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Midterm Sample Probs

1. How many sig figs in the following:

10 -

100. -

100.00 -

100.050 -

1,000,501 -

0000.001 -

2. Use rule of sig figs to solve:

$$2.1 + 5.83 =$$

$$7.931 + 2.01 =$$

$$2.0 \times 31.3 =$$

$$5 \times 291.35 =$$

$$100.3 \div 25 =$$

$$1,000,000 \div 331.5 =$$

3. Convert the following

$$90.6 {}^{\circ}\text{C} \rightarrow {}^{\circ}\text{F} =$$

$$295 \text{ K} \rightarrow {}^{\circ}\text{C} =$$

$$721 \text{ K} \rightarrow {}^{\circ}\text{F} =$$

$$98.6 {}^{\circ}\text{F} \rightarrow \text{K} =$$

(2)

4. Solve the following for density

$$25 \text{ g} + 11.5 \text{ ml} =$$

$$100 \text{ g} + 3,000 \text{ ml} =$$

5. Solve for % Error

$$\text{You got } 27.1 \text{ g, Actual} = 26.9 \text{ g} =$$

$$\text{You got } 105.1, \text{ Actual} = 105.2 \text{ g} =$$

6. Calculate Average mass using % Abundance

$$^{35}\text{Cl} = 76\% \quad \& \quad ^{37}\text{Cl} = 24\%$$

$$^{63}\text{Cu} = 69.2\% \quad \& \quad ^{65}\text{Cu} = 30.8\%$$

7.a) If an isotope has a half life of 7 days, & it has aged 3 half lives, how old is it in days?

b) If an isotope is found to be 2,900 yrs old & has gone through 2.1 half lives, what is the half life of the isotope?

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8. Mole calc's

convert 2.3 moles to atoms

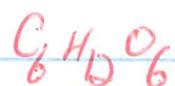
convert 1,000,000,000 atoms to moles

convert 2.3 moles of carbon to mass(g)

convert 251 g Cu to moles

convert 251 g Cu to atoms

9. % Composition by mass



(4)

10. Calculating Empirical formulas

14.79% N, 50.68% Oxygen, 34.53% Zn

27.87% P & 72.13% S

11. Calculating molecular formulas

If actual mass of a compound is 60 g & the empirical formula is CH_2N , what is the molecular formula?

12. Convert moles to volume

convert 45 L into moles of gas @ STP

Convert 3 moles onto 1 liter of gas @ STP