Earth Science Investigation
M & M® HALF-LIFE LAB

Name_____
period_____ date_____

Goal: (1) demonstrate radioactive decay
(2) Illustrate the concept of half-life
(3) construct a graph to show results

PRELAB: define the following: (use a dictionary)
(A) disintegration:
(B) half-life:
(C) radioactive decay:
(D) isotope:

Materials needed: • around 100 M&M candies • box: baby wipe or shoebox
• graph paper

PROCEDURE:
(1) Place the candies "M"- facing up in the bottom of the shoebox. Count this starting number.
(2) Close the cover and gently shake.
(3) Open the box and remove all the ***changed*** candies - those that now have the"M"-side down.
(4) Count and record the number of unchanged candies remaining in the box (those with the M's up) Record this on data chart. Also record the number of changed candies.
(5) Repeat steps 2,3, and 4 until all the candies have turned.

DATA TABLE:

trials	# ***unchanged***	# ***changed***

(6) **Graph the information from the chart.** In this model of half-life decay - The X-axis will be the number of shakes (independent variable) and the Y-axis will be How many **unchanged** (dependent variable.) Draw a red curve line for the data.

Conclusion questions:

1. How many atoms changes by the end of this lab? _____
2. Compared to the original number of atoms you started with, approximately how many were left after each shake? _____
3. If each shake represented 500 years, what would the half-life of the atoms (M&M) be? _____
4. What are some inaccuracies of this experiment in demonstrating half-life?

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5. Will all of the carbon -14 in nature eventually disappear? (explain.)

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6. Can C-14 dating be used for dating organic substances from the Precambrian era? (explain)

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7. Can carbon-14 be used to date lava flows?

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8. Write your own conclusion for this lab.

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