

Fission & Fusion Webquest

Task 1: Nuclear Fission

Use this Nuclear Fission: en.wikipedia.org/wiki/Nuclear_Fission webpage to answer the following questions.

1. What are the two most common nuclear fuels?
2. Nuclear fuels are bombarded by what particles to induce their fission?
3. Why do heavy elements nuclei contain proportionally more neutrons than light element nuclei?
4. What does it mean if an isotope is "fissionable"?
5. What does it mean if an isotope is "fissile"?
6. How is the number of neutrons in an "assembly" involved in creating a "sustained nuclear chain reaction"?
7. Define "critical mass"?
8. What is a "breeder reactor"?
9. What is a "power reactor"?

Task 2: Nuclear Fusion

Use this Nuclear Fusion: en.wikipedia.org/wiki/Nuclear_fusion webpage to answer the following questions.

1. What happens when two nuclei lighter than iron are fused?
2. What happens when two nuclei heavier than iron are fused?
3. Who first observed the fusion of light nuclei and in what year?

4. The collision of two nuclei to produce nuclear fusion produced a LOT of energy. There is only one type of collision that is known to produce more energy. What is it?
5. The strong nuclear force can easily overcome the electrostatic force that pushes like charges apart. So why is so much energy needed to bring positive nuclei together to fuse?
6. Gravity is a force strong enough to confine fusion fuels close enough for ignition. Why can't we make a fusion reactor using gravity?
7. The "proton-proton chain" produces most of the energy in stars the size of our Sun and smaller. What particles fuse in this reaction?
8. What is produced by the proton-proton chain?

Task 3: Nuclear Explosions

Use this [Nuclear Explosions: en.wikipedia/wiki/Nuclear_explosions](https://en.wikipedia/wiki/Nuclear_explosions) webpage to answer the following questions.

1. On what month, day and year was the first man-made nuclear explosion?
2. What was the "name" of the bomb dropped on Hiroshima, Japan?
3. When was the first Russian test of a fission weapon?
4. When was the first test of a fission weapon in the United Kingdom?
5. Who or what was Ivy Mike?
6. When was the first French test of a fission weapon?
7. When was the first test of a fission weapon by China?
8. When was the first test of a fission weapon by India?