7.1 Radioactivity and Isotopes

Radioactivity has been used to explain the origins of many superheroes. But what is it?

Radioactivity is the release of _____ and rays of energy from a substance as a result of changes in the

_____ of its atoms.

(translation: parts of the _____ break off and

releases _____)

This occurs naturally (_____ radiation).

It is responsible for the earth being _____ under

the_____ . In fact, we are all being bombarded by radioactive particles everyday.

_____refers to high-energy rays and particles emitted by radioactive sources.

The _____ is a great example of forms of radiation. One form of radiation visible to

humans is _____.

_____ were discovered when a German physicist realized there was an unseen energy being released from certain

materials. He called them _____ because ___ represented the unknown.

Before digital cameras your camera would capture light on photographic paper. The light would cause a chemical reaction turning the exposed area dark.

A French physicist discovered (by accident) that _____ salts would also darken photographic paper.

One of the most famous and intelligent scientists of all time

was _____. She (along with her husband) figured out what was happening in the situation described

above. The _____ were able to explain what was happening and also identified two new elements:

_____ and _____ . She is one of only 4 people to win 2 Nobel prizes. Sadly, she died of radiation poisoning in 1934.

_____ are different atoms of a particular element that have the same number of protons but different number of

_____.

The _____ of a particular atom is a whole number representing the number of

_____ and_____.

_____# = _____# + # of _____

You may recall "standard notation" from Grade 9. It is a way to write the symbol of any particular atom including information about the number of neutrons. Another name for this is

_____.

There is often more than one type of _____ for

any element. _____ (for example) can have 20, 21, or 22 neutrons. They naturally occur in different amounts. For example, 93.26% of all potassium atoms have 20 neutrons, 6.73% have 22 neutrons, and 0.01% have 21.

This is the reason that the _____

of most elements is a decimal number: it is really an _____ mass of all of the isotopes of a particular atom.

Sometimes when discussing the various isotopes you want to differentiate between them. This is usually done by adding the

_____ at the end of the name of the element

(example_____, _____, _____)

Please note that the _____ and _____

of all isotopes are the same.

The only difference is in the _____.