

Building Molecule Models

Name: _____ Date: _____

LEARNING OBJECTIVE

The student will construct 3D models of simple molecules and interpret chemical formulas.

MATERIALS NEEDED

- Toothpicks (15-20)
- Mini marshmallows or gumdrops in at least 3 colors (or clay balls of different colors)
- Notebook paper
- Pencil

HANDS-ON ACTIVITY

1. Assign one color of marshmallow/gumdrop to represent each element you will use (e.g., white = hydrogen, black = carbon, red = oxygen).
2. Build a model of water (H₂O) using 2 hydrogen pieces and 1 oxygen piece connected by toothpicks (bonds).
3. Build a model of carbon dioxide (CO₂) using 1 carbon piece and 2 oxygen pieces connected by toothpicks.
4. Build a model of methane (CH₄) using 1 carbon piece connected to 4 hydrogen pieces.
5. For each model, write its chemical formula and count the total number of atoms on notebook paper next to a sketch of your model.

QUESTIONS

1. What does the chemical formula H₂O tell you about the molecule's makeup?

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2. How many total atoms are in one molecule of methane, CH₄?

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3. What is the difference between an atom and a molecule, based on what you built?

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4. Why did you need different colors of marshmallows/gumdrops for your models?
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