M319: AP Computer Science Principles Name: _____

Chapter 3: Data Representation

rgb_hex_example.html Date: _____ Teacher: _____

**File To Create:** *Examples \ rgb_hex_example.html*

```
<!DOCTYPE HTML>
<html>
<head>
	<title>RGB/Hex Color Example</title>
	<style>
		body {
			padding: 10px 0;
			border: 5px solid gray;
			text-align: center;
			background-color: rgb(240,240,240);
			font-family: "Trebuchet MS", Helvetica, sans-serif;
		}
	</style>
	<script>

		// REQUIRED: ADD A DESCRIPTIVE COMMENT HERE
		function changeBackgroundColor(color){
			document.body.style.backgroundColor = color;
		}

		// REQUIRED: ADD A DESCRIPTIVE COMMENT HERE
		function displayMessage(text){
			var output = "This color is represented by the value ";
			output += text;
			output += ".";

			document.getElementById("idDiv").innerHTML = output;
		}

		// REQUIRED: ADD A DESCRIPTIVE COMMENT HERE
		function masterFunction(){
			var rgbString = document.getElementById('idRGBValue').value;

			changeBackgroundColor(rgbString);

			displayMessage(rgbString);
		}

	</script>
</head>

<body>
	<h1>RGB/Hex Color Example</h1>
	<h3>Enter one of the following:</h3>

	An RGB string such as "rgb(255,0,255)" (numbers should be integers between 0 and 255).
	<br> <br>
	An RGB hex value such as "#FF00FF" (each pair of hex values should be between 00 and FF).
	<br> <br>
	<input type="text" id="idRGBValue">
	<br> <br>
	<input type="button" value="Change Background" onClick="masterFunction()">
	<br> <br>
	<img src="rainbow.jpg">
	<br> <br>
	<div id="idDiv"></div>
</body>
</html>
```

**Required Tasks:**

1. Type in the code above. Test and debug until it is working correctly.
2. Help your partner debug his/her code until both of your websites are working correctly.
3. Experiment with the working webpage. Discuss the following questions with your partner:

    - Type `rgb(255, 0, 0)` into the textbox. What color do you get? Why?
    - Type `#FF0000` into the textbox. What color do you get this time? Why does this make sense?

    - Type `rgb(0, 255, 0)` into the textbox. What color do you get? Why?
    - Type `#00FF00` into the textbox. What color do you get this time? Why does this make sense?

    - Type `rgb(0, 0, 255)` into the textbox. What color do you get? Why?
    - Type `#0000FF` into the textbox. What color do you get this time? Why does this make sense?

    - Try again with `rgb(255, 0, 255)`, `rgb(255, 255, 0)` and `rgb(0, 255, 255)`. What colors do you get and why?
    - What are the hex equivalents of these three colors? Check your work by typing in your hex color `#??????` in the website.

    - Find the rgb and hex values for black. Why does this make sense?
    - Find the rgb and hex values for white. Why does this make sense?
    - Find the rgb and hex values for a shade of gray. Why does this make sense?

    - Create a color of your choosing (both its rgb and hex versions). Explain to your partner why it looks the way it does.

**Enhancements (in this order):**

1. Define a function `rgbToHex(rgb)` that accepts a string in the form "`rgb(x, y, z)`" and returns its hex equivalent. For example, `rgbToHex("rgb(255, 0, 0)")` should return the string "`#FF0000`".
2. Create a function `hexToRGB(hex)` that accepts a string such as "`#00FF00`" and returns its rgb equivalent.
3. Modify your `displayMessage(item)` as follows:
    - If `item` is an rgb value, the message also includes the hex value of the color.
    - If `item` is a hex value, the message also includes the rgb value of the color.