Chemistry 141 Name key

Dr. Cary Willard

Quiz 1a (20 points) February 4, 2013

1. (4 points) Classify each property as physical or chemical
	1. The tendency of ethyl alcohol to burn chemical
	2. The odor of paint thinner physical
	3. The temperature at which dry ice evaporates physical
2. (4 points) Human fat has a density of 0.918 g/mL. How much volume (in quarts) is gained by a person who gains 12.0 lbs of pure fat?

$$?qt=12.0 lb fat×\frac{454 g fat}{1 lb fat}×\frac{1 mL fat}{0.918 g fat}×\frac{1 qt fat}{946 mL fat}=6.27 qt fat$$

1. (4 points) A volatile liquid (one that easily evaporates) is put into a jar and the jar is then sealed. Does the mass of the sealed jar and its contents change upon the vaporization of the liquid? Explain your reasoning.

The mass will remain constant. The state of the matter in the jar has changed, but the amount of matter has not changed therefore the mass will not change.

1. (4 points) The diameter of a hydrogen atom is 212 pm. Find the length in kilometers of a row of 6.022 x 1023 hydrogen atoms. If a ping pong ball has a diameter of 4.0 cm, how many ping pong balls will have the same length as a mole of hydrogen atoms?

$$?km atoms=6.022×10^{23}atoms×\frac{212 pm}{1 atom}×\frac{1 m}{10^{12}pm}×\frac{1 km}{1000 m}=1.28×10^{11}km$$

$$?ping pong balls=1.28×10^{11}km×\frac{1000 m}{1 km}×\frac{100 cm}{1 m}×\frac{1 ping pong ball}{4.0 cm}=3.2×10^{15}balls$$

1. (6 points) On the Grossmont temperature scale, water freezes at 68oG and boils at 428oG. Convert 47oC to oG.

1st determine how many oG above the freezing point

$$47℃×\frac{360^{o}G}{100℃}=169^{o}G above FP$$

2nd adjust for the zero point

$$169^{o}G+68^{o}G=237.^{o}G$$

Chemistry 141 Name key

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Quiz 1b (20 points) February 4, 2013

1. (4 points) Classify each property as physical or chemical
	1. The shine of silver physical
	2. The boiling point of ethyl alcohol physical
	3. The tendency of iron to rust chemical
2. (4 points) Human fat has a density of 0.918 g/mL. How much volume (in quarts) is gained by a person who gains 14.0 lbs of pure fat?

$$?qt=14.0 lb fat×\frac{454 g fat}{1 lb fat}×\frac{1 mL fat}{0.918 g fat}×\frac{1 qt fat}{946 mL fat}=7.32 qt fat$$

1. (4 points) A volatile liquid (one that easily evaporates) is put into a jar and the jar is then sealed. Does the mass of the sealed jar and its contents change upon the vaporization of the liquid? Explain your reasoning.

The mass will remain constant. The state of the matter in the jar has changed, but the amount of matter has not changed therefore the mass will not change.

1. (4 points) The diameter of a sodium atom is 380. pm. Find the length in kilometers of a row of 6.022 x 1023 sodium atoms. If a ping pong ball has a diameter of 4.0 cm, how many ping pong balls will have the same length as a mole of sodium atoms?

$$?km atoms=6.022×10^{23}atoms×\frac{380. pm}{1 atom}×\frac{1 m}{10^{12}pm}×\frac{1 km}{1000 m}=2.28×10^{11}km$$

$$?ping pong balls=2.28×10^{11}km×\frac{1000 m}{1 km}×\frac{100 cm}{1 m}×\frac{1 ping pong ball}{4.0 cm}=5.7×10^{15}balls$$

1. (6 points) On the Grossmont temperature scale, water freezes at 88oG and boils at 428oG. Convert 64oC to oG.

1st determine how many oG above the freezing point

$$64℃×\frac{340^{o}G}{100℃}=218^{o}G above FP$$

2nd adjust for the zero point

$$218^{o}G+88^{o}G=306.^{o}G$$