

Chemistry 12 Substantial Assignment

Name: _____

Date: _____

Moles, Mass and Molecules (show all your work)

1. Convert 11.03 moles of calcium nitrate to grams.
2. How many molecules are contained in 103.4g of sulfuric acid?
3. 3.25×10^{24} molecules of dinitrogen pentoxide would be how many moles?
4. What would be the mass of 9.03×10^{21} molecules of hydrobromic acid?
5. A sample of iron (III) chloride has a mass of 26.29g. How many moles would this be?

6. Calculate the volume at STP occupied by the following.

a. 12.5 mol of $\text{NH}_{3(g)}$

b. 0.350 mol of $\text{O}_{2(g)}$

c. 4.25 mol of $\text{HCl}_{(g)}$

7. Calculate the number of moles contained in the following.

a. 10.6 L of $\text{SO}_{2(g)}$ at STP

b. 0.950 kg of NaOH

c. 5.50×10^{25} molecules of CCl_4

d. 4.25×10^{12} molecules of Fe_2O_3

Basic Algebra

8. Simplify the following:

a. $5p + 6p - 3p =$ _____

b. $6m - 3m + 10m =$ _____

c. $6ab - 3ab - ab + 2ab =$ _____

d. $12mn - 6mn + 3mn =$ _____

e. $9m + 7mn - 6m - 2mn =$ _____

9. Calculate the product:

a. $7 \times 3a =$ _____

b. $4m \times 5m =$ _____

c. $4mn \times 3m \times 2n =$ _____

d. $3a \times 4am =$ _____

e. $(-2p) \times 5 \times (-5p) =$ _____

10. Calculate the quotient:

a. $12a \div -6 =$ _____

b. $-10pq \div 5p =$ _____

c. $50ab \div 25ab =$ _____

d. $-18a \div 6a =$ _____

e. $(-36mn) \div (-9m) =$ _____

11. Simplify the following:

a. $x^6 \times x^5 \times x^3 =$ _____

b. $a^9 \div a^5 =$ _____

c. $(x^2)^4 =$ _____

d. $(3x^3x^4)^2 =$ _____

e. $a^0 + 2a^0 =$ _____

12. Simplify the following:

a. $\frac{a}{12} \times \frac{18}{2a} =$ _____

b. $\frac{7p}{18} \times \frac{5}{14p} =$ _____

c. $\frac{2xy}{7} \times \frac{14}{x^2y^2} =$ _____

d. $\frac{mn^2}{5p^2} \div \frac{m^2n^2}{10p^2} =$ _____

e. $\frac{ab^2}{ac} \times \frac{c^2}{a^2} =$ _____