on Thursday, September 7.**

List names in alphabetical order, and give social security numbers! Put names on all pages, and staple pages together

Average =12.8

Median =13.0

High =15.0

Points

- (4) 1. Write each of the following numbers in exponential notation, and give the number of significant figures in the number:

Number	Exponential Notation	Significant Figures
546.21	5.4621×10^2	5
0.0005050	5.050×10^{-4}	4
20.02	2.002×10	4
3105.0	3.1050×10^3	5

- (4) 2. Carry out the following calculations, giving the answer in exponential notation and to the correct number of significant figures:

(a) $25.29 \times 0.0016 = 4.0416 \times 10^{-2}$ (round to 2 sig. fig.)

(b) $\frac{203.27 \times 10^{-2} \times 0.51}{1456} = 7.1200 \times 10^{-4}$ (round to 2 sig. fig.)

(c) $3.12 + 0.04567 = 3.16567$ or 3.17 (round to hundredths position)

(d) $9.2567 - 9.2531 = 3.6 \times 10^{-3}$ (significant to fourth decimal place, but still only 2 significant figures)

- (2) 3. The density of Hg is 13.6 g/mL. What does Hg stand for? What volume would 123.6 g of Hg occupy?

Hg is mercury. $123.6 \text{ g} \times \frac{1 \text{ mL}}{13.6 \text{ g}} = 9.09 \text{ mL}$ (minus 0.1 point if 9.088 is given)

List names in alphabetical order. Be sure to staple pages together!

(3) 4. Carry out the following unit conversions:

$$4.26 \text{ km to cm} \quad 4.26 \text{ km} \times \frac{10^3 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ cm}}{10^{-2} \text{ m}} = 4.26 \times 10^5 \text{ cm}$$

$$55 \text{ L to mL} \quad 55 \text{ L} \times \frac{1 \text{ mL}}{10^{-3} \text{ L}} = 5.5 \times 10^4 \text{ mL}$$

$$35 \text{ }^\circ\text{C to K} \quad 35 \text{ }^\circ\text{C} + 273.15 = 308 \text{ K (ok if only 273 is indicated)}$$

(2) 5. 15.0 g of mercury oxide decomposes upon heating into 13.9 g of mercury and oxygen.

(a) How many grams of oxygen are produced in this reaction?

$$15.0 \text{ g mercury oxide} - 13.9 \text{ g mercury} = 1.1 \text{ g oxygen}$$

1 pt.

(b) How much mercury oxide would be required to produce 14 g of oxygen?

$$\frac{x \text{ g mercury oxide}}{14 \text{ g oxygen}} = \frac{15.0 \text{ g mercury oxide}}{1.1 \text{ g oxygen}}$$

1 pt.

$$x \text{ g mercury oxide} = 15.0 \text{ g mercury oxide} \times \frac{14 \text{ g oxygen}}{1.1 \text{ g oxygen}} = 1.9 \times 10^2 \text{ g}$$

(-0.1 pt if answer given to more than two significant figures)