

Unit 3 Linear Functions

Content Area: **Mathematics**
Course(s): **Integrated Modern Algebra**
Time Period: **November**
Length: **4 weeks**
Status: **Published**

Transfer Skills

In this unit students will focus on linear functions. An emphasis will be placed on slope and average rate of change. A main focus will be placed on the use of different forms of linear equations to identify key features both in and out of context.

Instructional Notes: Students need to have an in depth understanding of what makes a linear function considered linear. Linear functions will be compared to other functions in future units and reviewed in a final unit.

Enduring Understandings

A function is a relationship between variables in which each value of the input variable is associated with a unique value of the output variable

Functions can be represented in a variety of ways, such as graphs, tables, equations, or words. Each representation is particularly useful in certain situations

A function that models a real-world situation can then be used to make estimates or predictions about future occurrences.

Essential Questions

What can a linear equation tell us about the function?

What is the best method for determining the rate of change of a function?

Content

Vocabulary

linear

slope

average rate of change

arithmetic sequence

explicit rule

recursive rule

standard form

slope-intercept form

point-slope form

parallel

perpendicular

Skills

Prove that linear functions grow by equal differences over equal intervals.

Given tables of values determine which represent linear functions and explain reasoning.

Graph linear functions from a table, an equation or a described relationship.

Construct linear functions, including arithmetic sequences, given a graph, a description of a relationship, a pattern or two input-output pairs and include reading these from a table. (Find slope given two points, write equations given various types of information.)

Write a linear function in different but equivalent forms to reveal and explain different properties of the function. These forms include slope-intercept form, standard form and point-slope form each revealing different properties. .

Rearrange the equation of a line into different forms (translate between slope-intercept form, standard form, and point-slope form).

Use technology to explore the effects of the parameters m and b in the linear function $f(x) = mx + b$ by holding first one parameter and then the other constant while allowing the other to vary. (Both in and out of context.)

Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval in order to identify linear functions.

Estimate the rate of change from a graph and compare rate of change associated with different intervals.

Find slopes of parallel and perpendicular lines and write equations for such.

Write both explicit and recursive formulas for arithmetic sequences and translate between the types. Graph the results.

Resources

Standards
