Lesson 2.6: Fraction Slider - Part 3

Objectives

In this lesson, students will:

- Gain experience incrementally developing a program.
- Practice translating english instructions into code
- Practice using events, user input, operators, conditionals, broadcast message, coding a reset button.

Agenda

1. Review and Catch Up	10 mins
2. Student Activity: Is the Dragonfly at the Correct Position?	15 mins
3. Student Activity: Adding a Reset Button (Optional)	15 mins
4. Wrap Up and Reflections	10 mins

Preparation

- ❑ Projector for demonstration
- ❑ Print student activity worksheets (one per student pair)

Resources & Links

- ❑ Solution project: https://scratch.mit.edu/projects/287740646
- ❑ Starter Project: https://scratch.mit.edu/projects/288557906

1. Review

Review the major activities and parts of the game that students have coded thus far:

- Created a plan
- Created the fraction and tally marks
- Coded the dragonfly to move right and left along the number line

If additional time is needed to review the code from the previous activity of coding the dragonfly, this is a good opportunity to review the code to ensure all students are caught up before the next activity.

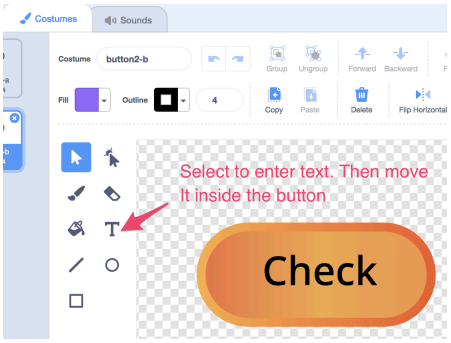
2. Student Activity: Is the Dragonfly at the Correct Position ?

Explain to students that in this next activity you will create the code to check if the dragonfly is in the correct position when the user clicks on the ***check*** button.

Project your screen and demonstrate the following steps:

- Create the button sprite (you can search for button2 when choosing the new sprite) and write the word ***Check*** inside it.

  See instructions to the right.



- Enter the following code for the button sprite.

Prompt students for ideas of how to check if the sprite is at the correct tally mark after we move to the numerator position.

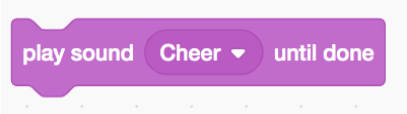
One way to do it is every time we move the sprite one tally mark to the right, we add 1 to a position counter. When we move left, we subtract 1 from the position counter. You coded this in the last activity.

After we move the sprite, the counter has to equal the numerator number.

For example, if the numerator is 2, we want to move to the right 2 times. The position will be 2. If we went too far and accidentally went to 3, when we move left, we subtract one, and are at the correct position and the position is 2.

If the numerator and the position counter are equal after the user moves the dragonfly and clicks on the check button, we know the dragonfly is in the correct position.

We can also add a cheering sound or some congratulatory sound when the user gets the correct position. We could do the same for **Try again**.



Distribute the activity worksheet "**Is the Dragonfly at the Correct Position?"** and tell students to open their Fraction game to code the activity. Students continue to work with the same partner.

Review the code from the demo project with students if they had difficulty with the activity.

3. Adding a Reset Button (optional)

This activity can be done if time allows or for more advanced students.

Tell students: Instead of running the program every time to get a new fraction, wouldn't it be nice to have a reset button that creates a new random fraction and resets the dragonfly back to the starting position?

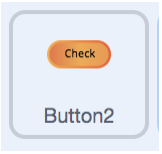
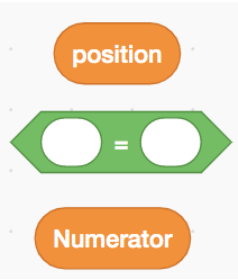
The solution to coding the reset button is in the solution project. Blocks need to be snapped together as indicated by the comments in the project for the Next Fraction button, dragonfly sprite and the tally mark sprite. Encourage students to find this solution as opposed to repeating the code that is run when the green flag is clicked.

4. Wrap Up and Reflections

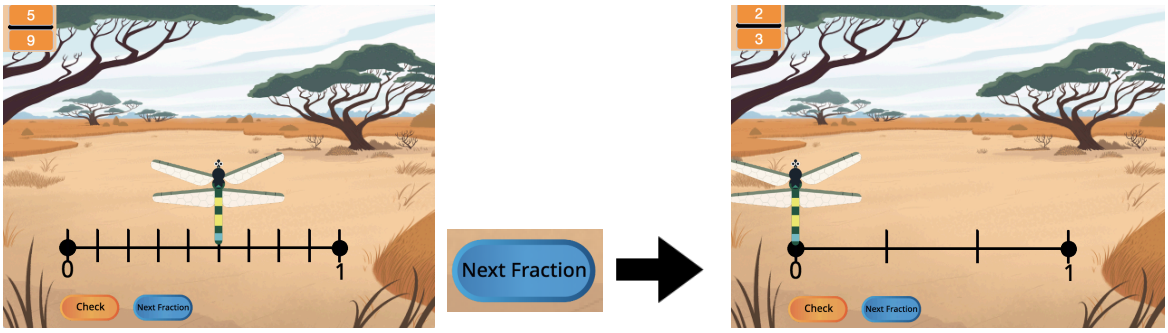
Reflection Points:

- What was the most difficult part of this activity?
- What are you most proud of?
- What is the user input for this program?

Student Activity: Is the Dragonfly at the Correct Position?

What to do:	Using/Details:
When we move the dragonfly, we keep track of the dragonfly's position. We will use the position now to check if the dragonfly is at the correct position.	
Create a button sprite. When the sprite is clicked, **check if** the dragonfly sprite was moved to the correct tally mark on the number line and say "You got it" and play some congratulatory sound. **If it is not** in the correct position, say something like "Try again".	 

Student Activity: Add a *Reset* Button



1. Create a new button sprite and label it ***Reset*** or ***Next Fraction***.
2. When the reset button is clicked, the same thing that happens when the green flag is clicked needs to happen:
   - the player gets a new random fraction and new tally marks are drawn
   - the dragonfly goes back to the zero line
3. We can do this with a **broadcast** message. The broadcast message lets the other sprites know to do what they did when the green flag was clicked.

Sprite:	Code:
	Send a ***reset*** broadcast message
	Replace **When green flag clicked** with **When I receive reset** message
	**Initialize** dragonfly starting position when ***reset*** message received

4. Test and explore until the code is working. Save and share your project.