

1. How many _____?
2. Calculate the molarity of the following solutions:
 - a. 1.0g of NaCl dissolved in water to make 100 mL of solution

$$\frac{1.0g}{58.44g/mol} \times \frac{1000 mL}{1 L} = 0.02 \text{ mol/L} \quad \text{or} \quad \frac{1.0g}{58.44g/mol} = 0.0171 \text{ mol} \quad \text{or} \quad \frac{0.0171 \text{ mol}}{0.1 L} = 0.171 \text{ M}$$
 - b. 2.0g of NaCl dissolved in water to make 100 mL of solution

$$\frac{2.0g}{58.44g/mol} \times \frac{1000 mL}{1 L} = 0.04 \text{ mol/L} \quad \text{or} \quad \frac{2.0g}{58.44g/mol} = 0.0342 \text{ mol} \quad \text{or} \quad \frac{0.0342 \text{ mol}}{0.1 L} = 0.342 \text{ M}$$
3. How many moles of KNO_3 are in 250 mL of a 0.5M solution?

$$0.5 \text{ M} = \frac{\text{mol}}{L} \quad \text{mol} = 0.05 \text{ mol } \text{KNO}_3$$
4. How many moles of NaOH are in 250 mL of a 0.2M solution?

$$0.2 \text{ M} = \frac{\text{mol}}{L} \quad \text{mol} = 0.05 \text{ mol } \text{NaOH}$$
5. A reaction calls for the use of 1.00 mol of KNO_3 . How many grams of KNO_3 should you use?

$$1.0 \text{ mol} = \frac{1 \text{ mol}}{1} \times 101.1 \text{ g/mol} = 101.1 \text{ g} \quad \text{or} \quad 101.1 \text{ g}$$
6. A reaction calls for the use of 1.00 mol of NaOH . How many grams of NaOH should you use?

$$1.0 \text{ mol} = \frac{1 \text{ mol}}{1} \times 39.997 \text{ g/mol} = 39.997 \text{ g} \quad \text{or} \quad 39.997 \text{ g}$$
7. How many grams of KNO_3 are in 250 mL of a 0.5M solution? How many grams?

$$0.5 \text{ M} = \frac{\text{mol}}{L} \quad \text{mol} = 0.05 \text{ mol } \text{KNO}_3 \quad \frac{0.05 \text{ mol } \text{KNO}_3 \times 101.1 \text{ g/mol}}{1 \text{ mol}} = 5.055 \text{ g}$$
8. A reaction calls for the use of 1.00 mol of KNO_3 . How many grams of KNO_3 should you use?

$$1.0 \text{ mol} = \frac{1 \text{ mol}}{1} \times 101.1 \text{ g/mol} = 101.1 \text{ g} \quad \text{or} \quad 101.1 \text{ g}$$