

Math Lab

# Graphing Radioactive Decay

You can use some dried corn, a box, and a watch to make a model of radioactive decay that will show you how scientists measure the age of objects.

## MATERIALS

- approximately 100 dry corn kernels per group
- cardboard box
- clock or watch with a second hand

## Procedure

1. Assign one member of your team to keep time.
2. Place 100 dry corn kernels into a box.
3. Shake the box gently from side to side for 10 seconds.
4. Keep the box still and remove and count the kernels that “point” to the left side of the box. Record in the data table below the number of kernels you removed.

| Data Table                 |                           |                             |
|----------------------------|---------------------------|-----------------------------|
| Total shake time (seconds) | Number of kernels removed | Number of kernels remaining |
| 10                         |                           |                             |
| 20                         |                           |                             |
| 30                         |                           |                             |
| 40                         |                           |                             |
| 50                         |                           |                             |
| 60                         |                           |                             |

5. Repeat steps 4 and 5 until all kernels have been counted and removed.
6. Calculate the number of kernels remaining for each time interval.
7. Make a graph using your group’s data. Plot “Total shake time (seconds)” on the *x*-axis. Plot “Number of kernels remaining” on the *y*-axis. Use a separate sheet of graph paper.

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Graphing Radioactive Decay *continued***

**Analysis**

**1. Identify** what the removed kernels represent in each step.

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**2. Calculate** the half-life of your sample, in seconds, that is represented in this activity.

**3. Calculate** the age of your sample, in years, if each 10-second interval represents 5,700 years.

| Total shake time (seconds) | Number of kernels remaining |
|----------------------------|-----------------------------|
| 10                         |                             |
| 20                         |                             |
| 30                         |                             |
| 40                         |                             |
| 50                         |                             |
| 60                         |                             |
| 70                         |                             |
| 80                         |                             |
| 90                         |                             |
| 100                        |                             |

**4. Evaluate** the ability of this model to demonstrate radioactive decay.

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