



NAME _____

DATE _____

PERIOD _____

Lesson 2: I Rule!

Solidify Understanding

Jump Start

- When I look at a table, I recognize a linear function if:
- When I look at a graph, I recognize a linear function if:
- When I look at an equation, I recognize a linear function if:

Learning Focus

Model patterns with functions.

Compare and contrast linear and quadratic functions.

How are quadratic functions different than linear functions?

Open Up the Math

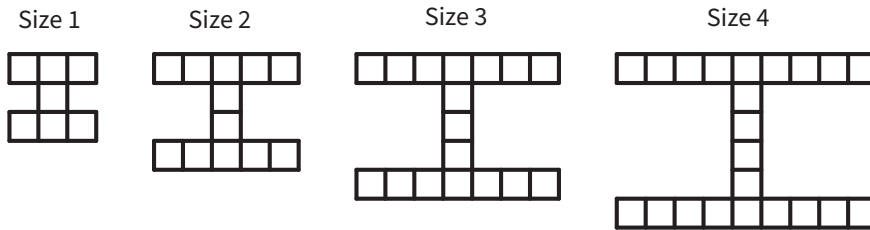
Launch, Explore, Discuss

Marco has started a new blog about sports at Imagination High School (mascot: The Fighting Unicorns) that he has decided to call “I Site.” He created a logo for the web site that looks like this:

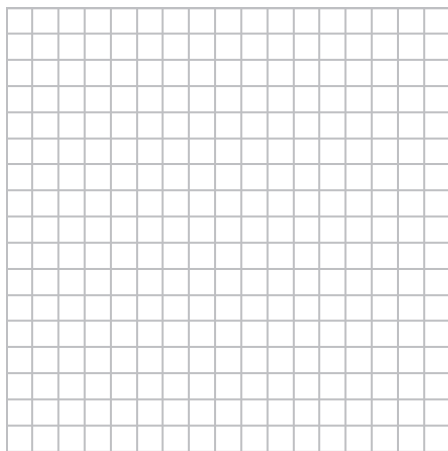


He is working on creating the logo in various sizes to be placed on different pages on the website. Marco developed the following designs:

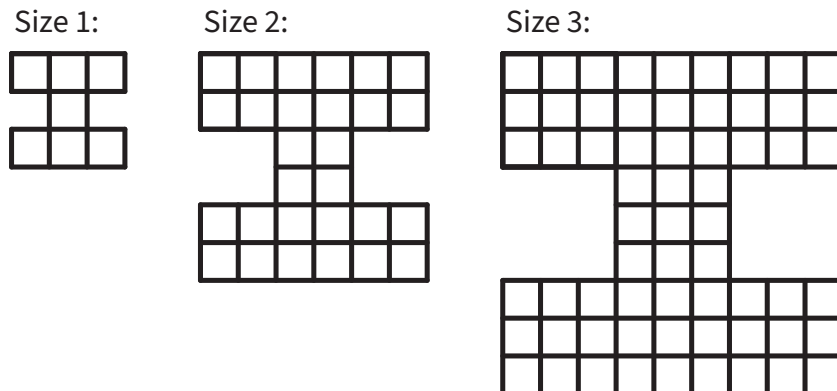
NAME _____ DATE _____ PERIOD _____



1. Develop a mathematical model for the number of squares in the logo for size n .



Marco decides to experiment with making his logo “blockier” so that it looks “stronger.” Here’s what he came up with:



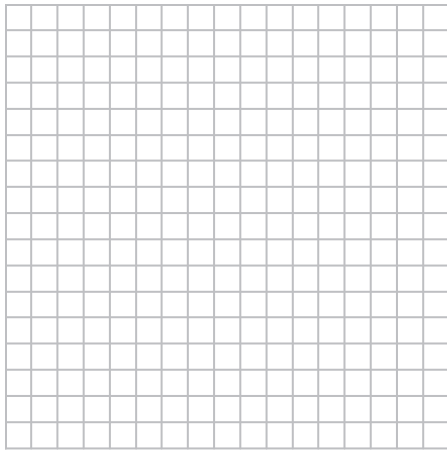
2. Assuming that Marco continues with the pattern as it has begun, draw the next figure, Size 4, and find the number of blocks in the figure.



NAME

DATE

PERIOD



3. Develop a mathematical model for the number of blocks in a logo of size n .
4. Compare the models that you developed for the first set of logos to the second set of logos. In what ways are they similar? In what ways are they different?



NAME _____

DATE _____

PERIOD _____

Ready for More?

Consider the function $f(x) = 7x^2$. If there is no story context given, what are the domain and range of the function? Describe the features of the graph of the function and relate the features to the equation.

Takeaways

	Linear	Quadratic
Rate of change		
Diagram		
Equation		
Table		
Graph		



NAME

DATE

PERIOD

Vocabulary

- **parabola**

Bold terms are new in this lesson.

Lesson Summary

In this lesson we modeled a quadratic and a linear function and compared representations. We learned that the graph of a quadratic function is called a parabola.



Retrieval

Rewrite each expression as the product of two binomials.

Each expression involves two multiplication problems separated by a + or – sign. Each multiplication problem contains a matching binomial factor that can be factored out so that the expression becomes a product of two binomials.

Example:

- $3x(4x + 1) + 2(4x + 1) = (4x + 1)(3x + 2)$
- Factor out $(4x + 1)$ and write the numbers that remain $(3x + 2)$.
- Rewrite as $(4x + 1)(3x + 2)$.

1. $9x(4x - 10) + 2(4x - 10)$



Find the greatest common factor (GCF) for the given values.

2. 36 and 45

3. 8, 24, and 36