Simulating Nuclear Decay with Smarties

Name: _____

Date: _____
Activity Title: Smartie Nuclear Decay Simulation

Aim - To model how radioactive decay happens randomly over time and understand the concept of half-life.

Materials:

- ~40 Smarties or similar lollies
- 1 die (six-sided)
- 1 plastic cup or container
- Pen/pencil

Instructions:

1. Place all Smarties into your cup. These represent unstable radioactive atoms.
2. Shake and pour the Smarties onto the table.
3. For each Smartie, roll a die:
   - If the number 6 is rolled, that Smartie has decayed (remove or eat it!).
   - If any other number is rolled, return the Smartie to the cup.
4. Record how many Smarties remain undecayed after each round in the table below.
5. Repeat steps 2–4 for 10 rounds or until no Smarties remain.
6. Complete the graph and questions below.

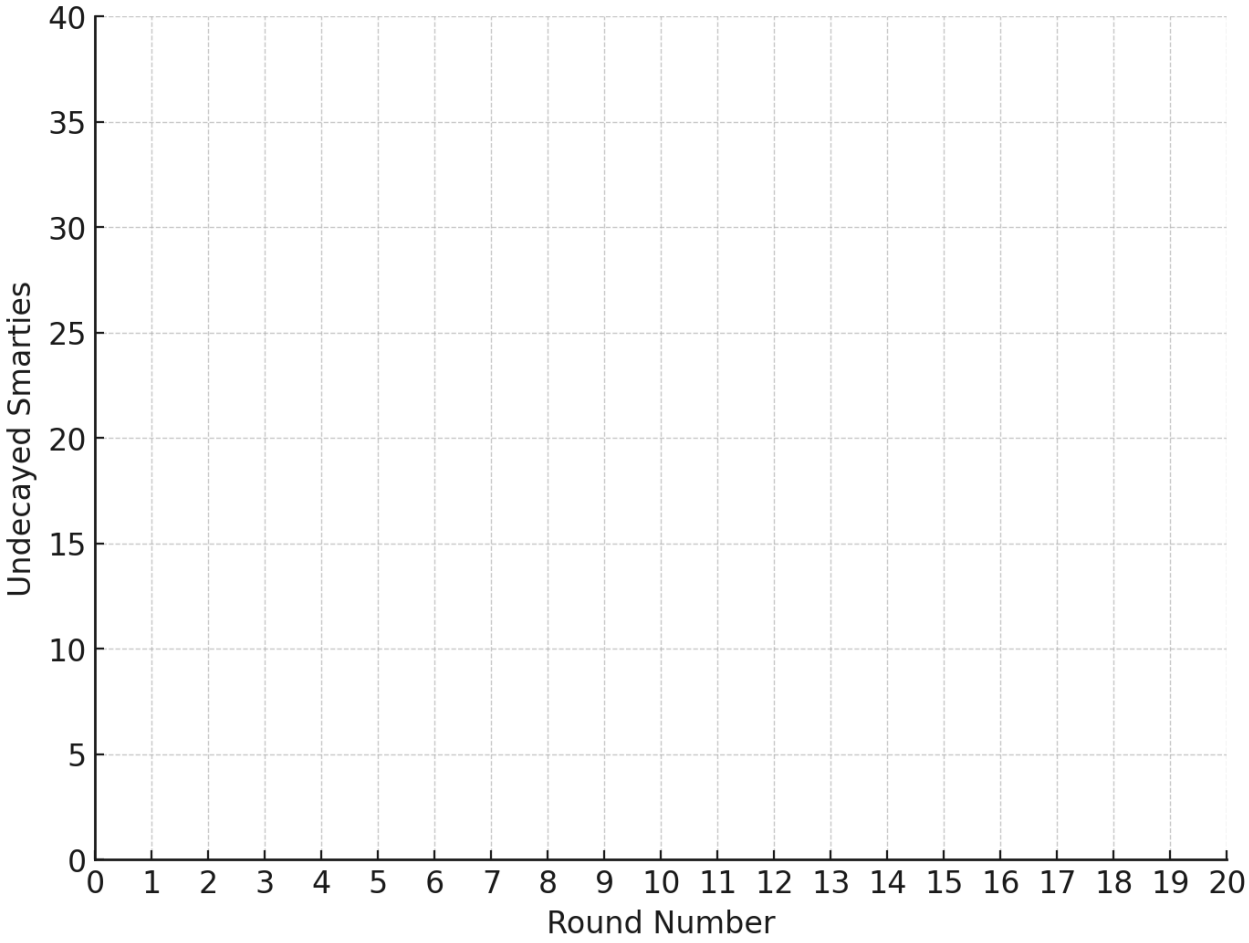
Results Table:

Round	Undecayed Smarties
1	40 (starting amount)
2	
3	
4	
5	
6	
7	
8	
9	
10	

Decay Graph:

Plot the number of undecayed Smarties on the graph below.
(X-axis = Round number; Y-axis = Number of undecayed Smarties)

Graph Paper with Axes



Analysis Questions:

1. Why don't all the Smarties decay in the first round?

_____

_____

2. What pattern do you notice in the number of undecayed Smarties?

_____

_____

_____

3. Around which round did you have about half the original Smarties left?

_____

_____

4. What does this activity show us about radioactive decay in real atoms?

_____

_____

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5. In your own words, what is half-life?

_____

_____

Conclusion:

_____

_____

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