

Name : _____



Nuclear Chemistry Worksheet



1. The splitting of the nucleus into lighter nuclei is called _____
2. When light mass nuclei combine to form a heavier, more stable nucleus, this is called _____
3. What is the difference between nuclear fusion and nuclear fission?
4. Do current nuclear power plants “harvest” energy from fusion or fission reactions? Why?
5. What is a “mass defect” and why is it important?
6. Name three uses for nuclear reactions.
6. Write an equation showing that when protactinium – 229 goes through two alpha decays and forms francium – 221.
7. Write the nuclear equation for the decay of Po-210 if it undergoes two consecutive alpha decays, followed by a beta decay and another alpha decay.

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Nuclear Chemistry Worksheet



1. The splitting of the nucleus into lighter nuclei is called nuclear fission.
2. When light mass nuclei combine to form a heavier, more stable nucleus, this is called nuclear fusion.
3. What is the difference between nuclear fusion and nuclear fission?

In nuclear fusion, small nuclei are combined to form a larger nucleus. This process releases tremendous energy and is the sun's primary energy source. In nuclear fission, large nuclei break apart to form smaller ones, releasing much energy. Fission is used in nuclear power plants to generate energy.

4. Do current nuclear power plants "harvest" energy from fusion or fission reactions? Why?

Nuclear power plants generate electricity by "harvesting" energy from fission reactions. While fusion has the potential to be a clean and virtually limitless source of energy, it is still an experimental technology that has not yet been developed for commercial use.

5. What is a "mass defect" and why is it important?

"Mass defect" refers to the difference between the mass of the nucleons (protons + neutrons) in a nucleus when weighed separately and the mass of the nucleus when it is put together. This difference is essential because this missing mass is converted to energy using $E=mc^2$, which holds the nucleus together.

6. Name three uses for nuclear reactions.

- Nuclear weapons
- Medicine
- Nuclear power generation

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7. Write the nuclear equation for the decay of Po-210 if it undergoes two consecutive alpha decays, followed by a beta decay and another alpha decay.

