

Linear & Exponential Functions

Mathematics Vision Project Secondary Math One - Module 2 (2016)

A review of learning opportunities across six lessons

This report examines the matched student edition (45 PDF pages) and teacher notes (63 PDF pages). It highlights selected, source-located findings about mathematical thinking, representations and teaching connections. It is not a whole-program rating or a claim of student mastery.

What the sequence makes visible

The module moves from constructing representations in context, through domain decisions and function classification, to comparing growth and selecting equation forms. Student tasks and teacher guidance are read together; a teacher statement alone is not treated as proof of what students must do.

What deserves care

Supplied variables and required representations must be distinguished from choices students make. Two reference labels in lesson 2.5 need correction. Evidence in a single module cannot establish cross-grade coverage, whole-course assessment alignment or effectiveness in classrooms.

[Open the report and source images at manateelearning.com](https://manateelearning.com)

Reviewed October 24, 2026. Report version 1.0.

2.1 Connecting the Dots: Piggies and Pools

Representing change

Students build tables, graphs and equations for supplied saving and pool contexts, then compare situations. This links arithmetic and geometric sequences to linear and exponential functions.

1. My little sister, Savannah, is three years old. She has a piggy bank that she wants to fill. She started with five pennies and each day when I come home from school, she is excited when I give her three pennies that are left over from my lunch money. Use a table, a graph, and an equation to create a mathematical model for the number of pennies in the piggy bank on day n .

Student edition: PDF page 3, printed page 1. Teacher notes: PDF page 6. Original source excerpt; see source links on the final page.

Interpretation boundary. The situations, variables and requested representations are supplied. This is evidence of contextual model construction, not independent selection of every modeling assumption or tool.

2.2 Shh! Please Be Discreet (Discrete)!

Interpreting domains

The books-in-boxes task asks students to represent the relationship and identify its domain. Teacher notes explicitly connect context with discrete or continuous models for linear and exponential change.

1. The Library of Congress in Washington D.C. is considered the largest library in the world. They often receive boxes of books to be added to their collection. Since books can be quite heavy, they aren't shipped in big boxes. If, on average, each box contains about 8 books, how many books are received by the library in 6 boxes, 10 boxes, or n boxes?
 - a. Use a table, a graph, and an equation to model this situation.

- b. Identify the domain of the function.

Student edition: PDF page 8, printed page 6. Teacher notes: PDF page 17. Original source excerpt; see source links on the final page.

Interpretation boundary. A correct formula alone does not establish that a student understands which inputs make sense. Domain explanations are an important part of the intended reasoning.

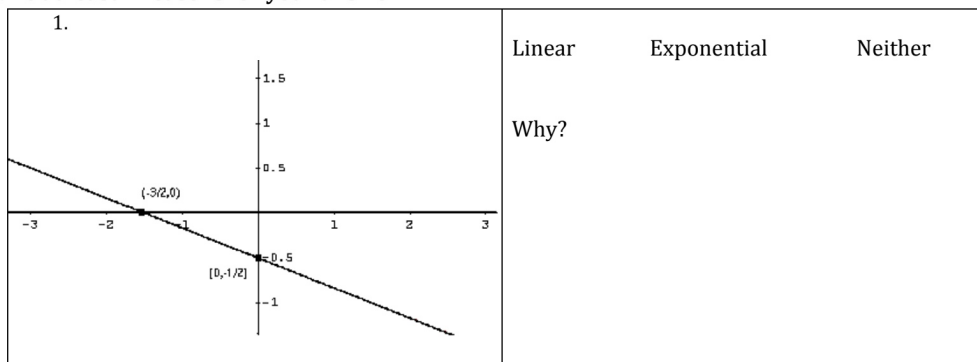
2.3 Linear, Exponential or Neither?

Explaining a classification

Students classify functions from different representations and give at least two reasons. The graph and table tasks make explanations part of the required response, rather than an optional extension.

For each representation of a function, decide if the function is linear, exponential, or neither.

Give at least 2 reasons for your answer.



Student edition: PDF page 15, printed page 13. Teacher notes: PDF page 28. Original source excerpt; see source links on the final page.

Interpretation boundary. This is evidence of a reasoning opportunity. It does not, by itself, establish that students construct full proofs or attain fluency across a course.

2.4 Getting Down to Business

Comparing growth

Two companies begin with different incomes and follow additive and percentage growth plans. Students create representations and compare them; teacher notes extend the discussion to growth over larger inputs and graphing windows.

Calcu-rama had a net income of 5 million dollars in 2010, while a small competing company, Computafest, had a net income of 2 million dollars. The management of Calcu-rama develops a business plan for future growth that projects an increase in net income of 0.5 million per year, while the management of Computafest develops a plan aimed at increasing its net income by 15% each year.

- Create standard mathematical models (table, graph and equations) for the projected net income over time for both companies. (Attend to precision and be sure that each model is accurate and labeled properly so that it represents the situation.)

Student edition: PDF page 24, printed page 22. Teacher notes: PDF page 35. Original source excerpt; see source links on the final page.

Interpretation boundary. The growth plans and starting values are supplied. Technology is recommended in the teacher notes; this recommendation alone is not evidence that students independently choose a tool.

2.5 Making My Point

Connecting forms and checking work

The lesson develops equivalent expressions and point-slope reasoning. In question 6, students write an equation from a slope and a point, then show a way to check it. Teacher guidance connects the work to alternative forms.

6. Zac challenges you to use the pattern he noticed to write the equation of line that has a slope of 3 and contains the point (2,-1). What's your answer?

Show a way to check to see if your equation is correct.

Student edition: PDF page 32, printed page 30. Teacher notes: PDF page 47. Original source excerpt; see source links on the final page.

Interpretation boundary. The shown question supplies the slope and point. The check is required, but no particular checking strategy is prescribed in this excerpt. Reference-label corrections are noted separately below.

2.6 Form Follows Function

Choosing and explaining an equation form

The task asks students to write an equation, name its form and explain why they chose that form. It also asks them to distinguish linear or exponential behavior and discrete or continuous inputs.

1. In his job selling vacuums, Joe makes \$500 each month plus \$20 for each vacuum he sells. Write the equation that describes Joe's monthly income I as a function of the n , the number of vacuums sold.

Name the form of the equation you wrote and why you chose to use that form.

This function is: linear exponential neither (choose one)

This function is: continuous discrete neither (choose one)

Student edition: PDF page 38, printed page 36. Teacher notes: PDF page 58. Original source excerpt; see source links on the final page.

Interpretation boundary. This provides explicit evidence of a representation-choice prompt. Choosing an equation form should not automatically be reported as choosing among calculators, spreadsheets or other tools.

Reference checks and review scope

Teacher-note labels to correct

On teacher-notes PDF page 47, the expression-structure expectation is labeled A-SSE.6. The official Common Core code for that expectation is HSA.SSE.A.2. On the same page, the repeated-reasoning practice is labeled SMP 7; that practice is MP8. These are reference-label findings, not a conclusion that the underlying lesson lacks worthwhile mathematics.

- A-SSE.1** Interpret expressions that represent a quantity in terms of its context.
 - a) Interpret parts of an expression, such as terms, factors, and coefficients.
- A-SSE.6** Use the structure of an expression to identify ways to rewrite it.
- A-CED.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- F-LE.5** Interpret the parameters in a linear or exponential function in terms of a context.

Standards for Mathematical Practice of Focus in the Task:

SMP 2 – Reason abstractly and quantitatively.

SMP 7 – Look for and express regularity in repeated reasoning.

Teacher notes, PDF page 47. Original wording is preserved in the excerpt.

How to read this report

All 108 source pages were accounted for. This public report presents selected findings and verified excerpts rather than publishing every provisional finding from the internal review. A cited opportunity is not a full-standards attainment judgment. No other publisher report, endorsement or comparative score is incorporated.

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[Student edition \(45 pages\)](#) | [Teacher notes \(63 pages\)](#)

[Official expression-structure standards](#) | [Official Mathematical Practices](#)

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