Lesson 2-9A

Action Fractions Math+CT

Sharing Equally

Math Connections: Children practice sharing objects equally (with leftovers) and writing a division number model.

CS Connections: Children practice using Scratch and attend to the role of different parts of the interface and the code.

▶ **Before You Begin**

Children will need to use their credentials that you distributed the first time they logged in to Scratch. Be prepared with a master list of these and back up cards for each child.

Common Core State Standards
- Develop understanding of fractions as numbers.

Computational Thinking
- **DECOMPOSITION:** Programs can be decomposed into components.

1 Warm Up 5–10 min

Materials

Remember Scratch?
Children think about giving directions to a computer.

"I Can ..." Statements
Children read the explicit Math and CS goals.

2 Focus 40–50 min

Sharing Equally
Children model a problem about equal sharing with remainders and write a division number sentence.

Sharing Equally project

3.OA.2, 3.OA.3, 3.OA.7

Sharing Equally TIPP&SEE
Children use **TIPP&SEE** to explore a project and modify it to model their desired division number sentence.

Sharing Equally project; *Sharing Equally TIPP&SEE* journal page

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"I Can ..." statements

- *I can carefully observe a Scratch project.*
- *I can find the code that matches an action I saw.*
- *I can learn more about a block by experimenting with it.*
- *I can equally share a set of items.*
- *I can identify the remainder after equally sharing items.*

Anticipated Barriers

- Logging in may be challenging for some children. Expect some to need more time with the written/video directions from Lesson 2-3A: *Animal Number Story.*
- Children often forget the procedure for remixing, even after being taught.
- Children may be confused by which sprite they are programming when there are multiple sprites.
- Children may have misconceptions about what to do with leftovers that cannot be shared.

Student Preferences

Consider these options for adapting the lesson to your students' preferences:

- Children may want to go beyond the scope of the project and have a chance to explore creatively (changing colors, sizes, costumes of the sprites).

"I Can ..." statements

- I can carefully observe a Scratch project.
- I can find the code that matches an action I saw.
- I can learn more about a block by experimenting with it.
- I can equally share a set of items.
- I can identify the remainder after equally sharing items.

SS: *The Scratch Project Page*

SCRIPTS — STAGE

BLOCKS — SPRITES
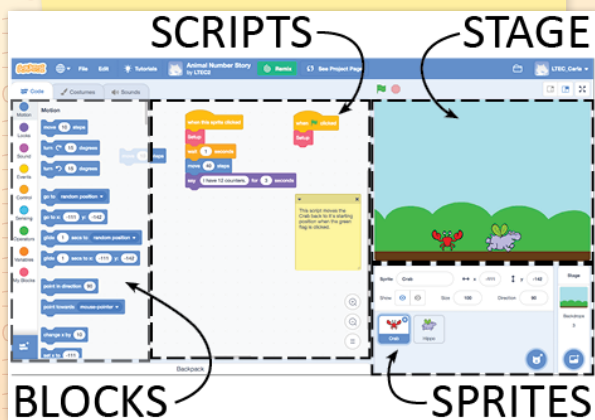
TIPP&SEE Poster

Start with TIPP&SEE

Get a TIPP from the Project Page:

Title: What is the title of the project? Does it tell you something about the project?

Instructions: What do the instructions tell you to do?

Purpose: What is the purpose of this activity? What will this code teach you?

Play: Run the project and see what it does! Which sprites are doing the actions?

SEE Inside:

Sprites: Click on the sprite that you want to learn from or change.

Events: Look at the event blocks starting the scripts. Which scripts are most useful?

Explore: Try different changes to the scripts and observe what happens!

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1 Warm Up — 5–10 min

▶ Remember Scratch?

Start by reminding students of their first experience using Scratch to remix the Animal Number Story project. Ask: *What do you remember about getting started with Scratch?* Answers vary.

▶ I Can ...

Display the "I Can ..." statements and remind children 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.

As needed, remind children of some sharing strategies from Lesson 2-9: *Modeling Division*.

2 Focus — 40–50 min

▶ Sharing Equally

WHOLE CLASS	SMALL GROUP	**PARTNER**	INDEPENDENT

Display your screen showing your Scratch homepage. Ask children to point out different parts of the page. Have children talk you through the steps to get to the class studio, then identify and open today's class project: Scratch in Action: Sharing Equally. Emphasize that each part of the page plays a different role.

Tell the students that you are going to model *TIPP&SEE* partially today and let them do most of it on their own (or with a partner). On the project page, again remind children about the different sections or parts of the Project Page: Title, Player, Instructions, Notes and Credits, and the See inside button. You may wish to ask children to help you read aloud some of the text.
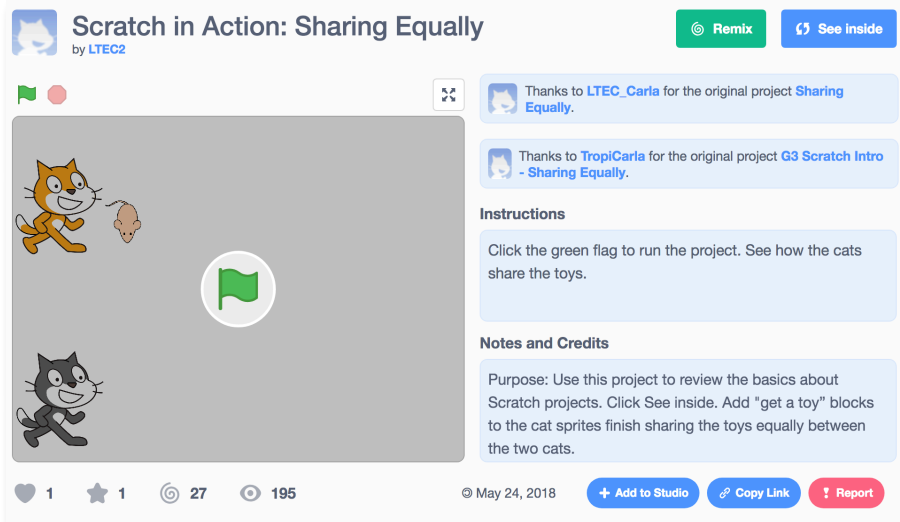
Tell children that you'd like to use the Scratch project to model sharing the toys equally between 2 cats. Play the project, then ask the following:

- *How many toys are to be shared?* 5
- *How many cats are sharing the toys?* 2
- *How many toys did each cat get?* 1
- *What division number model shows this?* $5 \div 2 \rightarrow 1\ R\ 3$
- *Where in the number model did we write the toys that are left over?* after the R
- *How many toys do you think each cat should get?* Sample answer: 2
- *To what should we change the division number model?* Sample answer: We would change it to: $5 \div 2 \rightarrow 2\ R\ 1$

▶ Sharing Equally *TIPP&SEE*

WHOLE CLASS	SMALL GROUP	**PARTNER**	INDEPENDENT

Distribute the TIPP&SEE journal page and tell children they will get a chance to explore the Scratch project and make changes. They will use the journal page to record their observations about the project. Direct them to their computers to log in and open the project. Be prepared to remind children about the steps they need to log in and open the project.

Scratch in Action: Sharing Equally
by LTEC2

⊚ Remix   ⚷ See inside

🚩 ⏹

Thanks to **LTEC_Carla** for the original project **Sharing Equally**.

Thanks to **TropiCarla** for the original project **G3 Scratch Intro - Sharing Equally**.

Instructions

Click the green flag to run the project. See how the cats share the toys.

Notes and Credits

Purpose: Use this project to review the basics about Scratch projects. Click See inside. Add "get a toy" blocks to the cat sprites finish sharing the toys equally between the two cats.

♥ 1   ★ 1   ⊚ 27   👁 195   © May 24, 2018   + Add to Studio   🔗 Copy Link   ⚠ Report

▶ Wrap Up

WHOLE CLASS	SMALL GROUP	PARTNER	INDEPENDENT

When children have had sufficient time to work, bring them together for a class discussion. Write the following on the board and ask children to help you fill in the blanks.

> We shared ___ toys equally among ___ cats. 5; 2
> Each cat got ___ toys. There was/were ___ toy(s) left over. 2; 1
> Number model: _____ 5 ÷ 2 → 2 R 1

Ask:

- *Which part of the project page should we use to make changes to a Scratch project?* the See inside button in the top right corner
- *What is one thing you know about the parts of the Scratch workspace and what they do?* Answers vary.
- *What do you know about the parts of this Scratch project and what they do?* Answers vary.
- *What new things did this Scratch project help you understand about sharing equally or writing division number models?* Answers vary.
- *Did your project do anything you were not expecting it to do? If so, how did you fix it?* Answers vary.

Now "I Can ..."   Review today's "I Can ..." statements and ask children to use their thumbs to show their opinion of each statement.

Sharing Equally TIPP&SEE, p. 1

TIPP&SEE
Sharing Equally

NAME ___
Lesson 2-9A
SCRATCH ID ___ DATE ___ TIME ___

Objective: I can closely observe a Scratch program and find the scripts that caused the actions.
Scratch Link: Sharing Equally (https://scratch.mit.edu/projects/225444068/)

Start with **TIPP&SEE!**   Get a **TIPP** from the Project Page.
Read carefully: **Title**   **Instructions**   **Purpose**
Play the project and circle the action(s) that happened for each event below.

① When I clicked 🚩 :
Glowy: moved — *talked* — changed color
Smokey: moved — *talked* — changed color
nothing happened

② When I pressed the space key: Smokey "meows."
Glowy: moved — talked — changed color
Smokey: moved — *talked* — changed color
nothing happened

③ When I clicked on 🐱 :
Glowy: moved — talked — *changed color*
Smokey: moved — talked — changed color
nothing happened

④ When I clicked on 🐱 :
Glowy: moved — talked — changed color
Smokey: moved — talked — changed color
nothing happened

⑤ At the end:
a. Glowy had __1__ toys.   b. Smokey had __1__ toys.
c. There were __3__ toys left over.

SEE inside. (Click the ⚷ See inside button at the top right.)
First click on the **Sprite**, then find the **Event** that starts the script, then find the code.

⑥ **Explore**: Circle your answer.
a. Which block makes **Glowy** talk?
say Hello! for 2 seconds — start sound meow ▾ — get a toy — change color ▾ effect by 25

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Sharing Equally TIPP&SEE, p. 2

TIPP&SEE
Sharing Equally (continued)

NAME ___
Lesson 2-9A
SCRATCH ID ___ DATE ___ TIME ___

b. Which block makes **Glowy** change color?
say Hello! for 2 seconds — start sound meow ▾ — get a toy — *change color ▾ effect by 25*

c. Which block makes **Smokey** get a toy?
say Hello! for 2 seconds — start sound meow ▾ — *get a toy* — change color ▾ effect by 25

d. Which block makes **Smokey** meow?
say Hello! for 2 seconds — *start sound meow ▾* — get a toy — change color ▾ effect by 25

e. Where can I find the change color ▾ effect by 25 and say Hello! for 2 seconds blocks?
Motion — *Looks* — Events — Control — My Blocks

⑦ **Explore**: Make these changes to the Glowy script and see what happens.
a. Add get a toy to the end of the when 🚩 clicked script. Run and watch.
Glowy gets 2 toys, Smokey gets 1 toy, and Smokey says "Not fair! Cat 1 has more toys than I do."
b. Remove Setup . Click the green flag three times.
Glowy starts with 2 toys; Smokey starts with 1 toy (because setup block was removed). Glowy ends up with 4 toys, and Smokey says "Boo Hoo. No more toys left!"
c. Remove wait 2 seconds . Run and watch. Glowy gets 2 toys before Smokey gets any toys.

⑧ Now modify the project!
Write the division number model you want to use: __5__ ÷ __2__ → __2__ R __1__
☐ Reload, Remix, Rename, and Share the project.
☐ Make the cats get the right number of toys. Use your division number model.
☐ Test and Save your finished program.   Add a get a toy block to both cats when the green flag is clicked event.

⑨ If you finish early:
☐ Switch the Toy's costume to an apple or ball.
☐ Choose a new backdrop for the stage.   ☐ Write the number sentence on the backdrop.
☐ Make Smokey dance around after it meows.

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