USD STEAM Academy
Lesson

From Math To Art

An Introduction to MathArt Creator

by
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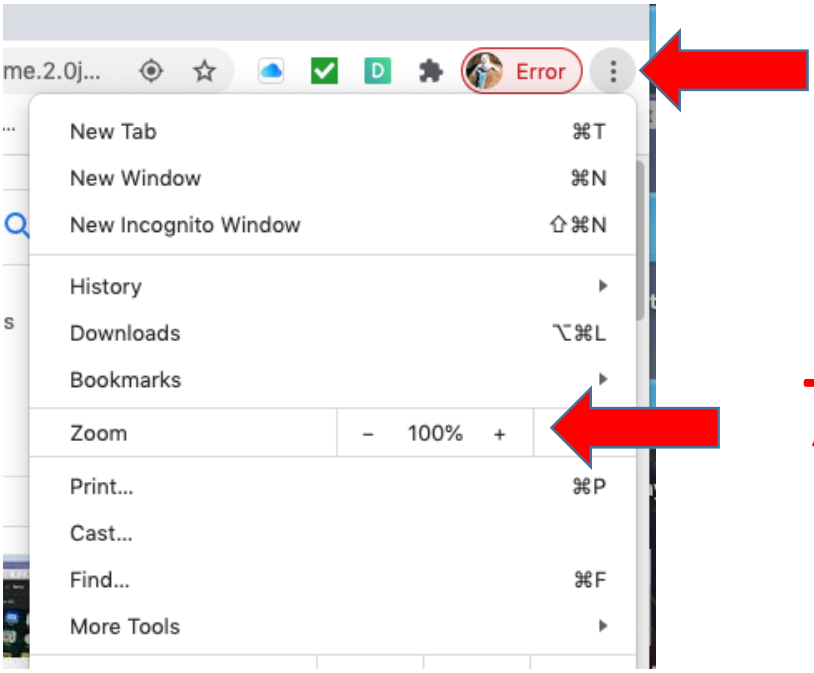
Speaker, Artist, Programmer

Setup

1. Put The link in the Chat: https://www.mathart.us/Lesson2020/index.html
2. Click the link.
3. Size screen to include instruction window

MACBOOK



75%

PC

CTRL -

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.

Introduction

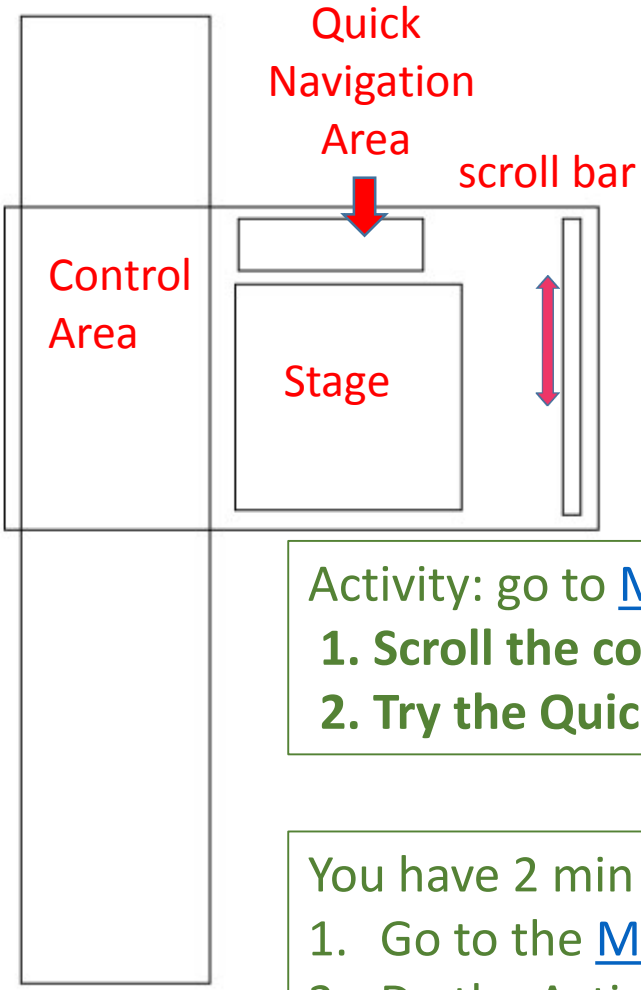
The MathArt Creator PlaySpace has two sides.

The Left Side is the Control Area. It scrolls up and down.

The Right Side Is the Artwork Stage and Quick Navigation areas. They stay in a fixed position.

Demonstration : Show **scrolling** the controls

Demonstration : Show **Quick Navigation** buttons



Activity: go to MathArt Creator Tab

1. **Scroll the controls**
2. **Try the Quick Navigation buttons**

You have 2 min to:

1. Go to the MathArt Creator.
2. Do the Activity.
3. Come back to Zoom.

Human Interface (Control Types)

The human interface is the way you make MathArtCreator do something .

The control types include the:

- **checkbox,**
- **slider,**
- **input field,**
- **spinner,**
- **button,**
- **clickable shape name,**
- **radio button,**
- **input window,**

Demonstration : Show an overview of **controls**.

Demonstration : Show the **Primitives** area and examples.

MathArt Transformations

To **Transform** means to change.

In Mathematics to perform a math transformation, you use an equation. Behind each **Slider** is an equation that converts the action of the slider to an action on the stage.

Demonstration : Show
1. Using the **Sliders**.
2. Using **Checkboxes**.

Saving Patterns

Demonstration : Show
1. **artcontrol button.**
2. **Download Art** button process.

Activity: go to MathArtCreator
1. **Try the Sliders**
2. **Try the Random Checkboxes**
3. **Try the Primitives**
4. **Click the Download Art Button**

You have 7 min to:
1. Go to the MathArt Creator Tab.
2. Do the Activity.
3. Come back to Zoom.

If you get stuck.
If the screen goes black
Use Quick Navigation Area
Use the Help/Reset button
Then Use Reset button and START OVER

MathArt Basic Primitives

A **Primitive** is a shape stacked into layers making an array.

Basic Shapes include:

Circle
Moon
Ellipse
Hexagon
Leaves
Octagon
Pentagon
Square
Stick
Triangle
Heart
File
NewShape
Petal

Special Primitive: PolyShape

Demonstration : Show
1. Picking points to make a **polyshape**.

Combine Primitives in containers

Demonstration : Show
1. Adding primitives to the **Basement** container.
2. Using the **Kitchen** as backup.

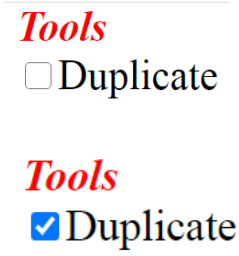
Activity: go to Primitives
1. Make a combined primitive pattern.
2. Save it using Download Art Button.

You have 5 min to:
1. Go to the MathArt Creator Tab.
2. Do the Activity.
3. Come back to Zoom.

Modify Primitives With the Toolbox

Toolbox tools work in two ways:

1. Checkbox empty means the Action is on the primitive.
2. Checkbox checked means the Action is on a copy of the primitive.



Demonstration : Show

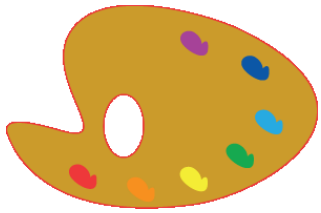
1. Set Layers to 1
2. Set ArrayBar to 1
3. Set Spread to 0
4. **Moving Stick to center 20H -180HV**
5. **Duplicate Stick - Rotate 60 – 6 times**
6. Set Layers to 60
7. Set Spread to 100
8. Set ArrayBar to 3
9. Set Scale to 3
10. Downlosd Art

Activity: go to tools

1. **Make a new primitive using the toolbox and containers.**
2. **Add layers, spread, Arrays, sliders**
3. **Save it using Download Art Button.**

You have 5 min

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 for your art.

1. Click PALETTE
2. Move Slider to Red
3. Pick Shade
4. Add Color button
5. Move Slider to Violet
6. Pick Shade
7. Add Color button
8. Move Slider to Magenta
9. Pick light Shade
10. Add Color button

You have 5 min

Activity: go to PALETTE

1. Change the colors of your design.
2. If you do not like it click NEW PALETTE
3. Move Slider to your color
4. Pick Shade
5. Add Color button.
6. Save it using Download Art Button.
7. Click the Reset button

Saving Your Artwork

Saving Art Images

Demonstration : go to Art Controls

1. Sending each image to yourself and to mathart@artbycoloring.com

Activity: go to Art Controls

1. Scroll Down to each of your saved images.
2. Right Click.
3. Select Copy image
4. Go to your email
5. Paste image into the email message
6. Put your name in the subject line.
7. Send your 3 favorite image to mathart@artbycoloring.com.
8. **PC uses send an email to yourself.**
9. **Mac uses open notes and save image there.**
10. Send each image in a separate email.

You have 5 min

Conclusion

Developing MathArtCreator required STEAM

Science - Color Systems

Technology - Computer Operations

Engineering – Programming JavaScript, SVG, and HTML5

Art – Shape and Pattern Design

Math – Algebra, Geometry, Trigonometry to make equations for Transformation of Scale, Rotation, Skewing, Calculating Horizontal and Vertical Distance.

Homework

- Explore the MathArtCreator Operations Help File
- Explore the Advanced Challenges
- Explore the ***Quick Navigation Links*** not demonstrated

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