

Unit 3 - Functions

Content Area: **Mathematics**
Course(s):
Time Period: **January**
Length: **6-8 weeks**
Status: **Published**

Unit Overview

Unit 3 focuses on content from the **Functions** (F) domain and addresses the following grade 8 standards: 8.F.1, 8.F.2, 8.F.3, 8.F.4, 8.F.5.

This unit emphasizes the following Mathematical Practices:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
7. Look for and make use of structure.

Essential Questions

"How can you find and use patterns to model real-world situations?"

"How can we model relationships between quantities?"

"How can you use a graph to write an equation?"

"How do tables and graphs represent relations?"

"How does the domain affect the range in a function?"

"How can functions be used to solve real-world situations?"

"What are the advantages and disadvantages to representing a function as an equation instead of a graph?"

"How is the initial value of a function represented in a table and in a graph?"

"How can you use a table or a graph to determine if a function is linear or nonlinear?"

"When does the graph of a quadratic function open upward or downward?"

"What are some advantages of displaying the relationship between two quantities using a qualitative graph?"

Skills

Create and interpret tables, graphs, and models to represent, analyze, and solve problems related to linear equations.

Analyze domain and range.

Discriminate between discrete and continuous data.

Given a table, graph, or verbal description, write an equation and make a prediction.

Translate among verbal, tabular, graphical, and algebraic representations of linear functions.

Determine whether a function is linear or nonlinear from a table.

Compare the graphs of linear and nonlinear functions.

Graph quadratic functions.

Assessments

Self-Check Quiz

Chapter Tests

Online Standardized Test Practice

Chapter Project

Teacher Observation

Lessons/Learning Scenarios

Glencoe Math Course 3 Text

Chapter 4 Lessons 1-9

Standards

CCSS.Math.Content.8.F.A.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.
CCSS.Math.Content.8.F.A.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
CCSS.Math.Content.8.F.A.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.
CCSS.Math.Content.8.F.B.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
CCSS.Math.Content.8.F.B.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

Resources

Glencoe Math, Course 3, McGraw-Hill, 2013

graphing calculator
Coordinate Planes Master