



Unit Title: Functions

Grade Level: 10

Subject Area: Algebra 2/Honors Algebra 2

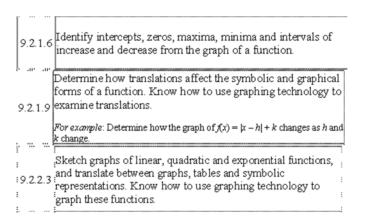
Duration/Length/Number of class periods: 12 class periods (50 min each)

Description:

Students will learn all the basic features of a function including domain, range, continuity, linearity, intercepts, and transformations. They will learn how functions can represent real life situations and how each feature of the graph can tell us important information about that situation. They will also learn how to manipulate functions using transformations in order to make the function better fit a situation.

Established Goals (National, State, Local):

	Find the domain of a function defined symbolically, graphically or in a real-world context.
	For example: The formula $f(x) = \pi x^2$ can represent a function whose domain is all real numbers, but in the context of the area of a circle, the domain would be restricted to positive x .
	Obtain information and draw conclusions from graphs of functions and other relations.
	For example: If a graph shows the relationship between the elapsed flight time of a golf ball at a given moment and its height at that same moment, identify the time interval during which the ball is at least 100 feet above the ground.



Other MN Standards addressed: 8.2.1.3, 8.2.2.2, 8.2.2.3, 8.2.4.4, 9.2.1.1, 9.2.1.2

ACT Standards addressed: AF403, 503, 603, 604 (702, 703, 704, 705, 706), A406, 501, 514, F401, 503, 504, 505, 506, 507, 509, 511, 601

What **Enduring Understandings** are desired?

- How can a mathematical function represent a real life situation?
- What does the domain and range of a function tell us about that situation?
- What features of the graph can I analyze to find out more about the situation?
- How can I use transformations to make adjustments to functions so that they can be the best model for a real life situation?

What Essential Questions will be considered?

How can analyzing a function help you understand the situation it models?

Students will know / be able to:

- Identify the domain and range of a function and whether it is one to one.
- Determine continuity of functions and whether functions are one to one.
- Determine linearity, intercepts, and symmetry of functions.
- Identify extrema and end behavior of functions.
- Sketch graphs of functions given key features of the function.
- Graph Linear Functions and Inequalities in Two Variables by hand and using technology.
- Write and graph piecewise-defined and absolute value functions (and step functions).
- Identify and use transformations of Functions and determine how they affect a function.

Description	For ma tive	Su m ma tive	Intro duct ory Activ ity	Lear ning Activ ity	Stud ent Tech nolo gy Use d	Teach er Tech nolog y Used	ISTE Stand ards
Skills Assessment/Pretest Activity (Google Form) (Written Portion)			х		Google Forms/G oogle Classroo m	Google Forms/Goo gle Classroom /Google Sheets, Khan Academy	1c, 1d
Daily Instructional Videos (<u>Sample Lesson Video</u>) (<u>EdPuzzle</u>)				X	YouTube, Google Classroo m, Edpuzzle	YouTube, Google Classroom, Edpuzzle, Screencast omatic, Smart Notebook Software	1c, 1d, 3c
Domain and Range Desmos Activity (<u>Teacher Link</u>) (<u>Student Link</u>)				Х	Desmos, Google Classroo m	Desmos, Google Classroom	1c, 1d, 3c, 4d
Online Daily "Checks"	X				Reveal Textbook Online Resource s - SE	Reveal Textbook Online Resources - TE	1c, 1d
Investigating Key Features of Graphs Using Technology				X	Reveal Textbook Online Resource s - SE, Graphing	Reveal Textbook Online Resources - TE	1d, 3c. 4a, 4b, 4d, 5c, 7b

				Calculato r or Geogebra		
Mid Unit Quiz	Х					
Design Satellite Dish or Bridge Using Function Transformations (Project)		Х				3d, 4a, 4b, 5c, 7b
Unit Review Goose Chase Scavenger Hunt (<u>Link to Game</u>)			Х	Goosecha se.edu	Goosechas e.edu	1c, 1d, 5c, 7b
Unit Exam		Х				

Materials, tools and resources: McGraw Hill Reveal Algebra 2 Textbook and Online Resources, Google Classroom, Teacher Created Instructional Videos, Edpuzzle, Goosechase, Screencastomatic, YouTube, Smart Notebook Software, Graphing Calculator or Geogebra or Desmos, Khan Academy

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I have another UbD template that I had previously created, the link is below for that document:

Alternate Form of UbD Template with more detail in daily lesson plans