|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Learning Target(s):**   1. Understand the connections between proportional relationships, lines and linear equations.  * I can graph proportional relationships. * I can interpret the unit rate as the slope of the graph. * I can compare two different proportional relationships. * I can apply concepts of slope and y-intercept to graphs, equations and proportional relationships. * I can explain why the slope (m) is the same between any two distinct points on a non-vertical line in the Cartesian coordinate plane. * I can derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b. | | | **Pacing:**   * 3 Days | |
| **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. | | | | |
| **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 how to solve a problem using two linear equations with two variables. * Understand how to recognizing equivalent expressions. * Understand how to graph functions and analyze functions from graphs. | | **Performance Task** (students will show they can do this by):   * Solving a problem using two linear equations with two variables. * Interpreting the meaning of algebraic expressions. * Graph functions and analyze functions from graphs. | | |
| **Suggested Activity:**  This lesson is about seeing relationships between variables in different ways, recognizing that there is a special kind of relationship we call a function, and understanding properties that are special to functions of all different types. The unit studies relationships between different variables and how to represent these in a variety of different ways - especially with graphs and tables. We also introduce unit conversions repeatedly during the course of the unit so that students see converting units as foundational to understanding relationships between different quantities.  Note: Select out functions which are beyond the scope of linear, quadratic, or exponential as necessary.  This lesson is structured in the following way:   * Before the lesson, students work individually on the task. You then review their work and create questions for students to answer in order to improve their solutions. * During the lesson, students work alone on a new task involving interpreting graphs of equations in two variables. They discuss their solutions in small groups before producing a joint solution. In the same small groups students evaluate some sample solutions to the task. * In a whole-class discussion, students explain and compare the alternative solution strategies they have seen and used. * Finally, in a follow-up lesson, students use what they have learned to revise their work on artifact/solution.   Activity Link: <https://curriculum.newvisions.org/math/resources/resource/student-handouts-unit-1-algebra-i/>  **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. | | | | |
|
|
|
| **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. | | | | |
| **Vocabulary:**   * Linear * Expression * Equation * Domain * Range * Functional Notation * Rate of Change | **Aligned Resources:**   * **Lesson PDF:** <https://drive.google.com/file/d/15edC81rSs7oBai_iairlGb-NAMFAUFCc/view> * **Embedded Lesson PDF:**   [Modeling with Functions](Alg%208th%20U5A2%20(8th%20Supplemntals).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 |
| **Test Item Exemplars:**  Open Exploration Activity (Ongoing Formative Assessment). | | | | |