

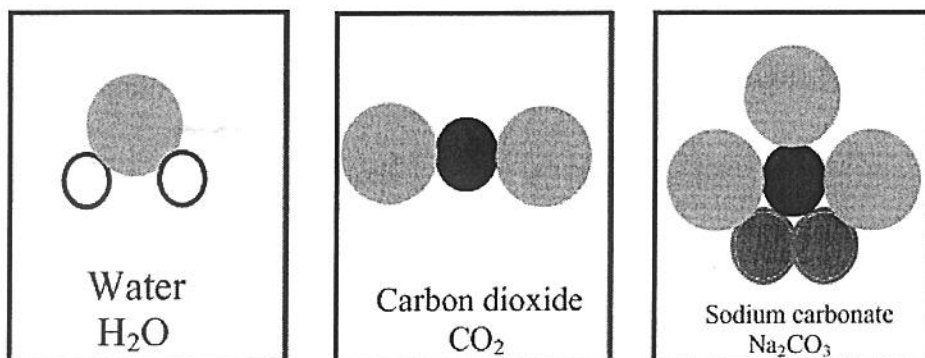
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Modeling Matter

Information

We live in a macroscopic world filled with large-scale, easily observed things. At the same time, we also live in a microscopic world since microscopic particles combine to make our macroscopic objects. Scientists use models to represent these tiny particles.

Model 1: Modeling Compounds



Key Questions

1. Identify which atom is represented by the following. Justify each response.
 - a. White circle
 - b. Black circle
 - c. Light gray circle
2. Are atoms actually circles? Explain your reasoning
3. Using Model 1 as a guide, draw a model of glucose, $\text{C}_6\text{H}_{12}\text{O}_6$.

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Information

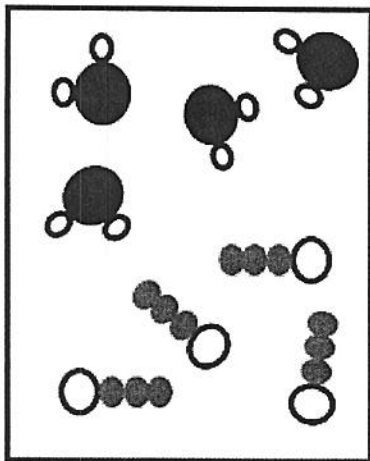
Models can also be used to show mixtures of compounds. Mixtures can be homogeneous – having uniform distribution, or heterogeneous – not having uniform distribution. By using more or less of each symbol, the relative amounts of each substance can also be depicted in models. Models can also be used to show the relative spacing of particles to illustrate whether the substance is a solid, liquid, or gas.

Key Questions

1. Draw a model of a homogeneous mixture of three different elements (include at least 5 of each element)

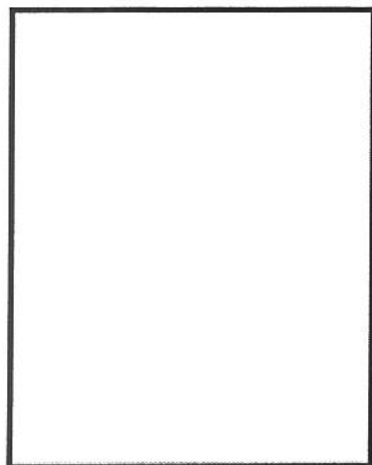


2. Observe the model below and describe as much as you can about the substance it represents. Explain your reasoning.

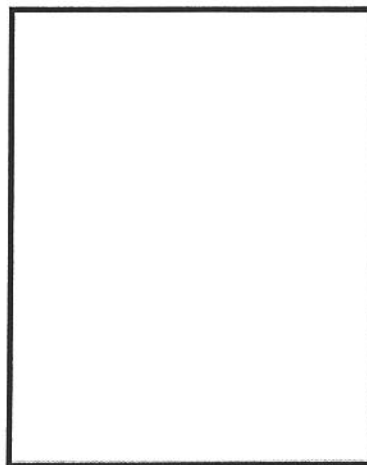


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3. Draw a model of gaseous O_2 . Draw a model of solid O_2 .



Gaseous O_2

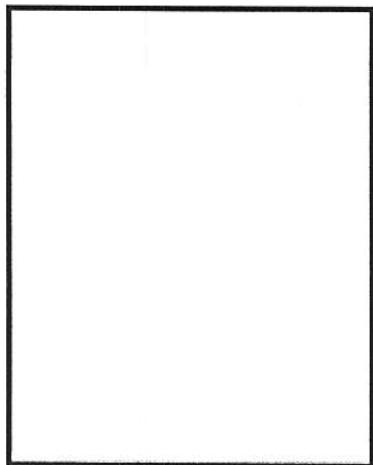


Solid O_2

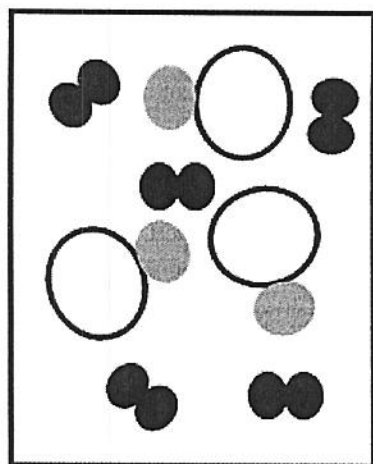
4. Compare and contrast the two models you drew in question 3.
5. Use your two models to explain why solids generally have greater densities than gases.
6. How would a model of gaseous N_2 compare to your model of gaseous O_2 ?

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7. The Earth's atmosphere is about 80% N_2 and about 20% O_2 . Draw a model of the Earth's atmosphere.



8. A student was asked to draw a model of a mixture composed of an element and a compound. Evaluate the student's drawing



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9. Draw a different model of this mixture (from question 8) that meets the basic requirements. Discuss how your model differs from the one given, but is still an acceptable model.

