

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.*

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

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

5	-	1	=	?
---	---	---	---	---

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:

Unit 4 Lesson 1 - Activity

3	+	4	evaluates to	?
5	-	2	evaluates to	?
11	*	2	evaluates to	?
10	/	2	evaluates to	?
"for"	+	"ever"	evaluates to	?
"gr"	+	8	evaluates to	?
2	+	"day"	evaluates to	?

Do This: Evaluate these expressions. Pay attention to what color stickies you create and if you use quotes.

4	+	5	?
10	-	9	?
"tree"	+	"house"	?
"you"	+	"r"	?
3	+	"D"	?

If you're using one or two strings, you can only use the + operator. The others don't make sense!

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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Variables and Expressions

Replace variable name with a copy of the value it holds
Evaluate the expression as normal

zip 5

3 + zip

3 + 5 evaluates to ?

bop "hi"

bop + zip

"hi" + 5 evaluates to ?

Make a copy of the value in zip. Don't take the sticky out of zip.

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

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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Do This: Evaluate these expressions. Make sure you pay attention to whether it evaluates to a string or a number.

boo 4

3 * boo

rar "ep"

rar + boo

?
?
?

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

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.

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← **Do This: Run this program**

"Assignment operator"

"Assign": a fancy name for putting a value inside the baggie.

Variables can only hold one stickie. If there's already a sticky note in there, throw it away.

"pow gets 3" and "pow gets 5"

```
00 var pow
01 pow ← 3
02 pow ← 5
```

Do This: Run This Program:

Unit 4 Lesson 1 - Activity

Do This:
Run this program. Compare your result with another group.

```
00 var pizza
01 pizza ← 3
02 var tacos
03 pizza ← "yum"
04 tacos ← "the best"
```

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

7. **Assign a Variable with Expression**

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

Unit 4 Lesson 1 - Activity

Assign a Variable with Expression
Evaluate the expression first to get one value.
Assign the value as normal

```
00 var pow
01 pow ← 1 + 2
02 pow ← 3 + 4
```

Evaluate expression first

Do This: Run This Program:

Unit 4 Lesson 1 - Activity

Do This:
Run this program. Compare your result with another group.

```
00 var zow
01 var fly
02 fly ← "to" + "day"
03 zow ← 4 - 1
04 fly ← 3 * 3
05 zow ← 4 + "now"
```

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

8. Assign a Variable: Expression with Variables

Do This: Run This Program:


Assign a Variable: Expressions with Variables
Evaluate the expression on the right first to get one value.
Assign the value as normal

```
00 var kit
01 kit ← 1
02 var boo
03 boo ← kit + 1
04 kit ← 5
```

Note: Variables aren't "connected". Changing kit doesn't change boo.

What is the Value for kit. ?

What is the Value for boo. ?

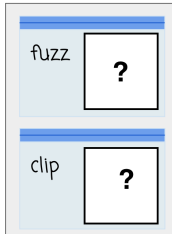


Write Your Answers on handout.
Compare your results with the Other Students!

Do This: Run This Program:

Do This:
Run this program. Compare your result with another group.

```
00 var fuzz
01 var clip
02 fuzz ← 5
03 clip ← fuzz + 2
04 fuzz ← clip + 1
05 clip ← "gr" + fuzz
06 fuzz ← fuzz + 1
07 fuzz ← fuzz + 1
08 fuzz ← fuzz + 1
```



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