Licorice Decay

Background

Radioactive decay is when an element spontaneously transforms into another by changing the number of protons in its nucleus. Certain isotopes are radioactive and emit energy as they decay to become stable. The time it takes for half of the atoms in a given mass to emit radiation and change to a more stable state is called a half-life.

Questions

1. What happens when you cut something in half and then in half again and again and again?
2. What kind of graph does it create?
3. How many times can you cut an item in half before it gets too small to handle?

Materials

- Two licorice sticks
- *Licorice and M&Mium Decay Graph* **(or graph paper)**

Procedure

4. Place a full length licorice stick above the 0 on the graph.
5. Take the second licorice stick and cut its length in half.
6. Place one half on the graph above the 1 with the bottom end touching the horizontal (bottom) axis. It should start to look like a bar graph.
7. Take the second half and cut its length in half.
8. Repeat, placing each consecutive half on the graph at the correct Half Cut location.
9. When you are unable to split the licorice any further, use your pen to place a dot at the top of each piece of licorice.
10. Dispose of licorice either in your gullet or in the garbage.
11. Draw a smooth line or curve to connect the dots on your graph.

Conclusion

1. Describe the shape of the graph.

2. How many times were you able to cut the licorice in half before it became too small? _____