Our Neighborhood through Scratch

Third grade social studies

This lesson requires a basic understanding of Scratch. At minimum, successful completion of the "Scratch Cards" available at: http://scratch.mit.edu/help/cards.

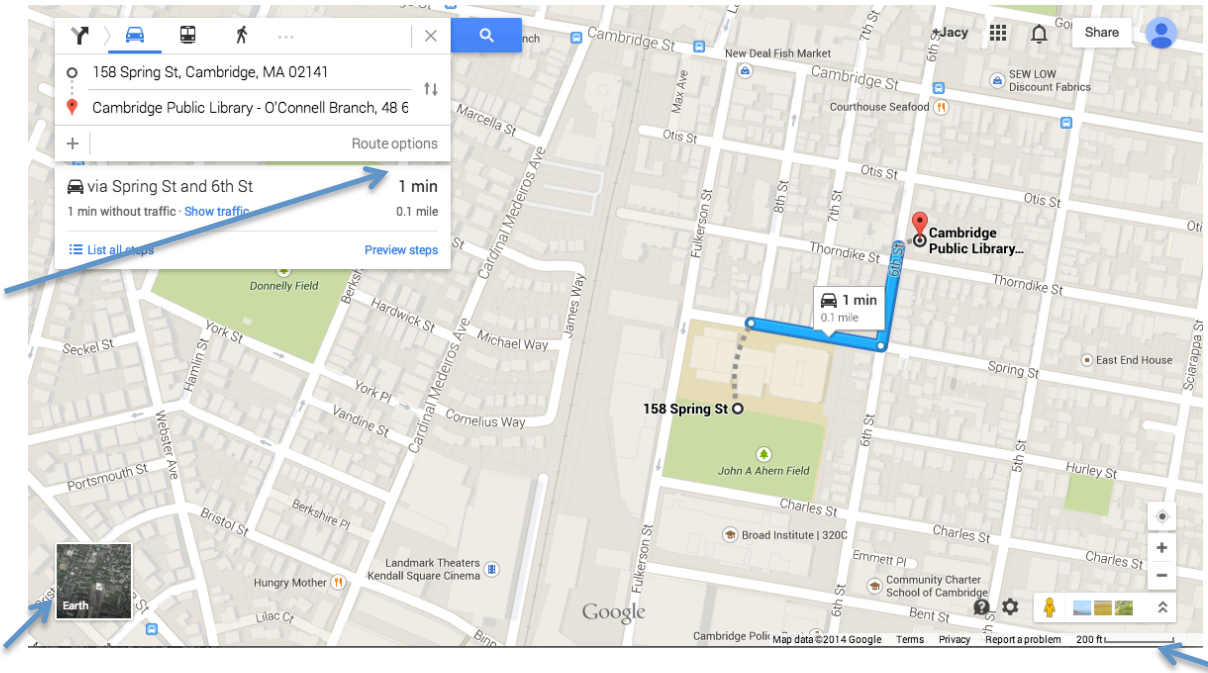
Objectives:

1. Students will learn mapping skills related to using cardinal directions, scales, legend and titles.
2. Students will research and define an array of jobs and businesses in their neighborhood.
3. Students will identify historical landmarks and examples of tax-supported facilities in their surrounding neighborhood.

Lesson 1: Google maps

- Map scavenger hunt:
    1. Find directions between the school and the closest public library.

What is the distance between the library and the school?

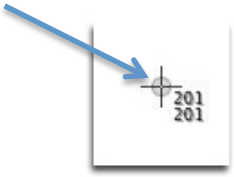


Toggle between map and Earth views. What do you notice about the different views?

Identify the scale. What units of measurements does the scale use?

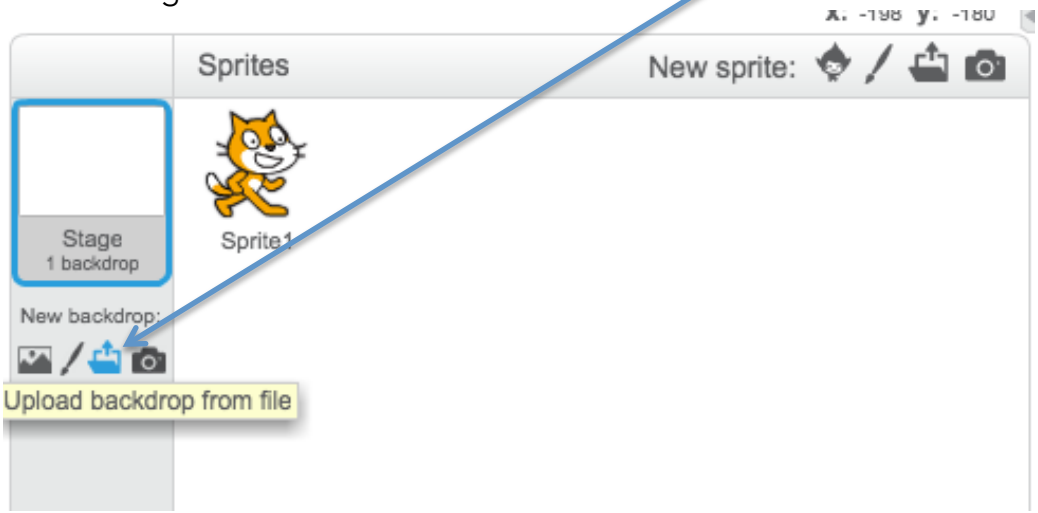
2. Have students take a screen shot of the map. On a Mac, this is holding down the keys: SHIFT, COMMAND and 4 at the same time.

This gives you a target icon that you can drag around what you want to capture. Let go. The screen shot will be saved on your desktop, downloads, or wherever you have specified as your default download folder.

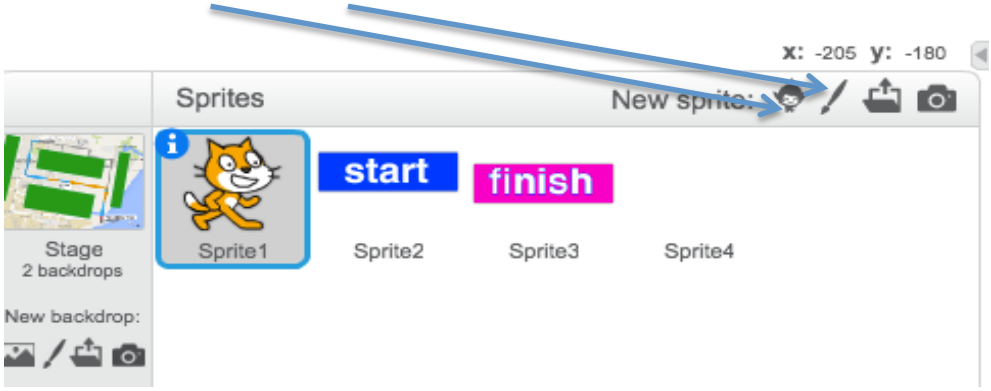


Lesson 2: Scratch maze

- Overlay maze onto Google map:
  1. Open new blank Scratch project: scratch.mit.edu.
  2. Upload new backdrop image by clicking on stage/backdrop and choosing the folder icon.

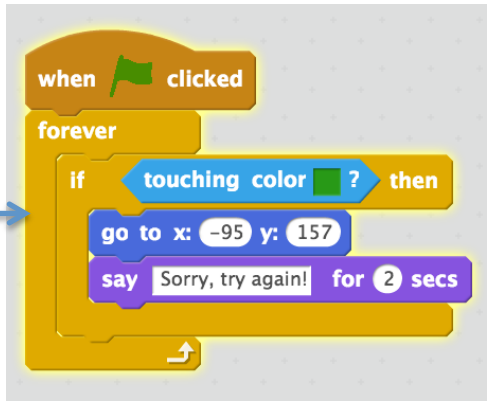


  3. Browse to where you have your Google map screen capture saved and upload it as your background.
  4. Choose or draw a new Sprite (if you don't want the Scratch cat)



5. Follow the detailed "Maze" lesson plan in the Scratch "Creative Computing Guide" (see addendum) to make sure your maze includes:
   - Key moves for your sprite
   - When green flag is clicked, automatically move your sprite back to "start"
   - When you reach the "finish", have your sprite say a congratulatory phrase.

- **Extra credit:**
  - Make a "start" sprite and a "finish" sprite.
  - Create "walls" for your maze by drawing colored squares or rectangles over the buildings, so that your sprite has a defined path to follow.
  - Program your sprite to either "bounce" off the walls or go back to the start if they touch a wall. (The bounce code is included in the Maze lesson.) Here is the "send back to start code"



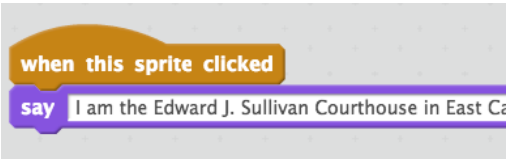
Lesson 3: Customizing your maze

- **Complete your maze with a scale and cardinal directions.**
  - The scale can be drawn right into your backdrop.
  - Make a new sprite to draw your cardinal directions. That way you can scale it (make it bigger or smaller) and place it exactly where you want it.)

Lesson 4: Public facilities/careers/historical sites in your neighborhood:

- Take a walking field trip of your neighborhood. Visit several historic sites and/or public, tax-supported facilities. Examples might include: library, courthouse, post office, registry of deeds, city hall.
- Have students add 2 or 3 of these landmarks/facilities onto their map as sprites (they will draw them as new sprites). Have them program the sprite to say the significance of the building when that sprite is clicked.

Code for when sprite is clicked, say...

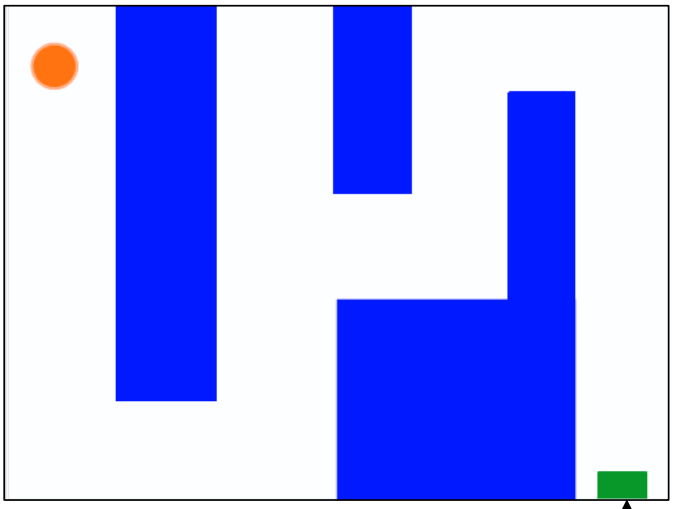


- **This would be a pre-planned activity:**
  - Contact several public facilities and coordinate to have contacts available for students the day of the field trip.
  - Have students give quick interviews of several people in the facility to learn about what they do.
  - **Then in Scratch:**
    - Have students create a neighborhood map in Scratch that lists a variety of public facilities and historical landmarks (as different sprites). Have them program each of these to "say" their significance when clicked.
    - Have students create additional sprites representing different people and their career paths in the neighborhood. Have these people speak their roles when clicked.

MAZE

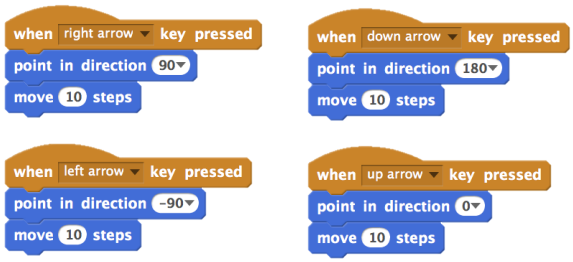
HOW CAN YOU USE SCRATCH TO BUILD AN INTERACTIVE GAME?

In this project, you will create a game. This game includes interactions between sprites, score, and levels. You move a sprite from the start of a maze to the end without touching the walls.



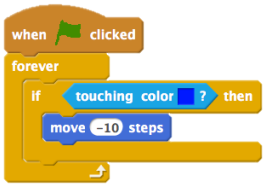
START HERE

- ❑ Draw a maze-like background and use different colors for the walls and end-of-maze marker.
- ❑ Add a sprite.
- ❑ Make your game interactive!



These scripts give the player control over sprite movement in the maze.

This tells your sprite where to begin and marks the start of the maze.



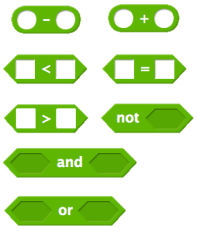
This will cause your sprite to bounce off the blue walls of the maze.

This tells the end-of-maze sprite that players win when the ball touches this sprite.

THINGS TO TRY

- ❑ Add multiple levels to your game! This can be done through the use of different backdrops and using broadcast blocks to trigger the next level.
- ❑ Use the make a variable block to keep score!
- ❑ Experiment with timer blocks to add new challenges to your maze!

BLOCKS TO PLAY WITH



FINISHED?

+ Add your project to the Games Studio: http://scratch.mit.edu/studios/487504
+ Swap games with a partner and walk each other through your creations.

Credit: Harvard GSE Scratch Ed "Creative Computing Guide." http://scratched.gse.harvard.edu/

Massachusetts History and Social Science Curriculum Frameworks
Grade Three

HISTORY AND GEOGRAPHY

- 4. Use cardinal directions, map scales, legends, and titles to locate places on contemporary maps of New England, Massachusetts, and the local community. (G)
- 9. Define specialization in jobs and businesses and give examples of specialized businesses in the community. (E)

CITIES AND TOWNS OF MASSACHUSETTS

- 3.8 On a map of Massachusetts, locate the class's home town or city and its local geographic features and landmarks. (G)
- 3.9 Identify historic buildings, monuments, or sites in the area and explain their purpose and significance. (H, C)
- 3.11 Identify when the students' own town or city was founded, and describe the different groups of people who have settled in the community since its founding. (H, G)
- 3.13 Give examples of goods and services provided by their local businesses and industries. (E)
- 3.14 Give examples of tax-supported facilities and services provided by their local government, such as public schools, parks, recreational facilities, police and fire departments, and libraries. (E)

COMPUTER SCIENCE TEACHERS ASSOCIATION K-12
COMPUTER SCIENCE STANDARDS

Grades 3–6 (L1:6.CT)

The student will be able to:

- Understand and use the basic steps in algorithmic problem-solving (e.g., problem statement and exploration, examination of sample instances, design, implementation, and testing).
- Develop a simple understanding of an algorithm (e.g., search, sequence of events, or sorting) using computer-free exercises.
- Demonstrate how a string of bits can be used to represent alphanumeric information.
- Describe how a simulation can be used to solve a problem.
- Make a list of sub-problems to consider while addressing a larger problem.
- Understand the connections between computer science and other fields.