

**STUDY GUIDE****Chapter 17****Masses of Atoms**

Use the terms in the box to complete the following paragraph about atomic mass. Terms may be used more than once.

number	standard	neutron(s)	proton(s)	mass
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The electron has very little mass compared to the \_\_\_\_\_ or \_\_\_\_\_ . The mass of the atom depends on the nucleus and how many \_\_\_\_\_ and \_\_\_\_\_ it has. The sum of the protons and neutrons is the mass \_\_\_\_\_ of an atom. The number of neutrons in an atom can be found by subtracting the atomic number from the \_\_\_\_\_ number. The mass of the atom is so small that there is a measure called the atomic \_\_\_\_\_ unit with a symbol of “ $\mu$ .”

Use the terms in the box to complete the following paragraphs about isotopes. Terms may be used more than once.

many	mixtures	protons	neutrons	between	number
element	one	isotopes	six protons	electrons	

The nuclei of all atoms of a given element always have the same number of \_\_\_\_\_. They will also have the same number of \_\_\_\_\_ around the nucleus. Some atoms may have more or fewer \_\_\_\_\_ than will other atoms of the same element. Atoms of the same element with different numbers of neutrons are called \_\_\_\_\_. Hydrogen has three isotopes. A hydrogen atom may contain zero, one, or two \_\_\_\_\_. Every atom of carbon must contain \_\_\_\_\_, but some contain six neutrons and others have eight neutrons. Some elements have only \_\_\_\_\_ natural isotope; however, other elements may have \_\_\_\_\_ isotopes.

One way of showing the difference between isotopes of an element is to put the mass \_\_\_\_\_ after the name of the element. The second way of showing an isotope is to write the mass number and the atomic number with the symbol of the \_\_\_\_\_. In nature, most elements are \_\_\_\_\_ of isotopes. In chlorine gas, there are two isotopes and the average mass of this element is \_\_\_\_\_ the two.

## REINFORCEMENT

## Chapter 17

### Masses of Atoms

#### Isotopes

*Answer the following questions on the lines provided.*

1. Define isotopes. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. How many isotopes can an element have? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. What is the average atomic mass of an element? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
4. Compare and contrast the atomic structure of the chlorine-35 and chlorine-37 isotopes.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. Suppose that a newly discovered element called centium has three isotopes that occur in nature. These are centium-200, centium-203, and centium-209. Assume that these isotopes occur in equal amounts in nature. What will be the average atomic mass of this element? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_