Molarity Worksheet

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Part 1: Building a Foundation

What is the unit of molarity?

Hint: Think about the relationship between moles and volume.

- ◯ grams per liter
- ◯ moles per liter
- ◯ liters per mole
- ◯ grams per mole

Which of the following are necessary to calculate molarity?

Hint: Consider what information is needed for the calculation.

- ☐ A) Moles of solute
- ☐ A) Volume of solution in liters
- ☐ A) Temperature of the solution
- ☐ A) Molar mass of the solute

Explain in your own words what molarity represents in a solution.

Hint: Think about how concentration is defined.

List the formula for calculating molarity and define each component in the formula.

Hint: Consider the relationship between moles and volume.

1. What is the formula?

2. What does 'n' represent?

3. What does 'V' represent?

If you have a 2 M solution, what does the '2 M' indicate?

Hint: Think about what molarity measures.

- ◯ 2 grams of solute per liter
- ◯ 2 moles of solute per liter
- ◯ 2 liters of solution
- ◯ 2% solute concentration

Part 2: Application and Analysis

To dilute a 5 M solution to a 1 M solution, which steps would you take?

Hint: Consider the process of dilution.

- ☐ Add more solute.
- ☐ Add more solvent.
- ☐ Increase the temperature.
- ☐ Use the formula M1V1 = M2V2.

Calculate the volume of water needed to dilute 100 mL of a 6 M HCl solution to a 2 M solution.

Hint: Use the dilution formula to find the answer.

Which factor does NOT affect the molarity of a solution?

Hint: Think about what components are involved in molarity.

- ◯ Amount of solute
- ◯ Volume of solvent
- ◯ Temperature of the solution
- ◯ Type of container used

Analyzing a solution's preparation, which steps are critical for accuracy?

Hint: Consider the importance of precision in measurements.

- ☐ Measuring solute precisely
- ☐ Using a volumetric flask
- ☐ Ensuring complete dissolution
- ☐ Heating the solution

Discuss how the molarity of a solution changes if the solution is heated and why.

Hint: Think about the relationship between temperature and solubility.

Part 3: Evaluation and Creation

If two solutions have the same molarity but different solutes, what can be inferred?

Hint: Consider the implications of molarity on solute properties.

- ◯ They have the same mass of solute.
- ◯ They have the same number of moles of solute.
- ◯ They have the same chemical properties.
- ◯ They have the same density.

Propose methods to increase the molarity of a solution.

Hint: Think about how concentration can be adjusted.

- ☐ Evaporate some solvent.
- ☐ Add more solute.
- ☐ Increase the temperature.
- ☐ Decrease the pressure.

Design an experiment to determine the molarity of an unknown solution using titration. Include the steps and necessary calculations.

Hint: Consider the titration process and how to measure results.