Lesson 1-6A
Action Fractions
Math+CT

Zoo Animals Number Story

Math Connections: Students use Scratch to show a multistep number story.
CS Connections: Students review and explore the Scratch workspace. Students learn that the
Scratch workspace and computer programs are made up of different parts. They search for and
try out different commands and learn which changes of and within commands can change the
program’s output.

Before You Begin
Create your class via your Teacher Account on the Scratch site and generate a list of student logins.
Create individual credential cards to distribute to students. Decide how to manage these credentials
in the event that students forget (e.g., keep a master list, have students tape their credential cards
to their desks). Decide how students will get to the Scratch website (scratch.mit.edu). Consider pre-
loading a bookmark on each child’s desktop.

Warm Up 5–10 min
Starting with Scratch
Students discuss using coding for extra math practice.
“I Can ...” Statements
Students read the explicit Math and CS goals.

Focus 45–50 min
Logging in to Scratch
Students log in and finish setting up their accounts.
Reviewing TIPP&SEE
Students review a strategy for exploring Scratch projects.
Zoo Animals Number Story TIPP&SEE
Students use TIPP&SEE to explore a project.

Materials
Student Credential cards (one per child)
Student Credential cards; computers
TIPP&SEE Poster
Zoo Animals Number Story project; Zoo Animals Number Story TIPP&SEE journal page

“I Can ...” statements
• I can log into my Scratch account.
• I can identify the important parts of Scratch.
• I can closely observe a Scratch program and find the scripts that caused the actions.
• I can remix, save, and share Scratch programs.
• I can make changes to a program so that it does what I want it to.

Anticipated Barriers
• Logging in to a new program can be challenging for some students.
  Providing pictorial or video versions of the verbal/written directions would be helpful.
• Students often forget the procedure for remixing, even after being taught.
• Students often forget to remix.

Student Options
Consider these options for adapting the lesson to your students’ preferences:
• Include simplified directions both within the Scratch projects and on a paper.
• Offer alternate versions of the directions (e.g., video).

Computational Thinking
• DECOMPOSITION: Systems are made up of smaller parts.
Prior to teaching this lesson, you should have already created your class via your Teacher Account on the Scratch site and generated a list of student logins for distribution. You may also have pre-loaded a bookmark on each desktop for students to use to get to the site scratch.mit.edu. Even students with existing Scratch credentials will need to use these new credentials to access the materials for this class.

“I Can ...” statements

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Scratch Login Instructions

1. Get your login name and password card from your teacher.
2. Type in the URL: http://scratch.mit.edu
3. Click “Sign In”
4. Enter the Username and Password that your teacher gave you.
5. Click on Get Started. The first time you log into Scratch, you will be asked to enter a new password. Type in the password that your teacher provided for you.

“Starting with Scratch”

Start with a whole-class discussion about using Scratch to get extra practice with math and build coding skills. Tell students that they will be using computers to program in Scratch many times this year, and that today they will focus on how to get started. Explain that students should pay close attention when you demonstrate steps on your computer, so that they will have an easier time when they go to their own computers to use and modify the Scratch project (program).

Briefly poll the class about their experience with Scratch. If there are any students who claim to be very experienced, consider asking if they are willing to help their classmates and adjust seating arrangements to spread them out accordingly. You may also wish to briefly talk to students about how to be respectful of and careful with the computer equipment.

Distribute login credentials to each student, and keep an extra set for you to model the steps for a first-time login for students.

“I Can ...”

Display the “I Can ...” statements and remind students that these statements express the goals for today’s lesson and can give them clues about what to expect. Carefully read each statement and ask them to use their thumbs to show how true they feel each statement is for them right now (thumbs up for yes, thumbs down for no, thumbs sideways for maybe). Remind them that during the wrap up you will look at the “I Can ...” statements again, and see how their opinions about the statements have changed.

“Logging in to Scratch”

Display your screen and model the steps to log in and arrive at the Scratch class home page. (See the Scratch Login Instructions document.)

When ready, have students go to their individual computers to attempt these steps. Each student should log in using their credentials and follow the prompts to finish setting up their accounts. Children will need to enter their own Birth Month, Birth Year, Gender, and Country. Circulate and assist students as needed.

After each student has had sufficient time to log in, have them close their devices or gather as group away from their desks. Lead a whole-class discussion on their experience getting to the Scratch site and logging in. Be sure to address any challenges (e.g., typing in the url, finding the bookmark, etc.) that students experienced.
Display your screen showing your Scratch class home page and remind students of the purpose of **TIPP&SEE**. Explain that Scratch is very powerful, so it has a lot of buttons, tabs, and pictures, and it can be overwhelming or distracting. In these lessons we use the **TIPP&SEE** strategy, which will help them navigate Scratch and focus on the important parts of each project.

Display the **TIPP&SEE** poster and ask students to remind you about what each letter in the acronym stands for. Read each section next to the project page, and be sure to point out each part of the Scratch project page as you refer to it.

Narrate your steps while you scroll down to the class studio and find and open today’s project. As needed, model using **TIPP&SEE** to look at a Scratch project by using the following scripted think-aloud.

*Now we are going to review the **TIPP&SEE** strategy for exploring Scratch projects.*

*First, we get a TIPP (point to the first four letters of the word) from the project page. A tip is a clue or helpful hint.*

- **T** stands for **Title**. First we read the title, which may tell us what the project might be about.
- **I** stands for **Instructions**. The instructions are in the top right box. These tell you how to run the program.
- **P** stands for **Purpose**. The purpose comes after the instructions. This tells you what you, the programmer, are supposed to do with this project today.
- **P** stands for **Play**. When we play a project it is important to remember three questions – what event did we do, what **sprites** did something, and what action did each sprite do? Event, sprite, and action. I can record what I saw happen on my **TIPP&SEE** journal page. Scratch programs begin when you press the green flag.

After previewing the Scratch Project page using **TIPP**, we can **SEE** inside to learn about the code that makes the program work! We go inside the project to find code that made the actions happen. Remember that when we played the program, we noted event, sprite, and action.

- **S** stands for **Sprites**. We can look and see how many sprites there are in the project and click on them to find some code.
- **E** stands for **Events**. First we use events to find which **script** did which action. In Scratch, a script is a set of **blocks**, or instructions, that are linked together with an event block at the top.
- **E** stands for **Explore**. Now is the time to figure out how blocks and scripts work by making changes to a script and seeing what happens. We can add blocks, delete blocks, or change a number or other information that is typed in a block.
Zoo Animals Number Story TIPP&SEE

Objective: Read carefully. Scrub and complete the journal page. Then call them together to discuss today’s experience. You may wish to have students pair and share for some questions. Suggestions:

- Describe Scratch to your friend. Share out with the group. Answers vary.
- Which “I can ...” statements did you do today? (Think/Pair/Share) Follow up: Which “I can ...” statement was most fun? Answers vary.
- What was your favorite/the most surprising/the trickiest thing about using Scratch today? Answers vary.
- Did your project do anything you did not expect it to do? Answers vary.
- What can you change to make a project do something different? Sample answer: You could change the blocks. You could change the numbers or the words in the blocks.
- What do you understand and remember about the sprites / blocks? Answers vary.
- What questions do you still have about Scratch? Answers vary.

Now “I Can ...” Review today’s “I Can ...” statements (see page 2) and ask students to use their thumbs to show their opinion of each statement.