Unit Project

Introduction

As a final assessment in *Growing, Growing, Growing*, you may assign the Unit Project, Half-Life. In this optional project, students investigate the phenomenon of radioactive decay. They simulate the decay of a substance, collect, and analyze data, and look for patterns.

Sample results and answers to the questions are given in the Assessment Resources section.

Assigning

The optional Unit Project, the Half-Life project, gives students an opportunity to apply what they have learned about exponential relationships to a real-world situation, radioactive decay. We recommend that students work on the project with a partner. Each pair will need 100 cubes (wooden, plastic, or sugar) to conduct the simulation. If it is not possible to have students mark on the cubes, supply them with stickers that can be removed later. Students can also use number cubes and choose one number to represent the marked side. The cubes can be shared.

Some teachers launch the project at the start of Investigation 4 and use the last several minutes of class each day for a few groups to experiment and collect data. By the end of Investigation 4, all groups have their data. A class period is then used for groups to finish the project. Sample results and answers to the questions are in *Half-Life Sample*.

Grading

Suggested Scoring Rubric

This rubric for scoring the project employs a scale that runs from 0 to 4, with a 4+ for work that goes beyond what has been asked for in some unique way. You may use the rubric as presented here or modify it to fit your district's requirements for evaluating and reporting students' work and understanding.

4+ Exemplary Response

- Complete, with clear, coherent explanations
- Shows understanding of the mathematical concepts and procedures
- Satisfies all essential conditions of the problem and goes beyond what is asked for in some unique way

4 Complete Response

- Complete, with clear, coherent explanations
- Shows understanding of the mathematical concepts and procedures
- Satisfies all essential conditions of the problem

3 Reasonably Complete Response

- Reasonably complete; may lack detail in explanations
- Shows understanding of most of the mathematical concepts and procedures
- Satisfies most of the essential conditions of the problem

2 Partial Response

- Gives response; explanation may be unclear or lack detail
- Shows some understanding of some of the mathematical concepts and procedures
- Satisfies some essential conditions of the problem

1 Inadequate Response

- Incomplete; explanation is insufficient or not understandable
- Shows little understanding of the mathematical concepts and procedures
- Fails to address essential conditions of problem

0 No Attempt

- Irrelevant response
- Does not attempt a solution
- Does not address conditions of the problem

Sample Student Work

Half-Life Sample

- Half-Life Sample