Physical Science Unit 11 *Radioactivity and Nuclear Reactions* Study Guide

The three types of nuclear radiation in increasing order of penetrating power are alpha, beta, gamma.
A geiger counter is a tube filled with a low-pressure gas with a charged wire running through its center.
Fission means "to divide."
Fusion is the combining of two low-mass nuclei into one nucleus with a larger mass.
Radioactive isotopes that are put into the body to monitor a bodily process are called tracers.
Ionizing radiation can be given internally or externally.
Strong force is the force that causes protons and neutrons to be attracted to each other.
Transmutation is the process of changing one element to another through nuclear decay.
Gamma rays are electromagnetic waves in the form of radiation.
If a source of radiation is placed near cancer cells, atoms in the cells can be ionized and can die or stop growing
The type of radioactive particle that can be stopped by a sheet of paper is the alpha particle.
One type of radioactive device that indicates the intensity of radiation with a clicking sound that increases in frequency as more radiation is present is a(n) Geiger counter.
When the strong force is not sufficient to hold unstable nuclei together permanently, the nuclei decay.
The amount of material left after two half-lives is one-fourth of the original amount.
A helium nucleus with two protons and two neutrons is called a(n) alpha particle.
An instrument that detects radiation by means of a superheated liquid is a bubble chamber.
Negatively charged particles emitted from a nucleus at a high speed are beta particles.
The first radioactive detector was a photographic plate.
The most penetrating type of radiation is the gamma ray.
The stability of an isotope nucleus depends on the neutron-to-proton ratio.
Radioactive tracers are useful in determining medical problems.
Both a fusion reaction and a fission reaction produce energy.
When the strong force is not large enough to hold a nucleus together tightly, the nucleus can become radioactive.
Neutrons released in a fission reaction can strike other nuclei and cause a chain reaction.
The process by which nuclei having low masses are united to form nuclei with larger masses is nuclear fusion.
Which of the following elements is most likely to be produced during a nuclear fusion reaction in the Sun?
When an electroscope is given a negative charge, its leaves repel each other and spread apart.
To calculate the age of a piece of bone, a scientist most likely would use carbon-14. .
The discovery of radioactivity by Henri Bequerel involved a photographic plate.
Carbon-14 is radioactive and carbon-12 is not because the neutron to proton ratio is higher for Carbron-14.
Be able to name radioactive detectors.
Be able to recognize a fission and fusion reaction and to describe the difference between the two.