

AR Chemistry Review Set:

For: Friday January 24 Quiz **Conversion bars and units (words) are required in all conversions!!!!!!**

1. What are the equalities from the “kilocat story”?

_____ km = _____ m : _____ m = _____ cm = _____ mm = _____ μm

2. What are the standard metric units for:

mass = _____ length = _____ volume = _____

3. What units do we use in the lab?

mass = _____ length = _____ volume = _____

4. Level 1 Conversion

How many millimeters are equal to 23.4 cm?

5. Level 2 Conversion

How many hours are in one year?

6. a. What is the definition for “Density”?

b. A material has a density of 6.78 g/mL. What would be the volume of a 48.5 gram sample?

c. You have 111 mL of the material in ‘b’. What is the mass of the material?

7. What are the numbers that go into the following equalities?

_____ mole = _____ grams = _____ atoms/molecules = _____ L@STP

8. You weigh out 92.6 grams of NaCl:

a. How many moles of NaCl do you have?

b. How many molecules of NaCl do you have?

c. How many Liters at STP would the salt have if it could be gas under those conditions (it can't)?

9. How many significant figures are in each of the following numbers?

a. 460 _____ b. 0.00340 _____ c. 1700. _____ d. 4.00 _____

10. Round the following numbers to 3 significant figures

a. 3456 _____ b. 0.168291 _____ c. 377600 _____ d. 14.74976

11. Add the following numbers and report your answer with the correct sig figs: $2.793 + 114.6$

12. Multiply the following numbers and report your answer with the correct sig figs: $(3.14)(16.45)$

AR Chemistry Review Set Answers

For: Friday January 24 Quiz **Conversion bars and units (words) are required in all conversions!!!!!!**

1. What are the equalities from the “kilocat story”?

$$1 \text{ km} = 1000 \text{ m} : 1 \text{ m} = 100 \text{ cm} = 1000 \text{ mm} = 1,000,000 \mu\text{m}$$

2. What are the standard metric units for:

$$\text{mass} = \text{kilogram (kg)} \quad \text{length} = \text{meter (m)} \quad \text{volume} = \text{cubic meter (m}^3\text{)}$$

3. What units do we use in the lab?

$$\text{mass} = \text{grams (g)} \quad \text{length} = \text{centimeter (cm)} \quad \text{volume} = \text{Liter (L)}$$

4. Level 1 Conversion

$$\text{How many millimeters are equal to 23.4 cm? } 23.4 \text{ cm} \times \frac{1000 \text{ mm}}{100 \text{ cm}} = 234 \text{ mm}$$

5. Level 2 Conversion

$$\text{How many hours are in 2.5 years? } 2.5 \text{ years} \times \frac{365 \text{ days}}{1 \text{ year}} \times \frac{24 \text{ hours}}{1 \text{ day}} = 21900 \text{ hours}$$

6. a. What is the definition for “Density”?

$$D = \frac{\text{mass}}{\text{volume}}$$

b. A material has a density of 6.78 g/mL. What would be the volume of a 48.5 gram sample? $48.5 \text{ g} \times \frac{1 \text{ mL}}{6.78 \text{ g}} = 7.15 \text{ mL}$

c. You have 111 mL of the material in ‘b’. What is the mass of the material? $111 \text{ mL} \times \frac{6.78 \text{ g}}{1 \text{ mL}} = 753 \text{ g}$

7. What are the numbers that go into the following equalities?

$$1 \text{ mole} = \text{Molecular Mass grams} = 6.02 \text{ E}23 \text{ atoms/molecules} = 22.4 \text{ L@STP}$$

8. You weigh out 92.6 grams of NaCl:

a. How many moles of NaCl do you have? $92.6 \text{ g NaCl} \times \frac{1 \text{ mol NaCl}}{58.44 \text{ g NaCl}} = 1.65 \text{ mol NaCl}$

b. How many molecules of NaCl do you have? $92.6 \text{ g NaCl} \times \frac{6.02 \text{ E}23 \text{ mole. NaCl}}{58.44 \text{ g NaCl}} = 9.91 \text{ E}23 \text{ molecules NaCl}$

c. How many Liters at STP would the salt have if it could be gas under those conditions (it can't)? $92.6 \text{ g NaCl} \times \frac{22.4 \text{ L NaCl @STP}}{58.44 \text{ g NaCl}} = 36.9 \text{ L@STP NaCl}$

9. How many significant figures are in each of the following numbers?

a. 460 (3) b. 0.00340 (3) c. 1700. (4) d. 4.00 (3)

10. Round the following numbers to 3 significant figures

a. 3456 (3460) b. 0.168291 (0.168) c. 377600 (378000) d. 14.74976 (14.7)

11. Add the following numbers and report your answer with the correct sig figs: $2.793 + 114.6$ (117.4)

12. Multiply the following numbers and report your answer with the correct sig figs: $(3.14)(16.45)$ (51.7)