



# Algebra I

## Unit 5: Comparing & Contrasting Functions

Volume 1 Issue 5

### References

**HMH Georgia Advanced Algebra Text:**  
Unit 3: Module 13

**Check with you teacher for online and print access:**

Online website:  
my.hrw.com

#### Web Resources

- Rate of Change  
<http://www.nms.org/Portals/0/Docs/FreeLessons/Fill%20It%20Up,%20Please%20-%20Part%20III.pdf>
- Distinguishing between Linear & Exponential Functions  
[https://learnzillion.com/lesson\\_plans/6663/](https://learnzillion.com/lesson_plans/6663/)
- Comparing Graphs of Linear, Quadratic, & Exponential Functions  
<http://www.virtualnerd.com/algebra-1/quadratic-equations-functions/linear-exponential-comparison/linear-exponential-comparison-graphing-examples/determine-function-type-from-graph>

#### Dear Parents

Below you will find a list of concepts that your child will use and understand while completing Unit 5: Comparing & Contrasting Functions. Also included are references, vocabulary and examples that will help you assist your child at home.

#### Concepts Students will Use and Understand

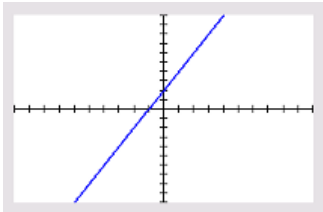
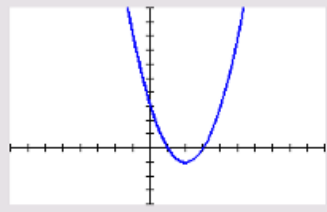
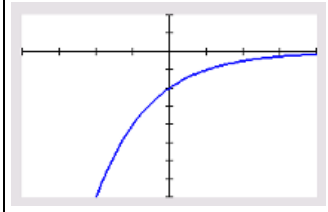
- Deepen their understanding of linear, quadratic, and exponential functions as they compare and contrast the three types of functions.
- Understand the parameters of each type of function in contextual situations.
- Interpret linear, quadratic, and exponential functions that arise in applications in terms of the context.
- Analyze linear, quadratic, and exponential functions and model how different representations may be used based on the situation presented.
- Construct and compare characteristics of linear, quadratic, and exponential models and solve problems.
- Distinguish between linear, quadratic, and exponential functions graphically, using tables, and in context.
- Recognize that exponential and quadratic functions have a variable rate of change while linear functions have a constant rate of change.
- Distinguish between additive and multiplicative change and construct and interpret arithmetic sequences as linear functions and geometric sequences as exponential functions.
- Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.

#### Vocabulary

All vocabulary is repeated from units 2-4.

#### Formulas

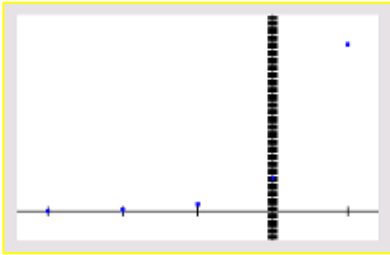
General Forms of Functions

Linear $y = mx + b$	Quadratic $y = ax^2 + bx + c$	Exponential $y = ab^x$
		

# Unit 5 Practice Problems

## Answers

1.) Exponential



2.) Linear: Constant

Quadratic: Variable

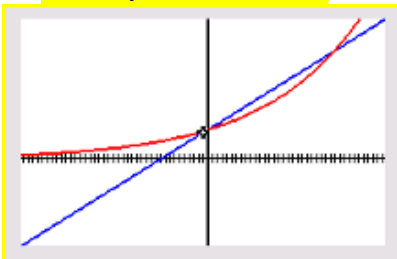
Exponential: Variable

(Average rate of change will eventually be greater than quadratic or linear rates of change.)

3.) Quadratic Function

4.) Plan A:  $y = 50x + 500$

Plan B:  $y = 500(1.05)^x$



More homes will be built under plan A up to the end of the 26<sup>th</sup> year. After that, more homes will be built under plan B, and plan B results in more homes than plan A by ever-increasing amounts each year.

1.) Graph the set of data. Which kind of model best describes the data?  
 $\{(-1, 4), (-2, 0.8), (0, 20), (1, 100), (-3, 0.16)\}$

2.) Describe the rate of change for linear, quadratic, & exponential functions.

3.) Determine which function model the data in the table represents:

Height of Bridge Suspension Cables	
Cable's Distance from Tower (ft)	Cable's Height (ft)
0	400
100	256
200	144
300	64

4.) A town home has approximately 500 homes. The town council is considering plans for future development. Plan A calls for an increase of 50 homes per year. Plan B calls for a 5% increase each year. Compare the plans.