

Unit Lesson

Objectives

Representing Relationships

Writing and Solving Equations in Two Variables

Solve for an unknown quantity in a two-variable linear equation, given one of the values.

Determine a two-variable linear equation that represents a scenario, identifying constraints on the variables in terms of the context.

Writing and Graphing Equations in Two Variables

Construct a table of values and a graph for a two-variable linear equation that models a situation, pointing out solutions that are viable or not viable based on the context.

Write a two-variable linear equation to model a quantitative relationship, describing the constraints of the model based on the context.

Interpret graphs and rates by examining the quantities represented by each axis.

Introduction to Functions

Determine the domain and range of a functional relationship given in a mapping diagram, table, graph, or scenario.

Analyze a mapping diagram, table, graph, or scenario to recognize functional relationships.

Function Notation

Interpret function notation that models a real-world situation.

Identify the input and output of a functional relationship, pointing out constraints on the domain and range.

Use function notation to represent a functional relationship.

Evaluating Functions

Analyze a function represented by an equation, table, or graph to determine the output when given the input, and vice versa.

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Find input and output values of two functions graphed in the same coordinate plane.

Write the inverse of a given linear function.

Analyzing Graphs

Use the graph of a function to determine the key aspects, using interval notation where applicable.

Analyzing Tables

Given a table of values for a continuous function, make predictions about the key features of the graph of the function.

Recognizing Patterns

Analyze a sequence of numbers to determine the pattern, and identify whether it is arithmetic or geometric.

Use a recursive rule to calculate a term of a sequence.

Write a recursive rule for a sequence.

Unit Test

Linear Functions

Introduction to Linear Functions

Calculate the rate of change of a function and, if constant, the initial value of the function.

Determine if a relationship is linear by analyzing the rate of change.

Calculate the rate of change of a function and, if constant, the initial value of the function.

Slope of a Line

Identify if the slope of a linear relationship is zero, positive, negative, or undefined.

Determine the slope of a line from a graph, table of values, or ordered pairs.

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Interpret slope in the context of real-world scenarios.

Slope-Intercept Form of a Line

Identify the slope and y-intercept of a linear function, and use them to graph the function.

Write a linear function, in slope-intercept form, for a given relationship.

Analyze how a change in a parameter of a linear function affects its graph or the scenario it represents.

Point-Slope Form of a Line

Write the equation of a line given its slope and a point on the line in point-slope form, and express the relationship as a function.

Graph a line given its equation in point-slope form, identifying the slope and intercepts.

Writing Linear Equations

Write two-variable linear equations in different forms using varying pieces of information about the relationships.

Use linear models to solve problems.

Write two-variable linear equations in different forms using varying pieces of information about the relationships.

Special Linear Relationships

Determine if a relationship is a direct variation.

Find the constant of variation in a direct variation.

Write an equation for a direct variation.

Write recursive and explicit rules for arithmetic sequences using function notation.

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Linear Equations and Inequalities

Solving Linear Equations: Variable on One Side

Determine the input value that produces the same output value for two functions from a table or graph.

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Explain the steps used to solve a one-variable linear equation having the variable on one side only.

Solve one-variable linear equations having the variable on one side only, pointing out solutions that are viable or not viable in a modeling context.

Create one-variable linear equations, having the variable on one side only, to model and solve problems.

Solving Linear Equations: Variables on Both Sides

Explain the steps used to solve a one-variable linear equation having the variable on both sides.

Solve one-variable linear equations having the variable on both sides using tables, graphs, or algebra, pointing out solutions that are viable or not viable in a modeling context.

Create one-variable linear equations, having the variable on both sides, to model and solve problems.

Solving Linear Equations: Distributive Property

Solve one-variable linear equations involving the distributive property.

Determine if a one-variable linear equation has zero, one, or infinite solutions.

Create one-variable linear equations involving the distributive property to model and solve problems.

Solving Rate Problems

Use a table to organize information given in time-distance-rate and work problems.

Write and solve one-variable linear equations to model and solve time-distance-rate and work problems.

Literal Equations

Rearrange a literal equation to highlight a quantity of interest and use it to solve problems.

Solving Absolute Value Equations

Solve absolute value equations using tables or algebra, pointing out solutions that are viable or not viable in a modeling context.

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Create absolute value equations to model and solve problems.

Solving One-Variable Inequalities

Explain the steps used to solve a multistep one-variable linear inequality.

Solve multistep one-variable linear inequalities.

Graph the solution sets of one-variable linear inequalities.

Introduction to Compound Inequalities

Write compound inequalities to model problems.

Relate the solution set of a compound inequality to its graph.

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Systems of Equations and Inequalities

Solving Systems of Linear Equations: Graphing

Use technology to find or approximate the solution of a system of linear equations graphically.

Analyze a system of linear equations to determine if it has one solution, no solution, or infinitely many solutions.

Solving Systems of Linear Equations: Substitution

Solve a system of linear equations using substitution.

Interpret the solution of a system of linear equations in a modeling context.

Solving Systems: Introduction to Linear Combinations

Solve systems of linear equations using linear combinations, limiting the systems to those that do not require

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multiples of both equations.

Interpret the solution of a system of linear equations in a modeling context.

Verify that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

Solving Systems of Linear
Equations: Linear Combinations

Solve a system of linear equations using linear combinations.

Interpret the solution of a system of linear equations in a modeling context.

Modeling with Systems of Linear
Equations

Create a system of linear equations to model a problem.

Interpret the solution of a system of linear equations in a modeling context.

Graphing Two-Variable Linear
Inequalities

Relate the graph of a two-variable linear inequality to its algebraic representation.

Modeling with Two-Variable Linear
Inequalities

Create a two-variable linear inequality to model a problem.

Graph the solutions to a two-variable linear inequality.

Interpret the solutions of a two-variable linear inequality in a modeling context.

Solving Systems of Linear
Inequalities

Identify solutions of a system of two-variable linear inequalities.

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Graph a system of two-variable linear inequalities.

Determine a system of two-variable linear inequalities given a solution set.

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Nonlinear Functions

Linear Piecewise Defined Functions

Relate the graph of a piecewise-defined function to its algebraic representation, limiting it to linear functions over its domain.

Evaluate a piecewise-defined function that is defined by linear functions over all intervals of its domain.

Graph a piecewise-defined function that is defined by linear functions over all intervals of its domain.

State the domain and range of linear piecewise-defined functions.

Absolute Value Functions and Translations

Graph the absolute value function and its translations.

Analyze key features of the absolute value function and its translations.

Reflections and Dilations of Absolute Value Functions

Graph reflections and dilations of the absolute value function.

State the domain and range of reflections and dilations of the absolute value function.

The Square Root Function

Simplify a square root whose radicand is a perfect square.

Graph the square root function and reflections over the axes.

State the domain and range of square root functions.

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Cumulative Exam

Cumulative Exam Review

Cumulative Exam