

CHM 107LL
Nuclear Lab

Bill Nye DVD

Name _____

1. It takes one train car full of nuclear fuel to run a nuclear power plant for a year, but it takes an entire train full of coal cars to fuel a coal plant for how long? _____
2. At the Columbia generating station, a nuclear power plant, the three main buildings are the reactor, the generator, and the _____ towers.
3. To start the uranium chain reaction we need to bombard the uranium fuel rods with these particles. _____
4. The uranium reaction is called _____, which means that large atoms are split into smaller atoms.
5. The waste produced by a nuclear power plant in 60 years could be stored in a convenient store. True False
6. Radiant energy is all types of energy such as microwaves, radio waves, light and heat.
True False
7. The first nuclear power plant was started in the:
a. 1930's b. 1950's c. 1970's d. 1980's e. 1990's
8. The biggest problem with nuclear power plants is where to store the radioactive waste. One plan involves putting it underground at _____ Mountain in Nevada.
9. The half life of radioactive material is defined as the time it takes for _____ of the radioactive atoms to decay or react.
10. World wide there is about _____ tons of nuclear waste.

Elegant Universe DVD

1. The _____ nuclear force holds the protons and neutrons together in the nucleus of an atom.
2. The _____ Site is where the first atomic bomb was exploded on July 16, 1945.
3. That bomb had the force of about 20,000 tons of _____.
4. The _____ nuclear force is still evident as seen by the radioactivity at the site, in fact it is still about 10 times more than normal as seen by the Geiger counter.

Nuclear Reactions:

Your instructor will explain how to write alpha, beta, and gamma decay / emission reactions.

1. Write the alpha decay reaction for Uranium-238 (^{238}U).
2. Write the alpha decay reaction for Americium-241 (^{241}Am).
3. Write the beta decay reaction for Nitrogen-14 (^{14}N).
4. Write the beta decay reaction for Cesium-137 (^{137}Cs).
5. Write the gamma decay reaction for Nickel-60 (^{60}Ni).
6. Write the gamma decay reaction for Neptunium-237 (^{237}Np).

Post Discussion Questions – Answer all three questions in complete sentences with proper grammar and spelling after the class discussion. Explain your answers.

1. Should the US produce more nuclear warheads, dismantle the ones we have, or do nothing and stay the same? Why? Explain.

2. Should the US build more nuclear power plants, shut down the ones we have, or stay the same? Why? Explain.

3. Discuss three pros of having nuclear power plants and at least two cons.

4. After today's lesson and discussion did your thoughts on nuclear power change or stay the same? Elaborate and explain.

5. After today's lesson and discussion did your thoughts on nuclear bombs change or stay the same? Elaborate and explain.