

## **Lesson - Animation with p5 (2 -4 Days)**

Objectives: Students will be able to....

- Create an animation program that runs without error in order to demonstrate their knowledge of coding.
- Include an algorithm that uses sequencing, selection, and loops in order to achieve object motion/animation.
- Identify/highlight where sequencing, selection, and loops are necessary in their program with comments.

### **Introductory Activity: 5 Minutes**

(Ex: Do-Now, Formative Assessment, Discussion, Inquiry)

Do Now: Students open/create “p5 editor account”

- Students click on web editor link (provided in google classroom)
- Students create a circle centered on their canvas

### **p5 Guided Exploration: 10 Minutes (Days 2-6)**

(Ex: Collaborative Problem Solving, Lab, Debate, Discussion, Direct Instruction)

CODE ALONG: During this exploration, students will discover different movements/motions in p5, and how to use motion via coding to create a unique animated image of their own.

- Teacher reviews p5 doc with students
- Teacher models coding different motions using p5 editor specifically highlighting:
  - var creation to produce motion
  - Sequencing algorithms\* (Math Connection: Order matters/logical ordering...p5 reads code top to bottom, so, order of shapes determines overlays)
- Teacher allows students to try coding simple animation...request for a volunteer to explain code or share their screen (Additional objects...extra 5 -10 mins).

### **Assessment Questions: (Day 2 through Last Day)**

- How can you make images move in p5? Give an example.
- Describe the process you used to create your unique animation
- Why is it important to pay attention to the order/sequencing of code in p5?
- Why are comments an important part of the coding process?

\*\*Additional questions raised throughout the unit daily depending on student coding issues.

### **Whole-Group Share Out/Summary: 5 Minutes (Daily)**



- Students will be expected to share their screens and/or explain their work process.
- Students will choose one reflection question to respond to before transitioning to independent work (Daily participation - students have to respond to a question or prompt using a post-it).



**Independent Work: 30 Minutes (Day 2 onward)**

(This is where you will use your hyperdoc with a variety of online learning activities which may include explorations, collaboration, discussion, video lessons, reading, and assessment.)

- Students will be expected to complete the given task independently/collaboratively.
- Students will complete a written reflection. (Google Classroom)

**Lesson Concepts:**

<b>Abstraction</b> 	<b>Extracting essential details and repeatable patterns from a more complex system.</b>
	Includes decomposition, pattern recognition, generalization, modularity, interfaces.
<b>Algorithms</b> 	<b>Instructions that convert a set of inputs into a desired output (kind of like a recipe).</b>
	Includes algorithm design, control flow, inputs/variables/outputs, application.
<b>Programming</b> 	<b>Giving instructions to computers in human language.</b>
	Includes languages, syntax, development environments, collaboration.
<b>Data</b> 	<b>Information that can be collected, stored, and processed by a computer.</b>
	Includes data abstraction & storage, transformation & visualization, feedback loops & automation.
<b>Analyzing</b> 	<b>I can develop a deeper understanding of computing applications.</b>
	Describing, examining, interpreting, evaluating.
<b>Prototyping</b>	<b>I can express my ideas by making computing projects.</b>

	Iterating, imagining, planning, designing.
<b>Communicating</b> 	<b>I can engage others in my ideas and work on computing concepts.</b>
	Showing, explaining, presenting, discussing.

## Notes:

### Reference Sheet

- [p5 Resource Doc - Animation](#)
- [p5 Resource Doc - Drawing](#)

### Google Classroom Links

Period 6 - <https://classroom.google.com/c/Mzk2MzA5MTk3MTg5?cjc=ucfsq7x>

Period 8 - <https://classroom.google.com/c/Mzk2MzA5MTk3MzI5?cjc=hiav6xv>

Period 9 - <https://classroom.google.com/c/Mzk2MzA5MTk3NDM4?cjc=rzvzwmwf>

### Day 1-2 Reflection

- Do Now ran a little over...students staggered entry
- Modeled Vertical & Horizontal Motion...student input requested to complete circle 2...Did first circle within 10 min, but used another 10-15 min to complete circle 2 with student input
- Assessment - Students chose a reflection question to respond to as "exit ticket" (Post-it).
- HW -Students to finish adding creative features to object (Color, Borders, etc.)...Independent Work
- Added screenshot of completed code to GC
- Added previous "P5 Resource Doc" to assignment in GC

### Day 3-4

#### Outlook

- Model Diagonal Movement & Bouncing
- Last 20 min...student complete independent work

### Reflection:

Period 6: Modeled diagonal movement...student input requested to complete the code based on previous coding pattern. Students completed the looping portion on their own during class. Students with completed error free code shared screen during the last 5 minutes.

HW - Animation in p5...Due Tomorrow! (Day 3)  
-Make the diagonal circle loop  
-Add at least one other moving shape  
-Use fill(), StrokeWeight() to add color and dimension

Period 8: Modeled diagonal movement...student input requested to complete the code based on previous coding pattern. Students completed the looping portion on their own during the session. Requested for students with completed error free code, share their screen during the last 5 minutes (No Takers).

HW - Add at least one other moving shape and use fill(), StrokeWeight() to add color and dimension...Due Monday

Period 9: Reviewed day 1 coding & allowed students to get caught up...no student had the completed code from day 1 despite it being posted to assignment in GC. Limited student response.

HW - Animation in p5..Due Monday  
- Complete coding for horizontal & vertical object motion (use attached sample doc)  
-Add at least one other moving shape  
-Use fill(), StrokeWeight() to add color and dimension

## **Day 5-6**

### Outlook

- Model Bouncing Motion
- Last 20 min...student complete independent work

### Reflection:

Modeled "bouncing motion"...student input requested to complete the code based on previous coding pattern. Shared sample code as model in GC assignment comments...limited student responses...Jav shared in chat he had a working code.

HW - work on completing individual screensaver with all key attributes listed...due next Monday.

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Sample Screensaver

<https://editor.p5js.org/lboland/sketches/7uSypLN4L>