

Name _____
Date _____ Hour _____

11.3: Harnessing the Nucleus

Otto Hahn and Fritz Strassman discovered that when the nucleus of an atom of uranium-235 is struck by a neutron, _____ were produced.

Lise Mietner and Otto Frisch explained that the uranium nucleus had _____.

Why was this explanation so surprising?

Define nuclear fission:

In a typical nuclear fission reaction, one _____ hits a uranium-235 nucleus and produces barium-141, krypton-92, three _____ and lots of energy.

Draw a picture of the fission process (Figure 11-15 should help)

Define and explain a nuclear chain reaction:

_____ is produced by a nuclear chain reaction.

In nuclear fission, the mass of the reactants is being converted into _____.

What are two examples of nuclear fission?

1. _____
2. _____

Define nuclear fusion:

What is the difference between nuclear fission and nuclear fusion?

_____ is needed for nuclear fusion to take place. This forms _____, a phase of matter that consists of positively charge ions and free electrons. These conditions can exist _____.

In nuclear fusion, the mass of the reactants is being converted into _____.

Draw a picture of the nuclear fusion process (Figure 11-18 should help)

What are some advantages of nuclear fusion over nuclear fission?

1. _____
2. _____
3. _____

What are some disadvantages (or difficulties) that exist with nuclear fusion?

1. _____
2. _____

What is an example of nuclear fusion? _____
How does this example get enough energy to react? _____

Does fission or fusion produce more energy? _____

Does fission/fusion or radioactive decay produce more energy? _____