Learning Targets

## 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.



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