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| **Learning Target(s):**1. Understand the concept of a function and use function notation.
* I understand that a function from one set (domain) to another set (range) assigns to each element of the domain exactly one element of the range:
	+ I can represent a function using function notation.
	+ I understand that the graph of a function labeled "𝑓" is the set of all ordered pairs (𝑥, y) that satisfy the equation 𝑦 = f (𝑥).
* I can use function notation to evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
 | **Pacing:*** 2 Days
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| **In previous grades, students have:*** In 7th Grade students develop an understanding of rational numbers and work with expressions and linear equations.
* In 6th Grade students write interpret and use expressions and equations.
* In 4th Grade students develop an understanding of fluency with multi-digit multiplication and dividing to find quotients with multi-digit dividends.
* In 2nd Grade students build fluency with addition and subtraction.
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| **Success Criteria** (to be able to do this, students must learn and understand…):* Understand how to represent the constraints and variables mathematically.
* Understand how to select appropriate mathematical methods to use.
* Understand how to make sensible estimates and assumptions.
* Understand how to investigate an algebraic process problem.
* Understand how to communicate their reasoning clearly.
 | **Performance Task** (students will show they can do this by):* Interpret a situation and represent the constraints and variables mathematically.
* Select appropriate mathematical methods to use.
* Make sensible estimates and assumptions.
* Investigate an algebraic process problem.
* Communicate their reasoning clearly.
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| **Suggested Activity:**The lesson unit is structured in the following way: * Before the lesson, students work alone on a task designed to reveal their current understanding. You review their solutions and create questions for them to consider to help improve their work.
* In the lesson, students work in small groups on a collaborative task, matching situations, sketch graphs, and algebraic functions. They refine the graphs and interpret the formulas to answer questions. Students then discuss as a whole-class what has been learned and the strategies used.
* In a follow-up lesson, students review their responses to the original task and the questions posed. They use what they have learned to complete a similar task; Another Four Situations.

Activity Link: <https://www.map.mathshell.org/lessons.php?unit=9260&collection=8>**Re-teaching:**Student Focus Questions and Thinking Guide:* What is known and what is unknown?
* What are you asked to find out?
* What kind of representation will help you tackle this problem?

*Try not to make suggestions that move students towards a particular approach to this task. Instead, ask questions that help students to clarify their thinking and encourage checking:* * Can you set out your work using a table or diagram?
* What would be a good way?
* What assumptions have you made?
* How can you check your solution?
* Do you think there is just one solution?

**Extension:*** What was your strategy for solving this problem?
* What do you know now that you did not know before?
* Would you continue to use this strategy on similar problem types?
* Are there any other approaches you could try?

Peer Reflection/Assessment:* If you are visiting another group, read through their work. If their work makes sense, explain it in your own words. If the work does not make sense to you, ask for clarification.
* If you are staying at your desk, either carefully listen to the explanation and check it matches your own thinking or answer the visiting students’ questions.
* You may then want to consider improving your artifact.
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| **EL Accommodations:*** Peer support.
* Discourse strategies.
* Reading and writing prompts.
* Provide written instructions.
* Provide a vocabulary list.
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| **Vocabulary:*** Linear
* Equation
* Domain
* Range
* Functional Notation
* Systems of Equations
 | **Aligned Resources:*** **Lesson PDF:** <https://www.map.mathshell.org/download.php?fileid=1740>
* **Lesson Slide Set:**
* <https://www.map.mathshell.org/download.php?fileid=1741>
 | **Blooms:** Apply**DOK:** 2**21st Century Skills:**Learning and Innovation Skills:* Creativity and Innovation
* Critical Thinking and Problem Solving
* Communication
* Collaboration

Information, Media and Technology Skills:* Information Literacy
* Media Literacy
* Technology Skills
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| **Test Item Exemplars:**Students will analyze and correct, as necessary, the “Boomerangs” activity (pg. T-2 and S-1 of linked MAP Mathshell lesson)… Then, after individual and peer reflections, they shall create their own Cat Poster with corrected data and conclusions.  |