

Lesson 8

Add-ons

Pre-Lesson Ideas:

- * Ask students to give examples of conditional statements that they see in their everyday life. Have them answer in the form: If ... then... . For example, If it is raining outside, then I put on my rainboots. Give students a few minutes to talk amongst themselves.
- * After a few minutes, transition from everyday conditional statements to conditional statements for programming. Ask them about video games they play or applications they use. Have them turn simple actions they are able to do into conditional statements. For example, If I press the space key, then my character jumps.
- * Take the if statements like, if I press the space key, then my character jumps, and have them break it down even further. Can we get more specific them jumped? How could we get a character to jump? Get the students to start thinking about how useful if statements can be in their code and how they need them to make a dynamic game or animation

Post-Lesson Ideas:

Reflection Questions

- 1) Why are conditional statements useful?

Possible Answers: They allow you to control movement.

- 2) What goes inside the parenthesis of an if statement?

Possible Answers: The condition, which generally consists of a variable compared to some number with an inequality.

- 3) What goes inside the brackets of an if statement?

Possible Answer: The action that happens when the condition is true.

Further Development

- * Have students use the same process of refreshing a shape, with a character or any advanced drawing.

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Set Up

Refresh:

- * Learn how to control movement with conditional statements
- * Practice using If statements to set boundaries within an animation.

Project Goal:

1) Generally, what should the project look like?

A simple shape moving across the screen that starts over from the beginning once it reaches a certain boundary.

2) What skill(s) are being learned/ practiced?

3) What concept are students gaining insight on?

Manipulating variables to move objects.

Programming/ Math Vocabulary:

Conditional Statement - The ability to test a variable against a value and act in one way if the condition is met by the variable or another way if not. They are also commonly called - if statements.

Inequality - When two things are unequal. One is either greater than the other or less than the other

Boundary - Something that indicates or fixes a limit or extent

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Outline

Introduction to Topic:

“Today we are going to be using conditional statements to make a shape move across the screen and make it start over once it reaches a certain point.

Project Breakdown:

- 1) Make a shape move across the screen
- 2) Write an if statement that includes an inequality
- 3) Set the variable back to its starting value
- 4) Problem solve and trouble shoot errors

Example Projects/ Basic Source Code:

```
// define variables for x
var x = 0;
draw = function( ) {
  //draw an ellipse
  fill(0,0,0);
  ellipse(x+50, y+300, 50, 50);
  //use math expression to add 5 to the x coordinate
  x = x + 5;
  //use a conditional statement to start the ellipse from the beginning once the ellipse
  reaches 700.
  if ( x > 700 ) {
    x = 0;
  }
};
```

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Troubleshooting

Common Mistakes and Confusions:

1) Not closing brackets

Every curly bracket ({ }) has to have an open and close bracket, or else the computer will throw an error.

2) Correct syntax for an if statement

3)

```
if ( some condition ) {  
    some action  
}
```

3) Creating a condition that is always true or never true

If the conditional statement starts off being true, then it will not work as intended. If the statement is always false, then it will never run.

4) Writing all of their code inside of the if statement

If you write all of your code inside the if statement, then it will not appear until the if statement becomes true, which is most likely never.

FAQ's:

1) Why are there brackets in an if statement?

The curly brackets tell the computer which code to run, only if the if statement is true.

2) Can I have multiple inequalities in a conditional statement?

Yes! You can use multiple inequalities to make more precise conditions.