

To understand matter it is important to form pictures in your mind of what is happening on the _____.

Element: a substance made up of only _____.

What is happening inside the copper penny (hint: how are the atoms moving)?

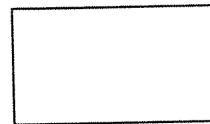
Pure Substance: the smallest individual particles (atoms) are **the same/different**

Molecule: _____ or more atoms are **chemically/physically** joined together

A water molecule has _____ hydrogen atoms and _____ oxygen atoms.

The chemical formula for water is : _____

Draw the water molecule



Subscripts in a chemical formula tell us _____

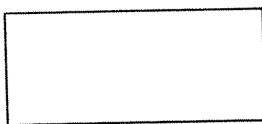
No subscript next to a chemical symbol = that there **are none/is one** of the atom present.

A **compound** is:

How do liquid molecules move:

What is written after the formula for water to represent that it is a liquid? _____

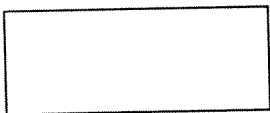
Draw a nitrogen molecule:



Write the formula for nitrogen _____.

How many atoms of nitrogen are present in a nitrogen molecule: _____

Draw the CO₂ molecule:



What elements are present in the CO₂ molecule? _____ and _____

How many oxygen atoms are present in CO₂ molecule? _____

Draw oxygen molecule:



Oxygen is an example of a _____ because there is more than one atom bonded _____.

What is written after the formula for nitrogen, carbon dioxide, and oxygen to represent that they are gases? _____

How do gas molecules move:

Mixture is:

How can you tell the molecules are not chemically bonded?

Write the formula for the mixture of nitrogen, carbon dioxide, and oxygen: _____

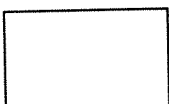
Summary:

1. Atoms or molecules of a solid are arranged _____ and they move by _____. Indication of a solid is done so by adding _____.
2. Atoms or molecules of a liquid have _____ but _____. Indication of a liquid is done so by adding _____.
3. Atoms or molecules of a gas move _____ and they are _____. Indication of a gas is done so by adding _____.

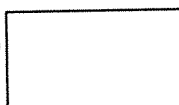
Now you try: What is the formula for: a solid water molecule _____, a liquid bromine (Br₂) molecule _____, and a gaseous carbon dioxide molecule _____.

Draw the picture of:

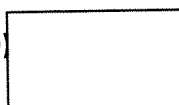
Copper (Cu)



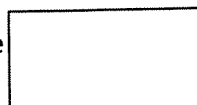
Oxygen (O₂)



water (H₂O)

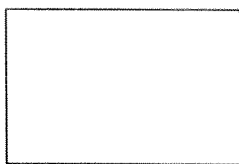


carbon dioxide



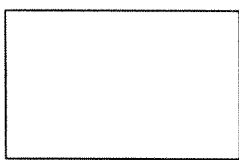
Draw the picture of:

Mixture of carbon dioxide & argon

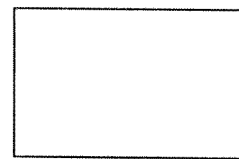


The formulas for this mixture are: _____

Pure substance & an element

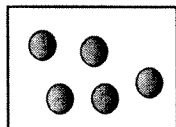


mixture of an element & a compound

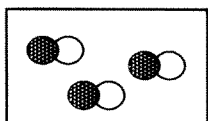


To describe how many atoms or molecules are present, place a _____ in front of the chemical formula.

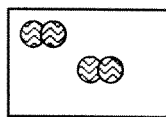
Now you try it: Using coefficients, describe how many of the atoms and molecules are present in each box below



____ He

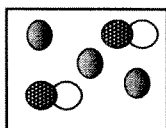


____ CO



____ F₂

Using the figures above for He, CO, and F₂, indicate which element and compound are present in below image. Include coefficients.



_____ + _____

Now.... "try the questions". Complete the **Question Set** for the Particulate Nature of Matter. This is graded. Finish questions successfully, you will need to answer 10 questions correctly before missing 3 questions! Follow the directions. Read carefully, Note: If you have to redo the question set more than 3 times, you need to:

- Read the notes you have taken
- redo the tutorial
- see your teacher for help

Conclusion Questions: The three states of matter

1. Describe the movement of

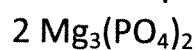
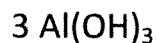
solids _____

liquids _____

gases _____

2. Identify the letters used to indicate the 3 states of matter, solid ____, liquid ____, and gas ____.

3. In each of the following formulas, underline the **coefficients** and circle the **subscripts**.



Use your ChemThink notes or textbook to summarize the definition of each of the following:

4. Element: _____

5. Molecule: _____

6. Compound: _____

7. Pure Substance: _____

8. Mixture: _____

9. Subscript: _____

10. Coefficient: _____