



## Nuclear Science Week

### The Fission Game

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**OBJECTIVE:**

*To help students understand how a large atomic nucleus can be split into two smaller particles, which produce energy for nuclear power.*

**Grade:** 3-8**Intended Learning Outcome:**

- Make predictions
- Use a model to demonstrate understanding
- Understand science concepts and principles

**Subjects:** Science, Physics, Math**Materials:**

- Balloons (2 per student) to serve as neutrons

**Teaching Time:** One class period or approximately 45 minutes**Number of Players/Students:** Full class (20-30 students) – this activity will work better with a large group.**Teacher Information:** This activity is meant to demonstrate that a nuclear reaction is constantly producing energy.

Nuclear fission is the process in which the nucleus of a uranium atom splits into smaller atoms (called fission products), producing 2 or 3 free neutrons and releasing a very large amount of energy. Fission is the process by which energy is produced in a nuclear reactor.

**Procedure:**

- 1) Each student gets two balloons (neutrons) to hold. Students should stand together in a close-packed group.
- 2) The reaction starts with a balloon (source neutron) being thrown into the group by the teacher or a volunteer.
- 3) When hit with a balloon that is in the air, the students will demonstrate “fission” by throwing their two balloons into the air.
- 4) Add “control rods” (a person who grabs balloons out of the air,

making them unavailable to cause fission) one at a time. Discuss how adding control rods affect the chain reaction. More control rods = slower reaction. Keep increasing the number of rods until the reaction proceeds very slowly or not at all.

- 5) Discuss chain reaction, critical, sub/supercritical, and reactor control.
- 6) If there is enough time, discuss how you use fission to make electricity, then discuss different electricity generation types.