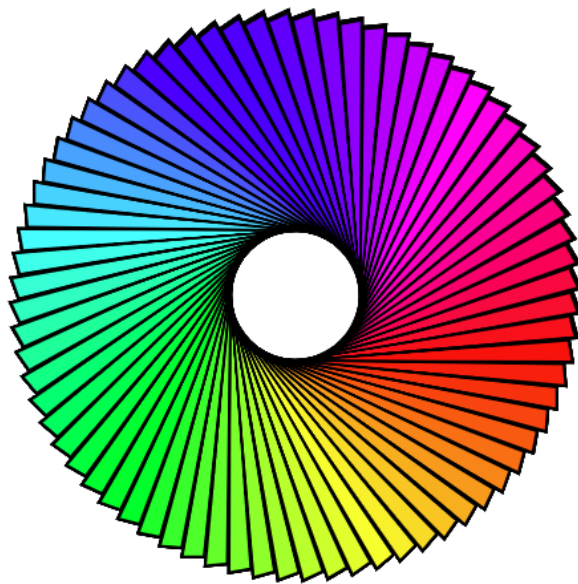


USD STEAM Academy

# HSVA\_Color Lesson



An Introduction to MathArt Creator

by

Paul G. Phillips

Speaker, Artist, Programmer

# WELCOME

Your presenter is  
Paul Phillips



My Son and I created MathArt so you can make art patterns using math transformations and simple shapes.

To be ready for the lesson:

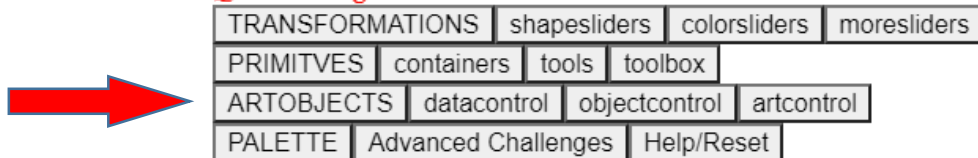
1. Click the link in your Chat Window.  
<https://www.mathart.us/Lesson2020/index.html>
2. Shrink the size of the browser to include the Instruction window. So it looks like my shared screen.
3. Figure how to switch between your browser and Zoom window.

# ArtData Demonstration

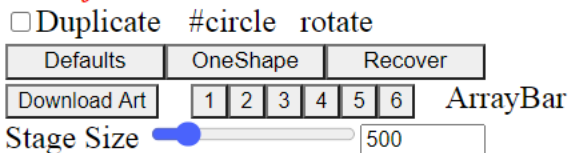
## Demonstration

1. Show/Hide ArtData button.
2. Triple Click on Data line.
3. Quick Navigate to Help/Reset.
4. Click the Reset button.
5. Quick Navigate to ArtObjects.
6. Click the Paste Art Data.
7. Paste in the empty field.
8. Click OK.

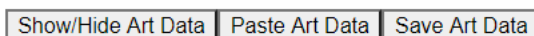
### Quick Navigation



### ArtObjects Controls

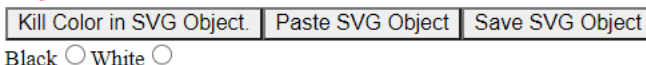


### Data Controls



Ignore Shape in Paste artData and use #circle.

### Object Controls



# Introduction Computer Color

## Setup for Hue Lesson

### ArtData:

```
1_200_100000_360_1_1.5_0_0_0_0_1_100_100_1_0_0_0_#circle_false_false_false_false_false_false_false_false_false_false
```

### Copy This ArtData String

1. Paste in using the Paste ArtData button

## Demonstration

### Show Hue Primary Colors

1. Set Rotate = 60
2. Set Hue = 60

These are the primary **HUES** for computers in the HSV A system.

HUE	COLOR
0	red
60	yellow
120	green
180	cyan
240	blue
300	magenta
360	red

## Activity

### Check the Hue Numbers

1. Set Spread = 0
2. Set layers = 2
3. Set Scale = 5
4. Enter the hue numbers in the table and verify they are the colors shown.

# HSVA

**Saturation** numbers determine the brightness of the color. The color fades like you are adding white light.

**Values** numbers determine the brightness of the color. The color gets darker like you are removing the white light.

**Alpha** numbers determine how transparent the color is. Alpha =0 means you only see the outline.

## Setup for HSVA Lesson

### ArtData:

```
1_200_100000_360_1_1.5_0_0_0_0_1_100_100_1_0_0_0_#circle_false_false_false_false_false_false_false_false_false_false_false
```

### Copy This ArtData String

1. Paste in using the **Paste ArtData** button
2. See the Hue spectrum on the Stage.  
The Hue numbers are from 0 to 360 where Hue 0 = red and Hue 360 = red.

## Demonstration

Show The **ColorSliders** effect on the spectrum

# RGBA (Red Green Blue Alpha)

The RGB color system grew out of the early Television Technology when there were 3 color rays activating the coating on the screen.

The combined intensity of the Red Green and Blue rays blended to make the colors of the spectrum.

The Computer Color definition of RGBA is used by the SVG programming to define the colors of the shapes.

MathArt must convert the HSV to RGB in order to display color objects on the Stage.

## Setup for RGBA Activity

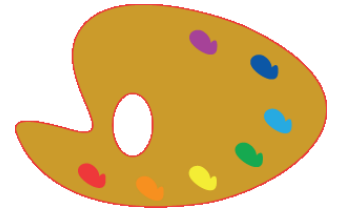
### ArtData:

```
1_27_100000_360_120_10_0_0_0_0_120_100_100_0.5_0_5_360_#circle_false_false_false_false_false_false_false_false_false_false_false_false
```

### Copy This ArtData String

1. Paste in using the **Paste ArtData** button
2. See the blending of RGB on the Stage.
3. Use the SAT Slider To see the intensity of the colors change.
4. Use the Alpha Slider to see the transparency change.

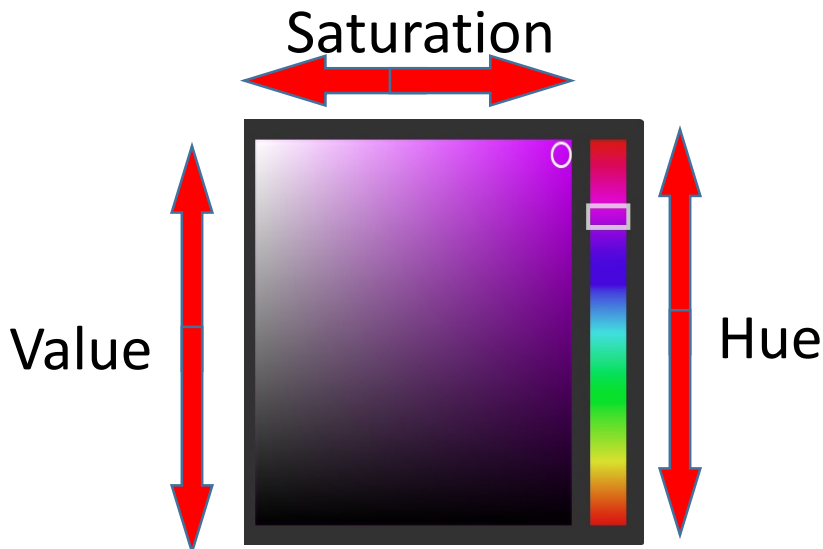
# Create A Custom Color Palette



- A **PALETTE** is a collection of colors used in a work of art.

Demonstration : Show how to create custom colors.

1. Click PALETTE
2. Move Slider on the right up and down to pick a HUE
3. Move the Dot left and right to pick a SATURATION
4. Move the Dot up and down to pick a VALUE
5. Click **Add Color** button

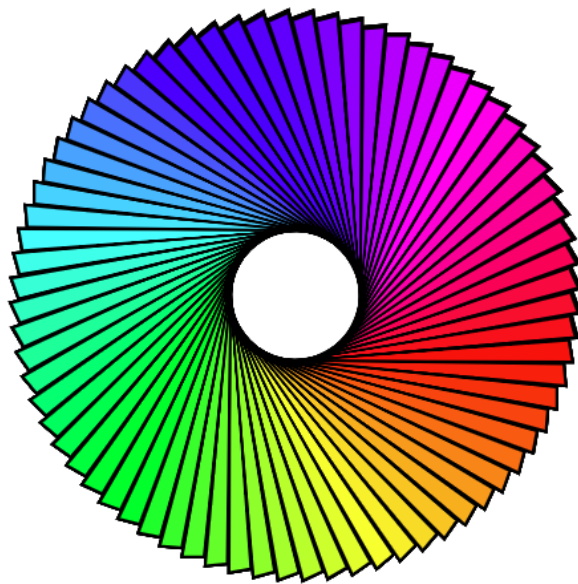


Activity: go to PALETTE

1. Change the colors of your design.
2. If you do not like it click **NEW PALETTE**
3. Move Slider for Hue
4. Move Dot for Shade (SAT and VAL)
5. Click **Add Color** button for each color.

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