



Hour of Code: Teacher Guide

Before the Hour of Code:

- Make sure student computers have an up-to-date browser (Chrome, Safari, or Firefox).
- Read through teacher notes in this document. Download notes to have exercise solutions ready.

During the Hour of Code:

1. Direct students to codehs.com/hoc_js_graphics
2. Allow students to work through Hour of Code at their own pace, providing encouragement and support when needed. See tips below for handling student questions.
3. Tweet pictures or stories at @CodeHS #ReadWriteCode #HourOfCode!
4. If time allows at the end of the period, facilitate a discussion around the Hour of Code using the following guiding questions:
 - Before today, what did you think about programming or coding?
 - Did any of these ideas change during the Hour of Code?
 - What was your favorite part of the Hour of Code?
 - Did any parts of the Hour of Code challenge you? How?

Hour of Code Tips:

If students get stuck or have questions, it is okay if you don't have the answer! Ask questions to activate their problem-solving skills such as:

- What can we try differently?
- What do you want the program to do? What are you telling the program to do?
- How can we break this problem into smaller steps?

Thank you for your dedication to Computer Science Education!

**Interested in going beyond the Hour of Code?
Reach out to us at hello@codehs.com.**

JavaScript Graphics Teacher Notes

In this Hour of Code, students learn the basics of creating graphics objects on a screen by setting the type, shape, size, position, and color. Using the geometric concepts, and the concept of `getWidth()` and `getHeight()`, students will create multiple graphic objects in JavaScript.

Objective

Students will be able to ...

- Create graphical JavaScript programs that draw shapes on the canvas
- Locate points on the graphics canvas using (x, y) coordinates

Link to Activity: codehs.com/hoc_js_graphics

Discussion Questions

- Describe how you would make a blue circle with radius 10 and add it to the center of the canvas.
- Many programs generate graphics. What are some programs, apps, or websites that you use that create graphics?
- What is challenging about creating graphical programs? What is rewarding about creating graphical programs?

Exercise Solutions

Graphics Hello World	
Description	This program adds "Hello world" to the canvas. Try updating it to say "What up world". Also, update the position of the text to (50, 50).
Motivation	Students practice modifying text in the JavaScript graphics campus
Solution	<pre>// This program will add text that // says "Hello world" at 100, 100. function start(){ var text = new Text("What up world"); text.setPosition(50, 50); add(text); }</pre>

JavaScript Graphics Teacher Notes

Blue Circle	
Description	This program draws a blue circle. Try drawing two more circles: A red circle with radius 50 at (200, 200). A green circle with radius 15 at (50, 15). You can use Color.green and Color.red
Motivation	Practice creating and adding circles to the graphics canvas
Solution	<pre>// This program draws 3 circles function start(){ var circle = new Circle(30); circle.setPosition(100, 50); circle.setColor(Color.blue); add(circle); var circle = new Circle(50); circle.setPosition(200, 200); circle.setColor(Color.red); add(circle); var circle = new Circle(15); circle.setPosition(50, 15); circle.setColor(Color.green); add(circle); }</pre>

Red Rectangle	
Description	This program draws a red rectangle. You should change the height of this red rectangle to 20. Also, you should draw one more rectangle that is blue. It should be the entire height of the screen and the width should be 30. Set it's position at (200, 0).
Motivation	Practice creating and adding rectangles to the graphics canvas.
Solution	<pre>// This program will add a red rectangle // and a blue rectangle</pre>

JavaScript Graphics Teacher Notes

```
function start(){
    var rect = new Rectangle(100, 20);
    rect.setPosition(60, 150);
    rect.setColor(Color.red);
    add(rect);

    var rect = new Rectangle(30, getHeight());
    rect.setPosition(200, 0);
    rect.setColor(Color.blue);
    add(rect);
}
```

Draw Something	
Description	Write a program to draw something fun or creative on the screen.
Motivation	Allow students to creatively apply what they have learned about JavaScript graphics.
Solution	Varies