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| **Learning Target(s):**1. Explore the concept of functions. (The use of function notation is not required.)
* I can understand that a function assigns to each input exactly one output.
* I can determine if a relation is a function.
* I can graph a function.
 | **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 solve a problem using the order of operations.
* Understand the distinction between a relation and a function.
* Understand how to solve a problem involving rates of change.
* Understand how to create, compare, and evaluate different representations of functions.
 | **Performance Task** (students will show they can do this by):* Solving a problem involving rates of change.
* Make distinctions between a relation and a function.
* Create, compare, and evaluate different representations of functions.
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| **Suggested Activity:**This lesson unit is intended to help you assess how well students are able to solve a real-world problem that involves rates of change. In particular, it will help you assess how well students are able to create, compare, and evaluate different representations of functions.This lesson is structured in the following way: * Before the lesson students tackle the problem individually. You then review their work and write questions to help students improve their solutions.
* At the beginning of the lesson students respond to your questions. Students are then grouped into pairs and work collaboratively to produce better solutions to the same task.
* There is a whole-class discussion to compare and evaluate different approaches.
* A second collaborative activity follows where students work in small groups to evaluate and comment on sample solutions, followed by a second whole-class discussion about the work.
* Finally, students review and evaluate their work on the problem.

 Activity Link: <https://www.map.mathshell.org/lessons.php?unit=8210&collection=8&redir=1>**Re-teaching:**Student Focus Questions and Thinking Guide:* Can you organize your work in a table?
* Would someone unfamiliar with your work easily understand your solution?
* Have you explained how you arrived at your answer?
* How can you check that your answer is correct?

*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:* **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 idea/position.
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| **EL Accommodations:*** Students must interpret sentences and relate them to equivalent symbolic expressions.
* Students explain their reasoning to other students and listen carefully to the explanations of others.
* Additionally, they must attend to any similarities or differences between methods.
* Peer support.
* Discourse strategies.
* Reading and writing prompts.
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| **Vocabulary:*** Real Number
* Rational Number
* Rate of Change
* Linear
* Expression
* Equation
* Domain
* Range
* Function
* Relation
 | **Aligned Resources:*** **Lesson PDF:**  <https://www.map.mathshell.org/download.php?fileid=1674>
* **Lesson Slide Set:**

<https://www.map.mathshell.org/download.php?fileid=1675>* **Supplemental Text and Slide Materials:**

[McGraw Hill Slide Set and Textual Supplements](Alg%208th%20U2A8%20%288th%20Supplemntals%29.pdf) | **Blooms:** Analyze**DOK:** 3**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 perform the “Comparing Fuel Consumption: Buying Cars” activity on (pg. T-2 and S-1 of linked MAP Mathshell lesson)… Then, after individual and peer reflections, they shall create their own rationale statements for each exemplar with corrected procedures and conclusions. |