03_Graphing Linear Equations and Inequalities

Content Area: **Math**
Course(s):
Time Period: **Full Year**
Length: **3-4 weeks (12-14 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 linear equations and inequalities. Lesson activities will reinforce new content and address common misconceptions and errors to support students' progress toward graphing equations and inequalities.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

Objectives/Enduring Understandings:

Students will understand that:

- Graphs can be represented by equations and used to solve a problem and predict an outcome
- Data can be graphed and some data lend themselves to linear graphs from which formulas can be derived

Essential Questions:

- Why is it useful to have different forms of linear equations?
- How does the graph of a linear inequality in two varables help you identify the solutions of the inequality?

CONTENT AREA STANDARDS

MA.F-IF.C.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.K-12.7	Look for and make use of structure.
MA.S-ID.C.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
MA.A-CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
MA.A-CED.A.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.

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:

- graphs have identifiable key features such as: intercepts, slope/rate of change, increasing, decreasing, and constant intervals
- equations in two variables have solutions and non-solutions

Procedural Knowledge

Students will be able to:

- explain the slope (rate of change) and intercept (constant term) of a linear model in the context of the data
- use the slope and intercept to make practical conclusions in contextual situations
- explain the relationship between the features of the symbolic representation of the function and its graph
- verify whether a point is or is not a solution to an equation in two variables
- graph one created equation to represent the relationship between two variables on a coordinate plane
- complete the steps of the mathematical modeling cycle

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 linear equations and inequalities can be used to analyze real-world situations in a variety of contexts as related to history, economics, and various scientific disciplines

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.