

Example 1: Simple and Compound Interest

- Option A: A treasury bond that pays 8% simple interest. The amount, A , after n years is given by the equation $A = 500 + 40n$
- Option B: A savings account that pays 6.5% per year, compounded annually. The amount, A , after n years is given by the equation $A = 500(1.065)^n$

- a) Graph each relation on the same set of axes. **Use TI83+ to help you.** Describe each relation.
- b) Compare the options. Which is the better investment? Why?

[illegible]A blank grid of 20 columns and 20 rows. A thicker vertical line is positioned between the 10th and 11th columns, dividing the grid into two equal halves of 10 columns each. The grid is composed of thin black lines forming small squares.

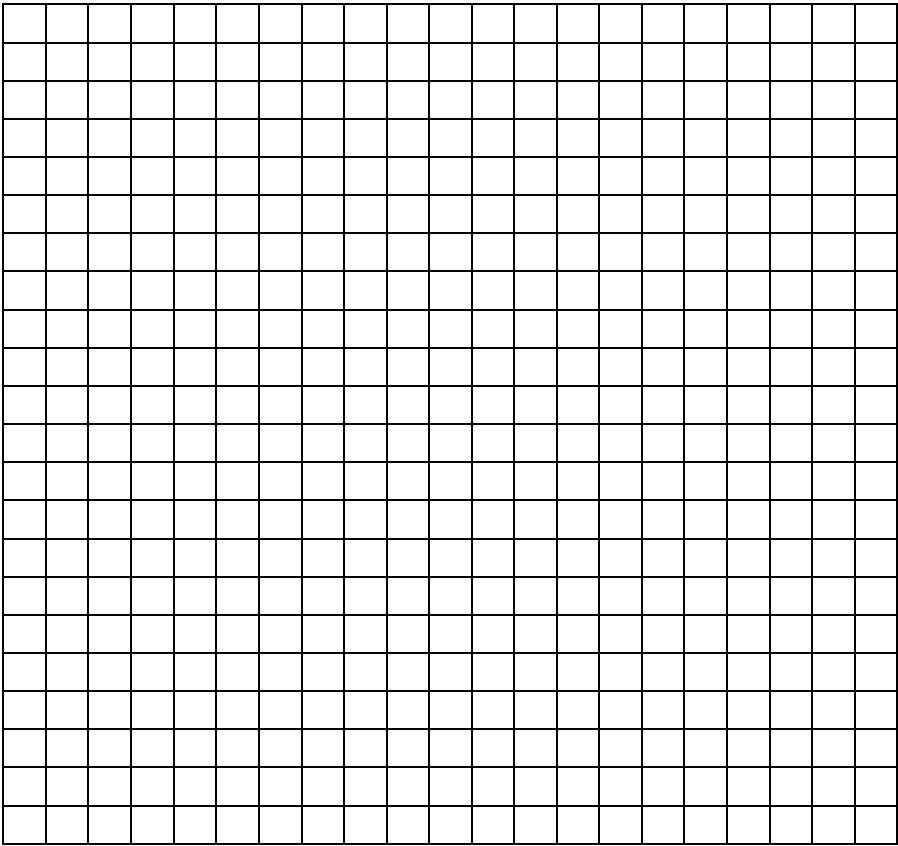
Example 2: Half-life.

An important property of a radioactive substance is its **half-life**, the time it takes for a radioactive sample to decay to half its original mass. For example, iodine-131 is a radioactive substance with a half-life of eight days. This material is commonly used for thyroid analysis.

a) Complete the table of values for an initial dose of 100 units of iodine-131.

Time (Days)	Units Remaining in the Bloodstream	First Differences	Second Differences	Percent Differences (Ratios)

- b) Is this relation linear or non-linear? Is this relation exponential? Explain.
- c) Construct a scatter plot of the data. Does the trend confirm your answer to part b? Explain.



- d) Determine an equation for the curve of best fit. _____
- e) Determine how long it will take for the initial dose of iodine-131 to decay to one unit. _____