Nov. BI Alg. I Unit 3: Graphing Linear Functions

Content Area: **Math**
Course(s):
Time Period: **November**
Length: **6-8 Weeks**
Status: **Published**

Unit Overview

Functions

- Linear Functions

- Function Notation

- Graphing Linear Equations in Standard Form

- Graphing Linear Equations in Slope-Intercept Form

- Transformations of Graphs of Linear Functions

- Graphing Absolute Value Functions

Enduring Understandings

SWBAT:

- Determine whether relations are functions
- Find the domain and range of a function
- Identify the independent and dependent variables of functions
- Identify linear functions using graphs, tables, and equations
- Graph linear functions using discrete and continuous data
- Write real-life problems to fit data
- USe function notation to evaluate and interpret functions
- Use function notation to solve and graph functions
- Solve real-life problems using function notation
- Graph equations of horizontal and vertical lines
- Graph linear equations in standard form using intercepts
- Use linear equations in standard form to solve real-life problems
- Find the slope of a line
- Use the slope-intercept form of a linear equation
- Use slopes and y-intercepts to solve real-life problems
- Translate and reflect graphs of linear functions
- Stretch and shrink graphs of linear functions
- Combine transformations of graphs of linear functions
- Translate graphs of absolute value functions
- Stretch, shrink, and reflect graphs of absolute value functions

- Combine transformations of graphs of absolute value functions

Essential Questions

How can we graph a linear equation using a table or list of values?
• How do we graph horizontal and vertical lines?
• How can we find the intercepts of a graph of a linear equation?
• How do we use intercepts to make a quick graph of a linear equation?
• How can we find slope of a line?
• How dow we interpret slope as a rate of change?
• How can we graph linear equations by writing in slope-intercept form?
• How do we solve a linear equation graphically?
• How can we identify when a relation is a function?
• How do we use function notation?

Instructional Strategies & Learning Activities

- Guided Practice
- Do Now
- Extra Practice & Puzzle Time (Resources)
- Scavenger Hunts
- Coloring Activities
- Task Cards (Around the World)
- Maze Activities
- Quizizz Online Assignments
- Kahoot! Online Games

Integration of Career Readiness, Life Literacies and Key Skills

TECH.9.4.8.IML.7	Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose (e.g., 1.2.8.C2a, 1.4.8.CR2a, 2.1.8.CHSS/IV.8.AI.1, W.5.8, 6.1.8.GeoSV.3.a, 6.1.8.CivicsDP.4.b, 7.1.NH. IPRET.8).
TECH.9.4.8.CI.4	Explore the role of creativity and innovation in career pathways and industries.
	An individual's strengths, lifestyle goals, choices, and interests affect employment and income.
TECH.9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

WRK.9.2.8.CAP.10	Evaluate how careers have evolved regionally, nationally, and globally.
TECH.9.4.8.GCA.2	Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal.
TECH.9.4.8.GCA	Global and Cultural Awareness
WRK.9.2.8.CAP.12	Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.
WRK.9.2.8.CAP.3	Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income.
TECH.9.4.8.IML.1	Critically curate multiple resources to assess the credibility of sources when searching for information.
TECH.9.4.8.DC.5	Manage digital identity and practice positive online behavior to avoid inappropriate forms of self-disclosure.
TECH.9.4.8.CT	Critical Thinking and Problem-solving
TECH.9.4.8.TL.2	Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
WRK.9.2.8.CAP.2	Develop a plan that includes information about career areas of interest.
TECH.9.4.8.GCA.1	Model how to navigate cultural differences with sensitivity and respect (e.g., 1.5.8.C1a).
WRK.9.2.8.CAP.4	Explain how an individual's online behavior (e.g., social networking, photo exchanges, video postings) may impact opportunities for employment or advancement.
TECH.9.4.8.TL.3	Select appropriate tools to organize and present information digitally.
TECH.9.4.8.IML.3	Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).
WRK.9.2.8.CAP	Career Awareness and Planning
WRK.9.2.8.CAP.1	Identify offerings such as high school and county career and technical school courses, apprenticeships, military programs, and dual enrollment courses that support career or occupational areas of interest.
TECH.9.4.8.IML.4	Ask insightful questions to organize different types of data and create meaningful visualizations.
	There are variety of resources available to help navigate the career planning process.

Technology and Design Integration

CS.6-8.8.2.8.ITH.2	Compare how technologies have influenced society over time.
CS.6-8.8.1.8.IC.1	Compare the trade-offs associated with computing technologies that affect individual's everyday activities and career options.
CS.6-8.8.2.8.ITH.1	Explain how the development and use of technology influences economic, political, social, and cultural issues.
CS.6-8.8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.
CS.6-8.8.2.8.ED.2	Identify the steps in the design process that could be used to solve a problem.
CS.6-8.8.1.8.DA.3	Identify the appropriate tool to access data based on its file format.
CS.6-8.8.1.8.CS.4	Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems.

CS.6-8.8.1.8.DA.2	Explain the difference between how the computer stores data as bits and how the data is displayed.

Interdisciplinary Connections

LA.RI.8.1	Cite the textual evidence and make relevant connections that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
LA.RI.8.2	Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.
LA.W.8.1.A	Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
LA.W.8.1.B	Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
LA.RI.8.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
LA.W.8.1.D	Establish and maintain a formal style.
LA.RI.8	Reading Informational Text
LA.RI.8.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.
LA.W.8.1.E	Provide a concluding statement or section that follows from and supports the argument presented.
LA.SL.8.1.C	Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
LA.SL.8.1.D	Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

Differentiation

- Understand that gifted students, just like all students, come to school to learn and be challenged.
- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.
- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.
- **Definitions of Differentiation Components**:
    - Content – the specific information that is to be taught in the lesson/unit/course of instruction.
    - Process – how the student will acquire the content information.
    - Product – how the student will demonstrate understanding of the content.
    - Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:

Additional support for stuggling learners will be available.

Challenges will be offered to students requiring additional depth of knowledge.

Modifications & Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.

Modifications and Accommodations used in this unit:

IEP and 504 accommodations will be utilized.

Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

Schoolwide Benchmark assessments:

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

Additional Benchmarks used in this unit:

Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

Formative Assessments used in this unit:

- Kahoot! Games
- Quizizz Games
- Homework
- Q & A
- Scavenger Hunts
- Coloring Activities
- Task Cards
- Partner Activities

Summative Assessments

Summative assessments evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

Summative assessments for this unit:

- Chapter Tests
- Quizzes

Instructional Materials

1. Big Ideas Math: Algebra 1: A Common Core Curriculum
2. Quizizz
3. Kahoot
4. Scavenger Hunts
5. Task Cards
6. Coloring Activities
7. Resources Book
8. Scientific Calculator
9. Graphing Calculator

Standards

0x CCSS.Math.Content.HSA-CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations on

		coordinate axes with labels and scales.
0x	CCSS.Math.Content.HSA-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).
0x	CCSS.Math.Content.HSF-BF.B.3	Identify the effect on the graph of replacing □(□) by □(□) + □, □ □(□), □(□□), and □(□ + □) for specific values of □ (both positive and negative); find the value of □ given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
0x	CCSS.Math.Content.HSF-IF.A.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If □ is a function and □ is an element of its domain, then □(□) denotes the output of □ corresponding to the input □. The graph of □ is the graph of the equation □ = □(□).
0x	CCSS.Math.Content.HSF-IF.B.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
0x	CCSS.Math.Content.HSF-IF.B.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
0x	CCSS.Math.Content.HSF-IF.C.7.a	Graph linear and quadratic functions and show intercepts, maxima, and minima.
0x	CCSS.Math.Content.HSF-IF.C.7.b	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
0x	CCSS.Math.Content.HSF-IF.C.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
0x	CCSS.Math.Content.HSF-LE.B.5	Interpret the parameters in a linear or exponential function in terms of a context.