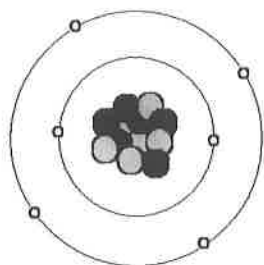


Name _____ Date _____ Period _____

Atoms, Ions and Isotopes



This picture shows an **ATOM** of carbon. Atoms are electrically **neutral**.

How many protons are there? _____

How many neutrons are there? _____

How many electrons are there? _____

What is the electrical charge of a proton? _____ neutron? _____

electron _____?

Key to the sub-atomic particles:

proton ● neutron ○ electron ○

In order that an atom to be neutral, what 2 sub-atomic particles must have the same number?

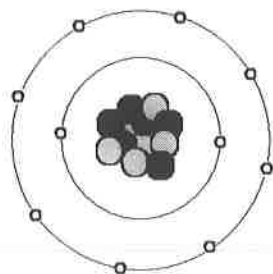
_____ and _____

What is the atomic number of this atom? _____ The atomic number is equal to the number of _____.

What is the mass number of this atom? _____ The mass number is equal to the number of _____ + _____.

Write the complete chemical symbol for this atom:

This is an **ION** of carbon.



What makes this ion different than an atom? _____

How many protons are there? _____

How many neutrons are there? _____

How many electrons are there? _____

What is the electrical charge of a proton? _____ neutron? _____

electron _____?

Is an ION electrically neutral? _____

Are there extra protons or electrons? _____ What is the electrical charge of this ion? _____

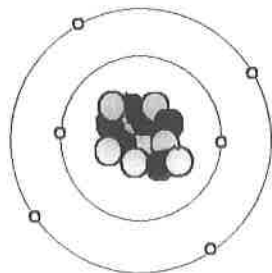
An ION is an atom that has _____ or _____ electrons. If an atom **LOSES** electrons, then there will be extra protons / electrons. (Circle one.) When atoms loses electrons a positive / negative ion is formed. (Circle one.)

If an atom **GAINS** electrons, then there will be extra protons / electrons. (Circle one.) When atoms gains electrons a positive / negative ion is formed. (Circle one.)

What is the atomic number of this ion? _____ What is the mass number of this ion? _____

Write the complete chemical symbol for this ion:

This is an **ISOTOPE** of carbon



What makes this isotope different than the atom on top? _____

How many protons are there? _____

How many neutrons are there? _____

How many electrons are there? _____

What is the atomic number of this isotope? _____ What is the mass number of this isotope? _____

Write the complete chemical symbol for this isotope:

Look at all three carbons: the atom, the ion, and the isotope. Which sub-atomic particle has not changed?

_____. This is what determines that this is **CARBON**. The type of element is determined by the number of _____.

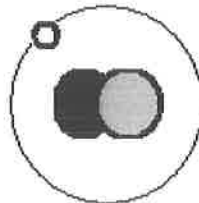
Here are some pictures of another element's: **ATOM**, **ION**, and **ISOTOPES**.



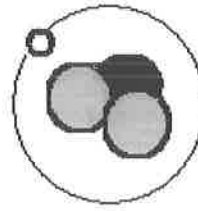
ATOM



ION



ISOTOPE



ISOTOPE

What element is this? _____ How do you know? _____

Write the complete chemical symbol for the **ATOM**:

Write the complete chemical symbol for the **ION**:

Write the complete chemical symbol for the first **ISOTOPE**:

Write the complete chemical symbol for the second **ISOTOPE**:

REVIEW:

An **ATOM** is electrically _____, so it has the same number of _____ and _____.

What part of an atom determines the type of element? _____

This number is also called the _____.

An **ION** is an atom that has gained or lost _____.

If an atom gains electrons, it forms a/an positive / negative ion. (Circle one.)

If an atom loses electrons, it forms a/an positive / negative ion. (Circle one.)

An isotope is an atom that has a different number of _____.

ISOTOPES are elements with the same atomic number / mass number, but different atomic number / mass number (Chose one from each set.)