Week 4

Girls Who Code Middle School

Ninja

Gather in a circle and on the count of three, jump back into a "Ninja" pose.

One-by-one and continuing counter-clockwise, each person takes a turn being the attacker and tries to touch another person's hand in a single "Ninja" move.

If a person's hand is touched, they are eliminated.

Avoid having your hand touched or slapped and be the last Ninja standing.

Lego

Split into two groups: the directors and the builders.

The directors should build something using the legos and have a volunteer take a picture of it.

Then disassemble it and give the builders instructions on how to recreate the structure.

Let's teamwork!

Happy Birthday Michelle!

Our amazing co-leader!

Variables

What is a variable?

What is a Variable?

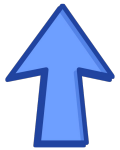
A **variable** is like a **box** with a **name**.

- We can put different things (i.e., different values) into the box.
- When we put something new into the box, we also get rid of what used to be in the box.

Let's Review!

var greeting = "Hello World!"

Name of our variable



How we assign the value of our variable

Information we are storing (the data)

How to Check a Variable's Value?

We can print the value of a variable onto the screen!

print greeting

Hello World!

Why Use Variables

- **Reduce**
  - We get to write less code!
- **Reuse**
  - We can use code we wrote before by storing its value in variables!
  - Your program will **never ever ever ever** forget what's in your variable!
- **Recycle**
  - We can replace the value in the variable!

Let's Change What's in Our Variable!

var x = 5	x	5
x = 5 + 2	x	~~5~~ 7
x = x + 5	x	~~5~~ ~~7~~ 12

The Equal Sign???

The equals sign does **NOT** mean what you think it means!

var greeting = “Hello World!”

Takes the value “Hello World!” and puts it in the variable greeting.

The equals sign is for assignment.

It means “put this value in this box.”

Let's Practice!

https://www.khanacademy.org/computer-programming/new/pjs

```
var x = 5;
var y = 10;
x = 2 + 2;
x = x + y;
println(x);
println(y);
```

What will we print out?

Data Types

What are some data types?

What Are Some Data Types?

Strings: var hello = “Hello World!”;

Booleans: var bool = True;

Ints: var num = 5;

Floats: var deci = 3.0;

Chars: var letter = ‘a’;

Some More Examples

- **Integers**
  - 1, 586, 785
- **Floats**
  - 1.0, 1.234, 500.847
  - Operators: +, -, ÷, ×
- **Chars**
  - ‘G’, ‘W’, ‘C’
- **Strings**
  - “Cat”, “Dog”, “Mouse”
- **Booleans**
  - True, False
  - Operators: not, and, or

Booleans

- A boolean value can be either **True** or **False**
- We use these to check if a certain condition is true or not

Comparison Operators

a > b check if **a** is **greater than b**

a < b check if **a** is **less than b**

a === b check if **a** is **equal to b**

a !== b check if **a** is **NOT equal to b**

exclamation point **“!”** always means **“not”**

Let's Practice!

>

Let's Practice!

<

Let's Practice!

=

Let's Practice!

!==

Boolean Operators

&&

and:

True and True ⇒ True
True and False ⇒ False
False and True ⇒ False
False and False ⇒ False

Boolean Operators

||

or:

True or True ⇒ True
True or False ⇒ True
False or True ⇒ True
False or False ⇒ False

Boolean Operators

!

not:

not True ⇒ False
not False ⇒ True

Can negate anything by putting "**not**" in front of it

Example: Evaluate not (i < 10) when i = 5.

i < 10 ⇒ True
not (true) ⇒ False

not (i < 10) => False

Let's Practice!

True

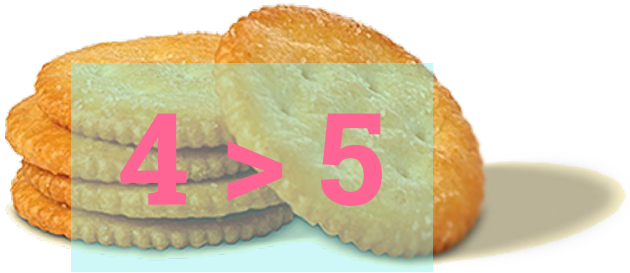
&&

True

Let's Practice!

5 !== 2

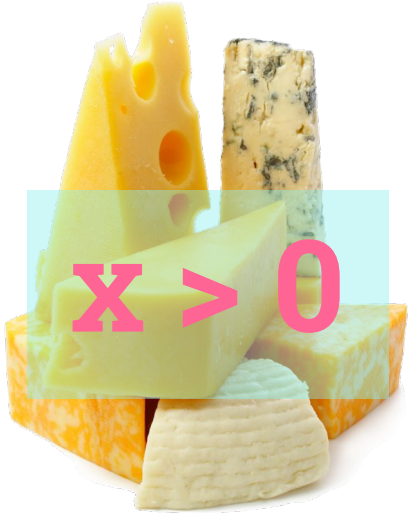
&&



4 > 5

Let's Practice!

```
var x = 8;
x = 4;
```



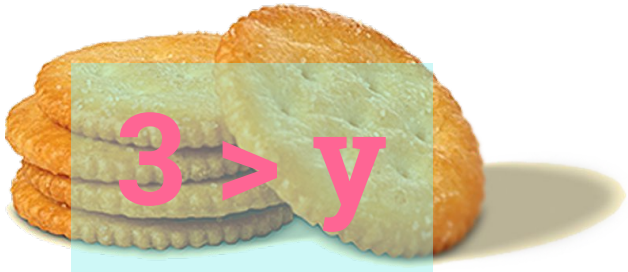
||

Let's Practice!

```
var y = 9;
var x = 7;
y = y - x;
```

! 6 !== y

||



3 > y

Conditionals

Sneak Peak into Conditionals

Conditional

- **Conditionals** tell the computer to only do something **IF** a certain condition is **true**

"If you finish your homework, you can watch TV."

"If you listen to Michelle and Amy, you will learn CS."

If, Else If, Else

IF statement

- tells a program to do something IF a certain condition is true

ELSE IF statement

- comes after the IF statement
- tells the program what to do if the first condition is false, but a different condition is true
- optional
- can have as many as you want

The **ELSE** statement

- goes last
- tells the program what to do if none of the conditions for the IF and ELSE IF statements are true

Example

```
var michelle_age = 22;
if (michelle_age < 21) {
      print “I’m in school!”;
} else if (michelle_age === 21) {
      print “It’s not my birthday yet!”;
} else if (michelle_age === 22) {
      print “It’s my birthday!”;
} else {
      print “What is my age?”;
}
```

False

False

It’s my birthday!

Worksheet Time!

Get out your pens and pencils!

Coding Time!

Let's get on Khan Academy!

Please also fill out the Happiness Survey!