

HALF-LIFE SIMULATION

PURPOSE

To develop an understanding of the concept of half-life and radioactive decay.

EQUIPMENT

Shoe box and lid or other container
Pennies
M & M's
Brass fasteners
Graph paper

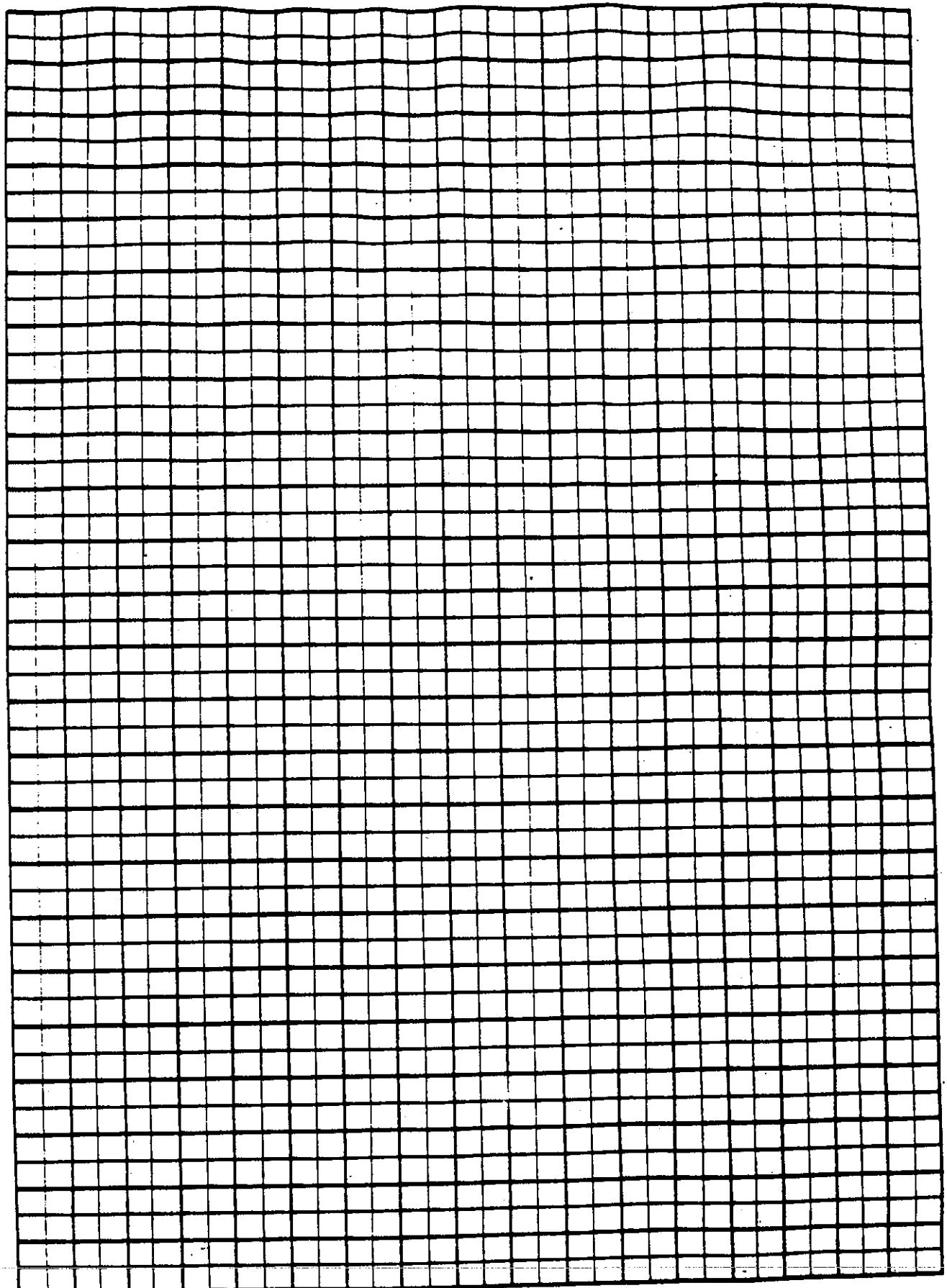
PROCEDURE

1. Before beginning this activity, count the total number of pennies or M & M's in the container. Record this number.
2. With the lid on, shake the box/container several times. Remove the lid and remove all pennies with the head side up. If you are using M & M's, remove those that have the "M" side up. Count how many objects are removed and record this in a data table. Do not put the objects back in the box.
3. Repeat Step 2 over and over until one or no objects remain in the box. Record the number of objects removed each time in a data table.
4. Calculate how many objects remained in the box after each shake and record this in the data table.
5. Repeat steps 1-4 using brass fasteners instead of pennies or M & M's. When using brass fasteners, after each shake, remove those fasteners that are point end up.
6. For each type of object used, graph the number of objects remaining (vertical axis) versus the number of shakes (horizontal axis). Draw a smooth line/curve that best fits the points for each set of data.

ANALYSIS

1. According to your graph, approximately how many pennies or M & M's were removed after each shake? Why?
2. According to your graph, approximately how many brass fasteners were removed after each shake? Why?
3. Each type of material (pennies, M & M's, brass fasteners) represents a different radioisotope. What does this lab suggest about the half-life of various radioisotopes?

Name _____ Class _____ Date _____



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