

10_Graphing Non-Linear Functions

Content Area: **Math**
Course(s):
Time Period: **Full Year**
Length: **2 weeks (8-10 blocks)**
Status: **Published**

General Overview, Course Description or Course Philosophy

This unit will focus on strengthening the prerequisite skills and conceptual understanding needed to graph non-linear functions. Lesson activities will reinforce new content and address common misconceptions and errors to support students' progress toward graphing non-linear functions.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Objectives/Enduring Understandings:

Students will understand that:

- Key features can be used to graph and transform functions
- Non-linear graphs can be used to solve a problem or predict an outcome

Essential Questions:

- What are some operations on functions that you can use to create models and solve problems?

CONTENT AREA STANDARDS

MA.F-IF.C.7e	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
MA.F-IF.C.8b	Use the properties of exponents to interpret expressions for exponential functions.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.7	Look for and make use of structure.
MA.K-12.8	Look for and express regularity in repeated reasoning.
MA.A-REI.D.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
WRK.K-12.P.9	Work productively in teams while using cultural/global competence.

STUDENT LEARNING TARGETS

Declarative Knowledge

Students will understand that:

- Each point on the graph of a curve is a solution to the equation
- Solution sets from a table are connected to the graphical representation of an equation in two variables
- Exponential functions can represent growth or decay

Procedural Knowledge

Students will be able to:

- Determine key features of exponential and logarithmic functions (intercepts, domain/range, shape of exponential growth and decay, end behavior)
- Graph exponential and logarithmic functions using transformation of the parent function

EVIDENCE OF LEARNING

Formative Assessments

- Student daily participation
- Student self-assessment
- Skills checklist
- Student-friendly proficiency scales
- Teacher feedback

Summative Assessments

- Assessment Reflection

RESOURCES (Instructional, Supplemental, Intervention Materials)

- Kuta Software
- Quizizz
- Desmos
- Delta Math
- Nearpod
- Khan Academy
- Assessment Reflection

INTERDISCIPLINARY CONNECTIONS

- Graphs of non-linear functions can be used to model and interpret a variety of real-world situations
- Graphs of non-linear functions can be used to compare and contrast information gained from research and experimentation in history, social studies, and the sciences

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.