U4Ch1L1_Variables Explore **Student Handout!**

Purpose: Students will acquire an understanding of how variables work.

Vocabulary: Variables, Values, Number, Strings, Operators, Expression, Evaluate

Activity: **Variables** *(match students with a partner.)*

- I will lead you from the Class Site!
- We will define the following terms on the front board: *Variables, Values, Number, Strings, Operators, Expression, Evaluate.*

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1. **Values** – a piece of information.
   a. Numbers - Made of the digits 0 thru 9. (Yellow Sticky Note).
   b. Strings –Made of any characters found on a keyboard – Strings in Quotes " ". (Blue Sticky)
   Do This: 1. Create a String and write on correct colored Sticky Note.
   2. Create a String and write on correct colored Sticky Note

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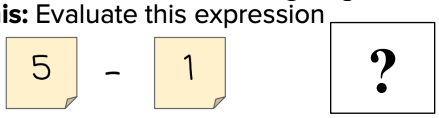
2. **Operator** – Plus, Minus, Multiply and divide symbols.
   a. Expression - At least two Numbers with an Operator between them.
   b. Evaluate – Carrying out the Expression (eg. 2+3=5, Evaluate the Expression)
   Do This: Evaluate the following Expressions:

Do This: Evaluate this expression



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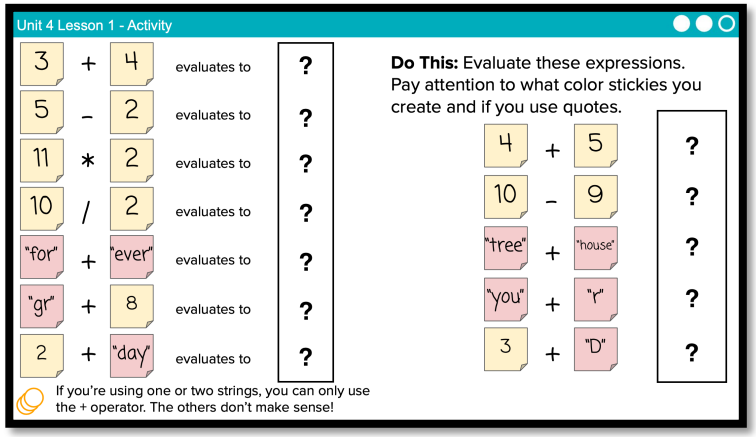
3. **Using Expressions –**
   a. You can use all 4 Operators with Numbers…but, if a String is in the Expression, it may only use + .
   b. If a Number is contained in the Expression with a String, then after being Evaluated, the Number becomes a part of the String.
   Do This: Evaluate the following Expressions:

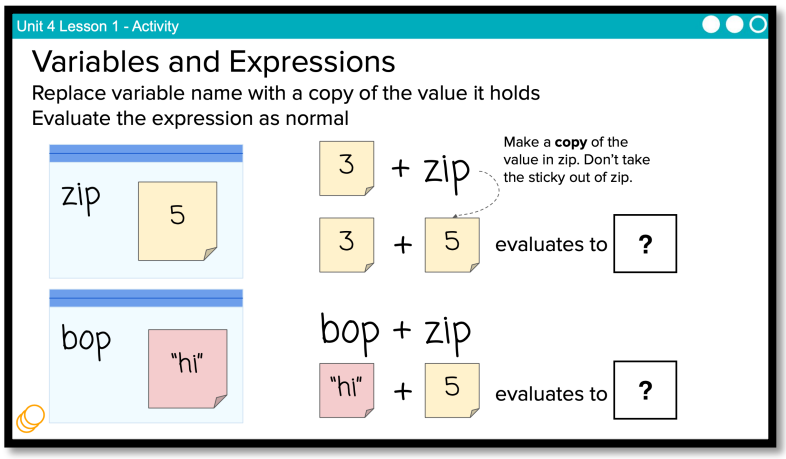


Write Your Answers on handout.
Compare your results with the Other Students!

4. **Create A Variable**
   a. Create a Variable that follows the following guidelines:
      i. Must start with a letter.
      ii. No quotes.
      iii. No spaces.

   Do This: Create 3 variables and write them on the 3 baggies. Create a String, write it on a Sticky and place inside one of the baggies/variables. Create a Number, write it on a Sticky and place inside one of the other baggies/variables.

5. **Variables & Expressions**
   a. Create a Number Sticky.
   b. Create a copy of the Number Sticky that is in one of the Variables (don't take out).
   c. Create a copy of the String Sticky that is the other Variable.
   d. Create an Expression with the Variable and the Number Sticky and Evaluate.
   e. Create an Expression with the Number Sticky and the Variable Value (the one you made a copy of.) and Evaluate.



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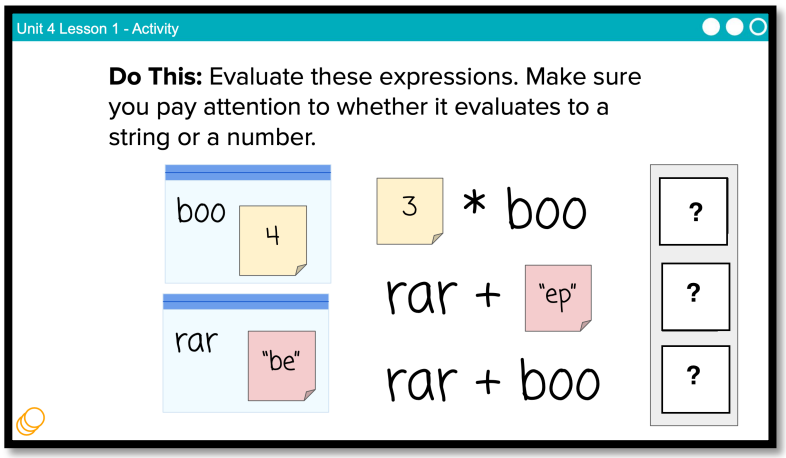
Do This #1: Create an Expression with the Number Sticky and Variable and Evaluate.
Create an Expression with a Variable and String and Evaluate.
Create an Expression with a Variable and a Variable and Evaluate.



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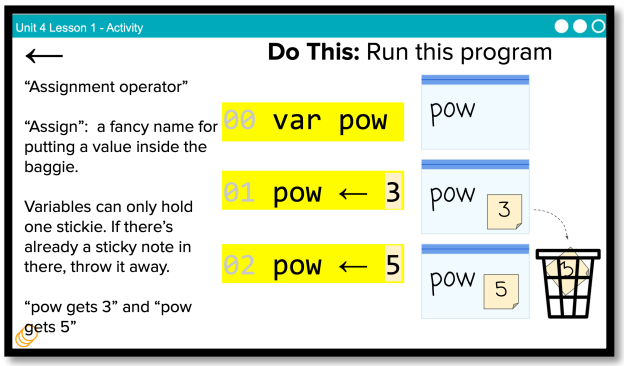
6. **Lets Start Writing Programs with Variables – Note: <- equals =**

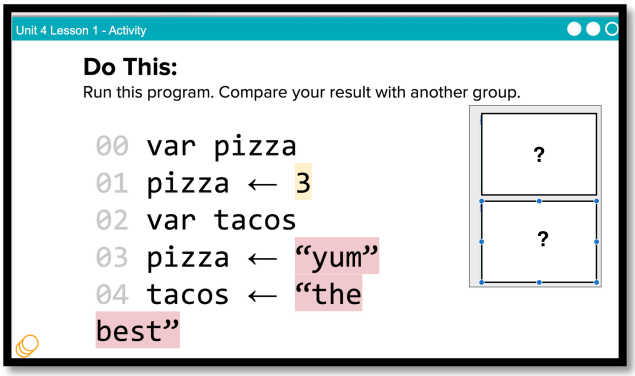
Note: In math = means "are equal forever". In programming = means "put this value in this variable".

Line Number	Command To Create Variable	Variable Name
00	var	pow

Take a look at how a Variable can only have one Value.



Do This: Run This Program:



Write Your Answers on handout.
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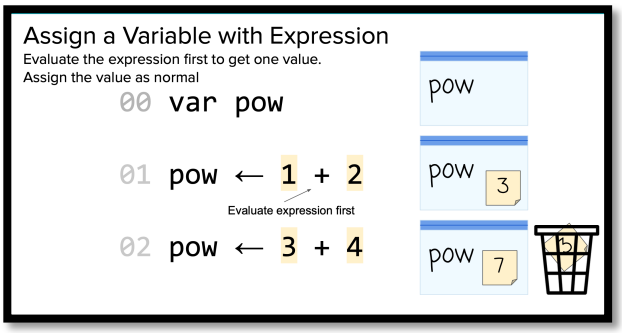
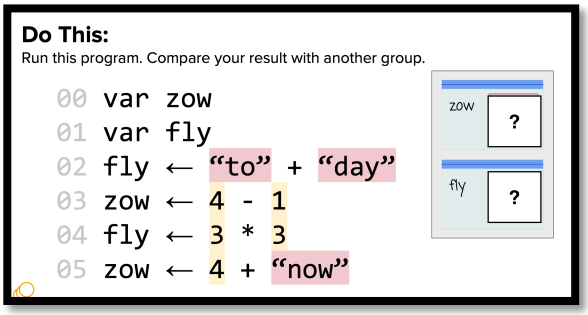
7. **Assign a Variable with Expression**

Take a look at how you can assign values to Variables by Evaluating and Expression.



Do This: Run This Program:



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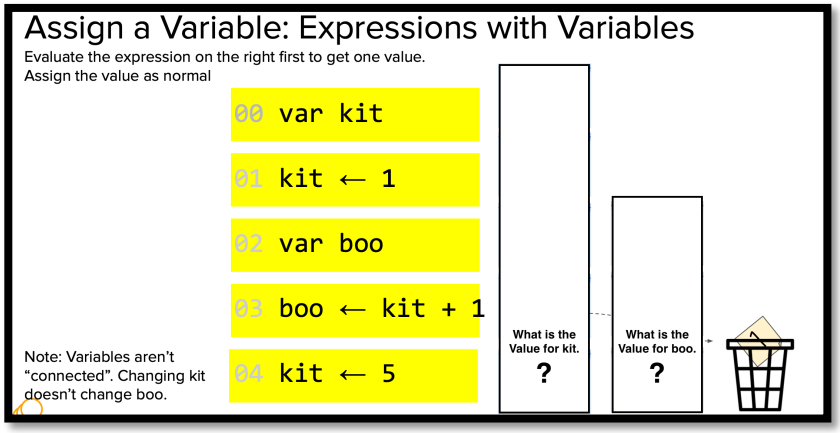
Compare your results with the Other Students!

8. Assign a Variable: Expression with Variables

Do This: Run This Program:



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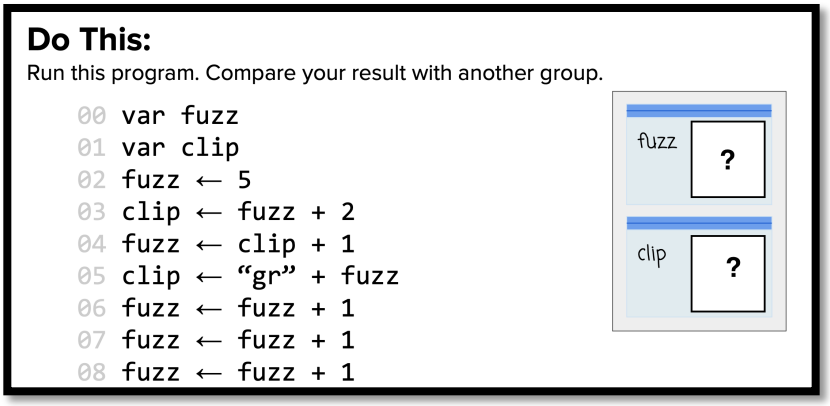
Compare your results with the Other Students!

Do This: Run This Program:



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