

Name: _____ Date: _____

Notes: Nuclear Reactions

What are the 3 subatomic particles in an atom? _____

What is the charge of each? Proton: _____ Neutron: _____ Electron: _____

Which subatomic particles are in the nucleus? _____

State the relative masses of each subatomic particle in the spaces below:

Protons _____ Neutrons _____ Electrons _____

Why do we not discuss electrons when discussing mass? _____

How are elements identified? _____

Define **isotope**: _____

Define **mass number**: _____

How do you find the number of neutrons? _____

When determining the identity of an isotope, how would you find its name?

When determining the identity of an isotope, how do you find its mass number?

Fill in the blanks with the correct number of neutrons for each isotope?

Carbon-13 has _____ neutrons Uranium-239 has _____ neutrons

Hydrogen-3 has _____ neutrons Boron-11 has _____ neutrons

Fluorine-19 has _____ neutrons Chlorine-37 has _____ neutrons

Write the name of the isotope for each of the combinations of protons and neutrons below:

47 protons and 61 neutrons = _____

20 protons and 20 neutrons = _____

30 protons and 35 neutrons = _____

8 protons and 8 neutrons = _____

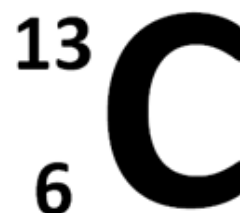
18 protons and 22 neutrons = _____

What do we use to abbreviate elements? _____

Label the **mass number** in the diagram to the right.

Label the **atomic number** in the diagram to the right.

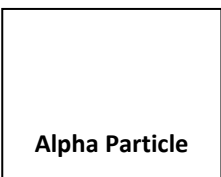
What will normally not be written for you in a nuclear reaction problem?



Add atomic numbers to the isotopes below.



What happens to unstable isotopes? _____



How many protons are in an alpha particle? _____

How many neutrons are in an alpha particle? _____

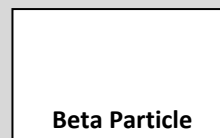
What is the mass number of an α particle? _____

α particles are the nuclei of what element? _____

What is the mass of a beta particle? _____

What is the charge of a beta particle? _____

β particles are also known as what? _____



What is the mass of a positron? _____

What is the charge of a positron? _____

What are positrons the antiparticles of? _____

What kind of high energy radiation is always released? _____

What is the symbol for gamma radiation? _____

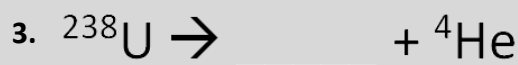
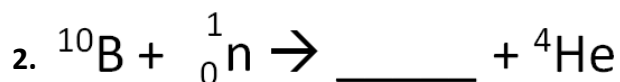
What is the symbol for a neutron? _____

Completing Nuclear Reactions

Step 1: _____

Step 2: _____

Step 3: _____



Define **fission**: _____

What is an example of a fission reaction? _____

Define **fusion**: _____

What is an example of a fusion reaction? _____

What can radiation cause? _____

Sketch the radioactive safety symbol in the space to the right.

