**Lesson Plan *1*: *Algebra/ Topic: Variables***

**Teacher Name: Marci Sams**

**Lesson Title: What is a variable?**

**Target Grade Level: 6th Grade**

**Estimated Time for Lesson: 54 minute**

**Lesson Objective:**

Given steps to an algebraic expression the learner will be able to correctly demonstrate they have an understanding of variables, and they can be used in a variety of different ways.

**Learning Target:**

Using variables in different ways

**Taxonomic level of objective:**

Application

**Unit goal that align with the lesson objective:**

The student will be able to use variables in a variety of different ways knowing the difference between an algebraic expression and an equation.

**Standard that aligns with the lesson objective:**

6.3.2 Develop the meaning and uses of variables

**Assessment:**

Students will be assessed using check-ins by a show of hands when prompted with a question. Students will fill out a number trick sheet, recording each step of the number trick and they will draw out what each step looks like when using manipulative squares and circles, demonstrating knowledge of content. A journal at the end of class explaining what new material students learned.

**Taxonomic levels of assessments:**

Demonstrate and application

**Literacy Across the Content Areas:**

Literacy will be used by students talking with partners and tables groups, and writing a journal entry.

**Materials:**

Math composition book, square color tiles, circle color markers, calculators, Investigation 1.1 sheet.

**Anticipatory Se***t*:

Students will be asked to discuss amongst table groups and brainstorm anything they know that has anything to do with algebra, including vocabulary.

**Lesson Sequence:**

Have students get out their planners and write down learning target and homework, which is number tricks sheet 1.1. (5 min)

*Anticipatory Set:* Have students take 3 minutes to brainstorm with their table to come up with anything they currently know relating to algebra, including vocabulary terms, and record them on a piece of paper.  (3 min)

Explain to students we are going to be starting a unit on algebra. Explain the learning target and each activity we will be doing as well as clearly explaining that the homework is going to be a worksheet similar to what we will be doing in class. (1 min)

Generate a list of what students already know on the whiteboard. Have students raise their hands before giving examples. (5 min)

Once the list is written on the whiteboard *address the term letter or variable, if used. Explain that these letters are variables in algebra. Have students think-pair-share if each letter, or variable, can only be one number or if a letter, or variable, can be any number. Have them explain why they think this. After a minute ask for a show of hands who thinks each variable or letter can only be one number. Then a show of hands, who thinks a variable, or letter, can be any number. (2 min)*

*Tell the students to think of their school bag/lunch bag/purse bag as a variable. Ask if sometimes they bring home a different amount of books, or if everyone who is leaving school with a school bag has the same amount of books in it. Ask students if all purses have the same items in them and relate that to a variable. Then tell them variables can be any number. (2 min)*

*Hand out calculator for IEP students.*

*Use a power point presentation to introduce number tricks. Ask students to try and do them in their head, but they can write them down on a piece of paper and/or use a calculator. (1 min)*

*Giving students enough time for each operation start with the first slide of having them choose a secret number between one and ten.*

*With their number have the students add 5…….*

*Double that……. (multiply by 2)*

*Subtract 4……..*

*Divide by 2…....*

*Subtract their secret number. (4 min)*

*Have the students whisper their answer to their elbow partner. Then share what number they started with. Ask entire class if they got three. Then ask if they all started with the same number. (1 min)*

*Let students use the same number trick with different numbers to test outcome. TAG students can use fractions, decimals, or negative numbers. (5 min)*

*Hand out Investigation 1.1 and the manipulative squares and circles. Explain they will follow along with the teacher who will be performing the number trick on the powerpoint presentation. Have them fill out Investigation 1.1 by writing what their secret number is after each operation and draw the squares and circles that represent the operations and the manipulative squares and circles , as we do the exercise together. (2min)*

*Explain the secret number, which is our variable, will be represented with the square manipulative. Any adding or subtracting will be represented with the circle manipulative. Then go through the slides.*

*Choose your secret number…….looks like……(one square)*

*Add five…………………………………looks like……(one square, five circles)*

*Double that…………………………..looks like…….(two squares, ten circles)*

*Subtract four………………………..looks like…….(two squares, six circles)*

*Divide by two……………………….looks like…….(one square, three circles)*

*Subtract your secret number……………………(three circles). (3min)*

*Have students check to see if their neighbors have three circle markers remaining at the end of the trick.*

*Introduce number trick #2 and have student first do the math in their head, on paper, or with a calculator.*

*Choose a secret number*

*Multiply by three*

*Add six*

*Divide by three*

*Subtract two*

*Whisper their answers to their table (all students should get the number they started with). (3 min)*

*Explain how we used our “special number”, which is our variable, to come up with the answer 3, and to come up with an answer the same as the variable. Let them think if there are others ways variables can be used.*

*Have students work together as table groups and try the second number trick with different numbers to test result. Tag students can again use more difficult numbers. (2min)*

*In the same table groups have students use square tiles and circle markers to visually show how the second trick works and record that on Investigation 1.1, and finish Investigation 1.1. If students finish they can raise their hand to get homework and start on their homework. (5 min)*

***Checking for understanding:***

Have student’s get out their composition book and journal finishing the sentence “Today in class I learned…….. While students are writing hand out homework sheet, that is similar to Investigation 1.1. (5 min)

***Closure:***

Have students, who want to, share what they wrote with each other, and write down their homework in their quads where they wrote their journal entry. (4min)

**Enrichment** **Activities (Early Finishers/ TAG/ Special Needs):**

*During first number trick instead of using a whole number students may use decimals, negative numbers, or very large numbers to check number trick. Early finishers can attempt to write what the number trick looks like as an algebraic expression.*

**Differentiation:  Meeting needs of individual learners**

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| --- | --- | --- | --- |
| **Multiple Intelligences**  x  Linguistic  x  Visual/Spatial  □  Musical  x  Intra-personal  x  Math/Logic  x  Kinesthetic  x  Inter-Personal  □  Naturalist | **Learning Styles**  □  Mastery  x  Interpersonal  x  Understanding  x  Self Expressive | I**nstructional Grouping**  x  Whole class  □  Learning centers  x  Pairs  x  Small groups  x  Mixed ability  □  Ability grouping | **Student Interests and Funds of Knowledge**  □  □  □  □  □  □ |

***Accommodations*:** *High achieving students can follow the enrichment activities listed above and slower students can use elbow partners and table groups to assist on recording sheet and number tricks.*

***Modifications*:** *I.E.P students can write down each step and use that to calculate number tricks rather than doing the math in their head. They can also use calculators. They can also get help when working in table groups.*