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| MSP Lesson Plan – Translating Algebraic Expressions |
| **NAME: Stephen Allen and Melissa Stephens** |
| **SUBJECT/GRADE RANGE: Math / 6th – 7th grades** |
| **TOPIC: Translating Algebraic Expressions** |
| **List of appropriate standards that support the lesson.**   * [CCSS.MATH.CONTENT.6.EE.A.2](http://www.corestandards.org/Math/Content/6/EE/A/2/)  * [CCSS.MATH.CONTENT.6.EE.A.2.A](http://www.corestandards.org/Math/Content/6/EE/A/2/a/)  * [CCSS.MATH.CONTENT.7.EE.B.4](http://www.corestandards.org/Math/Content/7/EE/B/4/) |
| **List of appropriate objectives that guide the lesson.**   * I can use variables to represent both math and real-world quantities. |
| **An equipment list in table format, stating the quantity and source for each item.**   |  |  |  | | --- | --- | --- | | Equipment | Quantity | Source | |  |  |  | | Cards with Words / Phrases associated with each of the Four Operations | 1 class set OR a set per group |  | |  |  |  | | Document Camera |  |  | |  |  |  | | Teacher created notes and problem set | 1 per student |  | |  |  |  | | Scavenger Hunt Cards (from Teachers Pay Teachers) | 1 class set |  | |
| **List of safety requirements for your lesson. (when applicable)**   * None |

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| **A detailed plan of instruction including activities, timeline, and questions you plan to ask students.**   |  |  |  | | --- | --- | --- | | ***Engagement*** | | | | Timing | Activities | Planned Questions & Expected Answers/Misconceptions | |  | As an introduction to this lesson, students should be refreshed on vocabulary terms such as sum, difference, product, and quotient as well as the meaning or purpose of the four operations.  Students group word / phrase cards associated with the four operations.  (Use as many or as few scenarios)  The cafeteria bought lots of frozen pizzas to serve. If you know the total amount of money they spent and how many pizzas they bought, how could you figure out the cost of 1 pizza? Why do you believe that? What is the action of this operation? “You would divide the total cost by the number of pizzas to find the cost of one pizza. Division separates the money spent into equal stacks. Each stack represents the cost of one pizza. Division separates a quantity into equal parts.”  Pete bought some candy and gave some of the pieces to his best friend, Hal. How could you figure out how many pieces Pete has left? Why do you believe this? What is the action of the operation? “Subtract the number of pieces he gave to a friend from the number of pieces he purchased. You are starting with the whole, taking away a part so what is left is the other part. The subtraction action is to take away, or compare by finding the difference.”  Bob and Tyler do not have enough money to buy a box of donuts, but they have the exact amount needed if they combine their money. How would you find the cost of a box of donuts? What is the action of this operation? “You would find the sum of Bob's and Tyler's money. Combine is the action of addition.”  Macy wants to buy each of her classmates a Coke. How would you figure out the cost? What is the action of this operation? “You would multiply the cost of the Coke by the number of classmates. Repeated addition of the same value is multiplication.” | - Describe, in two words or less, the purpose of each math operation.  - Are there words or phrases that could be placed in more than one category? Provide examples of how they could be used. | | ***Exploration*** | | | |  | | | | Timing | Activities | Planned Questions & Expected Answers/Misconceptions | |  | Begin by asking students, "How many of you love to solve word problems?" Distribute to each student a plain sheet of paper and tell them to express how they feel about working with word problems by drawing a picture, no words draw a picture only. |  | | Have a student volunteer share his/her picture and the rest of the class translate what the picture means to them. Students should share their translation explaining why they interpret the picture in their own way. Express that all of this is a form of communicating, and the way we communicate in math is with the same concept. |  | | ***Explanation*** | | | |  | | | | Timing | Activities | Planned Questions & Expected Answers/Misconceptions | |  | Define an expression for students, "A math phrase without an equal or inequality sign." Tell students that numeric expressions can be solved, algebraic expressions can be evaluated ONLY IF values are defined for each variable(s). This lesson is to translate written words to numbers, operational symbols, and variables. |  | | Remind students that a variable is a placeholder for one or more numbers. "Some number" is a phrase that indicates a variable is needed. |  | | Model how to translate an algebraic expression from words into math.  1st – define the variable or unknown  2nd – identify math terms / phrases  3rd – translate  For example, “Maxine sold half of her paintings in the art exhibit last week.”  Variable: p = paintings  Math Terms / Phrases: half  Translated Expression: ½p or p ÷ 2  Be purposeful to address expressions that contain the use of grouping symbols. For example, “twice the sum of a number and 5”. | Misconception: students often choose to write the expression ½ - p to represent this expression | | Given a set of algebraic expressions, students practice the skill of translating. |  | | ***Elaboration*** | | | |  | | | | Timing | Activities | Planned Questions & Expected Answers/Misconceptions | |  | Practice writing algebraic expressions in a fun way! This self-checking scavenger hunt includes 10 real world word problems that require the students to write an algebraic expression.  Post the pages around your room in a random order. Give a student work page to each student. I usually make a point of telling the students to start at different problems, so they aren’t all in a bunch. The students work out the problem on their first sheet and find the answer on the bottom of another sheet around the room. They then complete the problem on the top of that sheet. They continue this until they return to the page where they started.  Scavenger Hunt can be purchased from Teachers Pay Teachers at the following site:  <https://www.teacherspayteachers.com/Product/Writing-Expressions-Scavenger-Hunt-1784876> |  | | ***Evaluation*** | | | | See below | | | |
| **Assessments. A copy (or description) of how you will assess whether the students have achieved your objectives along with a key showing how you will evaluate responses.** |
| **Any visual aids and handouts that you will use.** |