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Unit 1: Relationships Between Quantities and Expressions

Topic A: Working with Radicals and Properties of Real Numbers

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Conceptual Activities

GeoGebra. “Graphs of Radical Functions.”

Khan Academy. “Evaluate radical expressions challenge.”

Topic B: Units of Measure

Lesson 1.2.1: Converting Units

Lesson 1.2.2: Modeling with Units and Precision in Modeling

Conceptual Activities

Illustrative Mathematics. “Ants Versus Humans.”

Khan Academy. “Multiple units word problems.”

Topic C: Interpreting Formulas and Expressions

Lesson 1.3.1: Identifying Terms, Factors, and Coefficients

Lesson 1.3.2: Adding and Subtracting Polynomials

Lesson 1.3.3: Multiplying Polynomials

Lesson 1.3.4: Interpreting Complicated Expressions

Conceptual Activity

GeoGebra. “Operations on Polynomials.”

Conceptual Task

Debating Polynomials

Unit 1 Assessment

Station Activities

Set 1: Ratios and Proportions

Set 2: Operations with Polynomials

Unit 2: Reasoning with Linear Equations and Inequalities

Topic A: Creating Linear Equations and Inequalities in One Variable

Lesson 2.1.1: Creating Linear Equations in One Variable

Lesson 2.1.2: Creating Linear Inequalities in One Variable

Conceptual Activities

Desmos. “Polygraph: Linear Inequalities.”

GeoGebra. “Simple Logic?”

GeoGebra. “Verbal to Algebraic!”

GeoGebra. “Linear Inequality Generator (1A).”

Conceptual Task

A Wing of a Deal

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Topic B: Creating and Graphing Linear Equations in Two Variables

Lesson 2.2.1: Creating and Graphing Linear Equations in Two Variables

Conceptual Activities

Desmos. “Function Carnival, Part 2.”

Desmos. “Put the Point on the Line.”

GeoGebra. “Rise & Run (Revamped).”

GeoGebra. “Equation of a Line: Dynamic Illustrator.”

Conceptual Task

Weighing Job Offers

Topic C: Representing Constraints

Lesson 2.3.1: Representing Constraints

Topic D: Solving Equations and Inequalities

Lesson 2.4.1: Properties of Equality

Lesson 2.4.2: Solving Linear Equations

Lesson 2.4.3: Solving Linear Inequalities

Conceptual Activities

Desmos. “Solutions to Systems of Linear Equations.”

Desmos. “Systems of Two Linear Equations.”

Conceptual Task

Inventory Indecision

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Lesson 2.5.1: Rearranging Formulas

Topic F: Functions and Graphing

Lesson 2.6.1: Graphing the Set of All Solutions

Lesson 2.6.2: Domain and Range

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Conceptual Activities

Desmos. “Card Sort: Linear Functions.”

Desmos. “Function Carnival.”

GeoGebra. “Systems of Equations on a Graph.”

GeoGebra. “Domain and Range.”

Topic G: Systems of Linear Equations

Lesson 2.7.1: Intersecting Graphs

Lesson 2.7.2: Solving Systems of Linear Equations by Substitution and Elimination

Lesson 2.7.3: Solving Systems of Linear Equations by Graphing

Conceptual Activities

Desmos. “The Intersection.”

GeoGebra. “Solving a System of Equations by Elimination.”

GeoGebra. “Solving Systems Using Substitution.”

GeoGebra. “Solving Linear Systems Graphically.”

Conceptual Task

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Topic H: Solving Linear Inequalities in Two Variables and Systems of Inequalities

Lesson 2.8.1: Solving Linear Inequalities in Two Variables

Lesson 2.8.2: Solving Systems of Linear Inequalities

Conceptual Activity

GeoGebra. “System of Inequalities.”

Conceptual Task

Book Cover Hustle

Topic I: Sequences as Functions

Lesson 2.9.1: Sequences As Functions

Lesson 2.9.2: Arithmetic Sequences

Conceptual Activities

GeoGebra. “Graphs of arithmetic sequences on a coordinate plane.”

GeoGebra. “Sequences (Dynamic Illustrator).”

Topic J: Interpreting Linear Functions

Lesson 2.10.1: Identifying Key Features of Linear Graphs

Lesson 2.10.2: Finding Average Rate of Change

Conceptual Activity

GeoGebra. “Average Rate of Change.”

Conceptual Tasks

Infectious Dilemma

Topic K: Analyzing and Comparing Linear Functions

Lesson 2.11.1: Graphing Linear Functions

Lesson 2.11.2: Comparing Linear Functions

Conceptual Activities

Desmos. “Match My Line.”

Desmos. “What Comes Next?”

Topic L: Building Linear Functions

Lesson 2.12.1: Building Functions From Context

Conceptual Task

Jumping Jamal

Unit 2 Assessment

Station Activities

Set 1: Solving Inequalities

Set 2: Solving Equations

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Lesson 3.1.3: Factoring Expressions with $a = 1$

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Lesson 3.1.6: Completing the Square

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Conceptual Activities

Desmos. “Build a Bigger Field.”

GeoGebra. “Factoring Expressions Using Algebra Tiles (1).”

Conceptual Task

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Lesson 3.2.1: Creating and Graphing Equations Using Standard Form

Lesson 3.2.2: Creating and Graphing Equations Using the x -intercepts

Lesson 3.2.3: Creating and Graphing Equations Using Vertex Form

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Conceptual Activities

Desmos. “Match My Parabola.”

Desmos. “Penny Circle.”

GeoGebra. “The 3 forms of Quadratic functions.”

Conceptual Task

Toss Up

Topic C: Interpreting and Analyzing Quadratic Functions

Lesson 3.3.1: Interpreting Key Features of Quadratic Functions

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Lesson 3.4.2: Replacing $f(x)$ with $k \cdot f(x)$ and $f(k \cdot x)$

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Desmos. “Polygraph—Absolute Value”

GeoGebra. “Function Transformations.”

Conceptual Task

This Curve You Can Change

Topic E: Building and Comparing Quadratic Functions

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Lesson 3.5.2: Comparing Properties of Quadratic Functions Given in Different Forms

Conceptual Activity

GeoGebra. “Building Functions Graphically.”

Unit 3 Assessment

Station Activities

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Unit 4: Modeling and Analyzing Exponential Functions

Topic A: Creating Exponential Equations

Lesson 4.1.1: Creating Exponential Equations in One Variable

Lesson 4.1.2: Creating and Graphing Exponential Equations in Two Variables

Conceptual Activity

Desmos. “Polygraph—Exponential Functions.”

Topic B: Domain and Range of Exponential Functions

Lesson 4.2.1: Domain and Range of Exponential Functions

Conceptual Activities

IXL Learning. “Domain and range of exponential functions: equations.”

IXL Learning. “Domain and range of exponential functions: graphs.”

Topic C: Geometric Sequences

Lesson 4.3.1: Geometric Sequences

Conceptual Activity

Khan Academy. “Explicit & recursive formulas for geometric sequences.”

Topic D: Interpreting Exponential Graphs

Lesson 4.4.1: Identifying Key Features of Exponential Graphs

Lesson 4.4.2: Calculating Average Rate of Change

Conceptual Activities

Desmos. “Polygraph—Exponentials.”

GeoGebra. “Average Rate of Change.”

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Topic E: Graphing Exponential Functions

Lesson 4.5.1: Graphing Exponential Functions

Conceptual Activity

GeoGebra. “Exponential Functions: Graphs.”

Topic F: Comparing Exponential Functions

Lesson 4.6.1: Comparing Exponential Functions

Conceptual Activities

Desmos. “Avi and Benita’s Repair Shop.” Desmos. “Game, Set, Flat.”

Conceptual Task

Saving for a Boat

Topic G: Building Functions From Context

Lesson 4.7.1: Building Functions From Context

Conceptual Activity

Khan Academy. “Construct exponential models.”

Topic H: Transformations of Exponential Functions

Lesson 4.8.1: Translating Exponential Functions

Lesson 4.8.2: Compressing, Stretching, and Reflecting Exponential Functions

Conceptual Activity

GeoGebra. “Function Transformations.”

Unit 4 Assessment

Station Activities

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Topic A: Key Features of Functions

Lesson 5.1.1: Comparing Key Features of Different Functions

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Conceptual Activities

GeoGebra. “Function Behavior.”

GeoGebra. “The 3 forms of Quadratic Functions.”

Topic B: Average Rate of Change

Lesson 5.2.1: Patterns of Change for Different Functions

Lesson 5.2.2: Average Rate of Change on a Graph

Lesson 5.2.3: Comparing Functions Using Average Rate of Change

Conceptual Activity

GeoGebra. “Average Rate of Change of a Function: Dynamic Illustration.”

Conceptual Task

Cooking Up Rational Equations

Topic C: Function Transformations

Lesson 5.3.1: Translation

Lesson 5.3.2: Dilation and Reflection

Lesson 5.3.3: Even and Odd Functions

Conceptual Activity

MathIsFun.com. “Function Transformations.”

Topic D: Modeling with Functions

Lesson 5.4.1: Choosing a Model

Lesson 5.4.2: Using a Model in Context

Lesson 5.4.3: Comparing Models

Conceptual Task

Competing Models

Unit 5 Assessment

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Topic A: Summarizing, Representing, and Interpreting Data on a Single Measurement Variable

Lesson 6.1.1: Representing Data Visually

Lesson 6.1.2: Comparing Different Data Sets

Lesson 6.1.3: Interpreting Data and Recognizing Outliers

Conceptual Activities

Desmos. “LEGO Prices.”

Desmos. “Polygraph: Histograms.”

GeoGebra. “Lotto Tickets Simulation.”

GeoGebra. “Dot Plot Maker.”

GeoGebra. “Measures of Center.”

GeoGebra. “Visualize Measures of Center and Spread.”

GeoGebra. “Outlier Influence.”

Conceptual Task

What Does the Real Data Show?

Topic B: Working with Two Variables

Lesson 6.2.1: Summarizing Data Using Two-Way Frequency Tables

Lesson 6.2.2: Analyzing Functions Fitted to Data

Lesson 6.2.3: Fitting Linear Functions to Data

Conceptual Activity

Desmos. “Predicting Movie Ticket Prices.”

Conceptual Task

Time to Print in 3D

Topic C: Interpreting Linear Models

Lesson 6.3.1: Interpreting Slope and y -intercept

Lesson 6.3.2: Calculating and Interpreting the Correlation Coefficient

Lesson 6.3.3: Distinguishing Between Correlation and Causation

Conceptual Activities

GeoGebra. “Correlation Experimentation.”

GeoGebra. “Correlation Sliders.”

Conceptual Tasks

Smartphone Surge

Unit 6 Assessment

Station Activities

Set 1: Displaying and Interpreting Data

Set 2: Line of Best Fit