Learning Targets

Introduction to Quadratic Functions

Lesson 1: A Different Kind of Change

- I can create drawings, tables, and graphs that represent the area of a garden.

- I can recognize a situation represented by a graph that increases then decreases.

Lesson 2: How Does it Change?

- I can describe how a pattern is growing.

- I can tell whether a pattern is growing linearly, exponentially, or quadratically.

- I know an expression with a squared term is called quadratic.

Lesson 3: Building Quadratic Functions from Geometric Patterns

- I can recognize quadratic functions written in different ways.

- I can use information from a pattern of shapes to write a quadratic function.

- I know that, in a pattern of shapes, the step number is the input and the number of squares is the output.

Lesson 4: Comparing Quadratic and Exponential Functions

- I can explain using graphs, tables, or calculations that exponential functions eventually grow faster than quadratic functions.

Lesson 5: Building Quadratic Functions to Describe Situations (Part 1)

- I can explain the meaning of the terms in a quadratic expression that represents the height of a falling object.

- I can use tables, graphs and equations to represent the height of a falling object.

Lesson 6: Building Quadratic Functions to Describe Situations (Part 2)

- I can create quadratic functions and graphs that represent a situation.

- I can relate the vertex of a graph and the zeros of a function to a situation.

- I know that the domain of a function can depend on the situation it represents.

Lesson 7: Building Quadratic Functions to Describe Situations (Part 3)

- I can choose a domain that makes sense in a revenue situation.

- I can model revenue with quadratic functions and graphs.

- I can relate the vertex of a graph and the zeros of a function to a revenue situation.

Lesson 8: Equivalent Quadratic Expressions

- I can rewrite quadratic expressions in different forms by using an area diagram or the distributive property.

Lesson 9: Standard Form and Factored Form

- I can rewrite quadratic expressions given in factored form in standard form using either the distributive property or a diagram.

- I know the difference between "factored form" and "standard form."

Lesson 10: Graphs of Functions in Standard and Factored Forms

- I can explain the meaning of the intercepts on a graph of a quadratic function in terms of the situation it represents.

- I know how the numbers in the factored form of a quadratic expression relate to the intercepts of its graph.

Lesson 11: Graphing from the Factored Form

- I can graph a quadratic function given in factored form.

- I know how to find the vertex and y-intercept of the graph of a quadratic function in factored form without graphing it first.

Lesson 12: Graphing the Standard Form (Part 1)

- I can explain how the a and c in $y = ax^2 + bx + c$ affect the graph of the equation.

- I understand how graphs, tables, and equations that represent the same quadratic function are related.

Lesson 13: Graphing the Standard Form (Part 2)

- I can explain how the b in $y = ax^2 + bx + c$ affects the graph of the equation.

- I can match equations given in standard and factored form with their graph.

Lesson 14: Graphs That Represent Situations

- I can explain how a quadratic equation and its graph relate to a situation.

Lesson 15: Vertex Form

- I can recognize the "vertex form" of a quadratic equation.

- I can relate the numbers in the vertex form of a quadratic equation to its graph.

Lesson 16: Graphing from the Vertex Form

- I can graph a quadratic function given in vertex form, showing a maximum or minimum and the y-intercept.

- I know how to find a maximum or a minimum of a quadratic function given in vertex form without first graphing it.

Lesson 17: Changing the Vertex

- I can describe how changing a number in the vertex form of a quadratic function affects its graph.