Lesson 5.1: 13 Colonies - Getting Started

Objectives

In this lesson, students will:

- Learn to approach a more complex project with planned tasks and algorithms
- Recognize key elements of an existing scratch project and identify and plan next steps to complete the project.
- Learn to distinguish between bitmap and vector mode when drawing a sprite.

Agenda

1. Introduction and Getting Started	10 mins
2. Student Activity: Starter Project Exploration	5 mins
3. Class Activity: Coding Plan	10 mins
4. Student Activity: Adding Game Instructions and the Colony Label	15 mins
5. Wrap Up and Reflections	10 mins

Preparation

- ❑ Projector to demonstrate project
- ❑ Print student activity worksheet, one per student pair

Resources & Links

- ❑ Teacher demonstration project: https://scratch.mit.edu/projects/307197018
- ❑ Student starter project to remix: https://scratch.mit.edu/projects/306109217

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1. Introduction and Getting Started

This project uses historic and geographic facts about the 13 colonies to create an educational and fun interactive game. The project is coded interactively and through student activities over the course of the next 5 lessons. Students will work with a partner to complete the project. Explain to students what they will be doing over the course of the next several lessons.

Demonstrate the final project so students understand what they will be creating. The project page of the Scratch project helps explain the final project game.

https://scratch.mit.edu/projects/307197018

Give students an opportunity to ask questions about the final project. Once students are paired up, they will get started on the project.

2. Student Activity: Starter Project Exploration

In this activity students work in pairs and explore the starter project. From this point forward, students will work with the same partner until the project is complete. Partners should decide whose Scratch account they will use to code the project. At the end there will be time for students to share the project so that the partner whose account was not used can remix the game into their own account.

Point out to students that the colony sprites, the fun facts sprites and some of the code for those sprites have been provided in the starter project. Tell them to explore the sprites, costumes and code.

Instructions to give to students:

1. Remix the starter project and save it:

   306109217

2. Explore the starter project noting what is there and what is missing. Make a few notes about your observations.

3. Add all the components to the Scratch backpack so they are saved. If you ever inadvertently lose something, you can retrieve it from the backpack.

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3. Class Activity: Coding Plan

Engage students in an interactive class discussion to put a plan together of what our next steps are. Explain that there are many parts to this project and it will go much smoother with fewer problems if we develop a plan.

Display your screen and review the Colonies Coding Plan. Go over the tasks and the corresponding algorithms that students will code in this lesson. Review with students what an algorithm is. An **algorithm** is a sequence of steps to complete a task.

Colonies Coding Plan:	
Task	**Algorithm:**
Game Setup: Create the Game Instructions	1. Create a game instruction's sprite using **Paint** 2. Draw a rectangle and type the instructions inside the rectangle.
Game Setup: Create the Colony Labels	A ***Labels*** sprite and the first 8 colony costumes have been provided in the starter project. 1. Create new costumes for colonies 9 through 13 by duplicating the last existing costume 2. Change the text for costumes 9 through 13 with the additional colonies in the correct order

4. Student Activity: Adding Game Instructions and Colony Labels

Before students get started, **explain** the difference between using bitmap and vector mode when creating hand drawn sprites.

We are going to start by adding the game instructions and a label for the colonies. When creating the instructions and colony label, we will be drawing costumes in vector mode. What does that mean?

When you are in vector mode, every object you create is stored in layers. Vector mode allows the picture to be saved as a series of multiple objects that can be edited over time.

When you are in Bitmap mode, you are just adding color and the color blends into one single frame.

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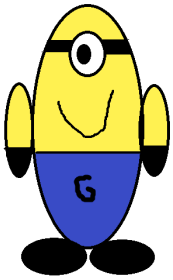
Bitmap



Minion by Rustcore

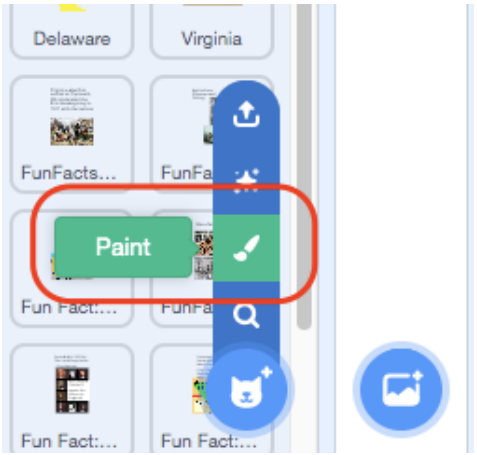
Everything is one big object, like a canvas. You cannot edit a part of an object

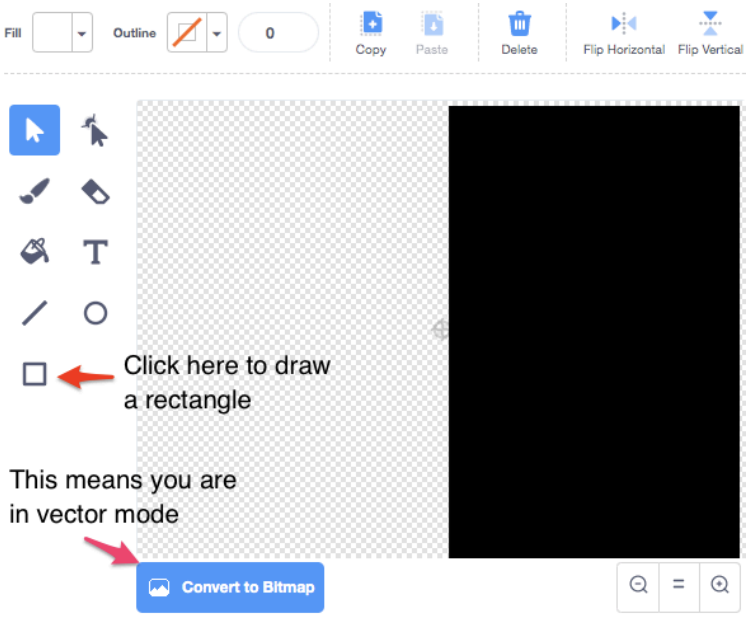
Vector

The bottom layer of the cake can be stretched independently of the top layers

Demonstrate creating the game instructions by remixing the starter project. Create the ***Instructions*** sprite using "**Paint"**, draw a rectangle, making sure you are in vector mode.

You will continue to use the starter project to demonstrate activities to students. Consequently, you may want to keep up with the activities to demonstrate and help debug upcoming activities.





Using the text tool, start typing part of the instructions inside the rectangle. Show how you can change the color of the rectangle and the text as well.

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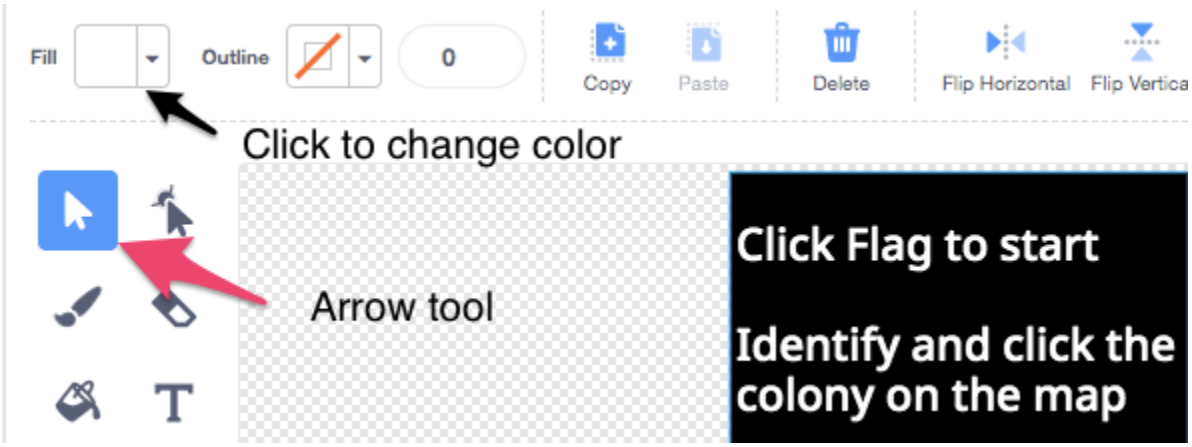
To change the color, click on the arrow tool, then select the object you want to edit. Then select a different color.



Distribute the activity worksheet and instruct students to get started on the project.

5. Wrap Up and Reflections

Reflection Points:

- What is the difference between Bitmap mode and Vector mode? Which one is easier to edit if we have text?
- What is an algorithm?
- What is a coding plan?

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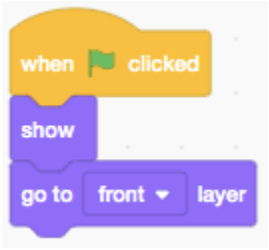
Tips for the Project:

These are useful tips for the duration of the 13 Colonies project:

- ❏ Do not share the link to the finished project with students as they will be creating the project over the course of the next 5 lessons.
- ❏ Vector mode allows the picture to be saved as a series of multiple objects that can be edited over time.
- ❏ Students tend to delete sprites by mistake. Tell them to save items in the backpack. Items in the backpack can be "uploaded" to any project, so this is also a good tip to transfer items (sprites, backdrop, scripts) from project to project.
- ❏ Sometimes, a sprite could be layered under other sprites. If the Starting Banner does not come up on top automatically, the block "go to front" in the "Looks" palette can be used after the "show" block in the script to fix that.



- ❏ The colony label costumes must follow the same order. A different order would change the number associating the label with the colony map.
- ❏ When duplicating the costume's label, if students are not able to edit the text, it might be because their costume is in Bitmap mode. They would need to switch to Vector mode before creating the text for the label.

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Student Activity:Create the Game Instructions and Colony Labels

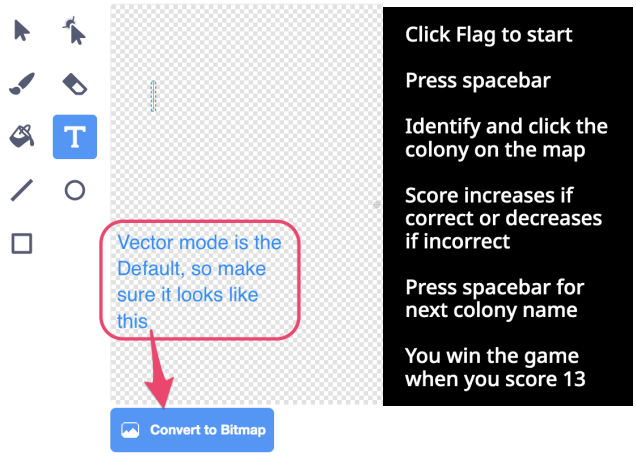
What to do:

Create the game instruction sprite:

1. In your ***Colonies*** project, create a new sprite using ***Paint***. Name it "Game Instructions".

2. Make sure you are in Vector mode as shown to the right. Draw a rectangle for the background and enter the text as shown to the right.

3. Make sure the instructions are to the right of the map and they don't cover up the map by moving them.



Create colony labels:

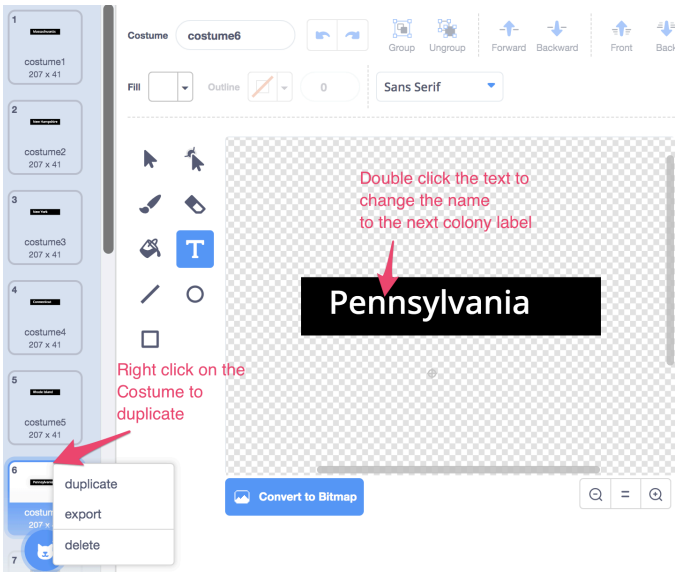
A ***Labels*** sprite and the first 8 colony costumes have been provided in the starter project.

1. Each colony is represented by a different costume of the "Colony Label" sprite.

2. Create new costumes for colonies 9 through 13 by duplicating an existing costume:

   Delaware, Virginia, North Carolina, South Carolina and Georgia.

   It is important to keep the order of the labels.



Be sure to save your project when you are done !

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