

Grade 4: Light and Sound

LET'S MAKE A SORTING GAME!

Rules for Coding

1. A mistake is a chance to learn!
2. I will not give up on the first try.
3. Questions are important.
4. I will work as part of a team.
5. I will have fun 😊

One more thing...

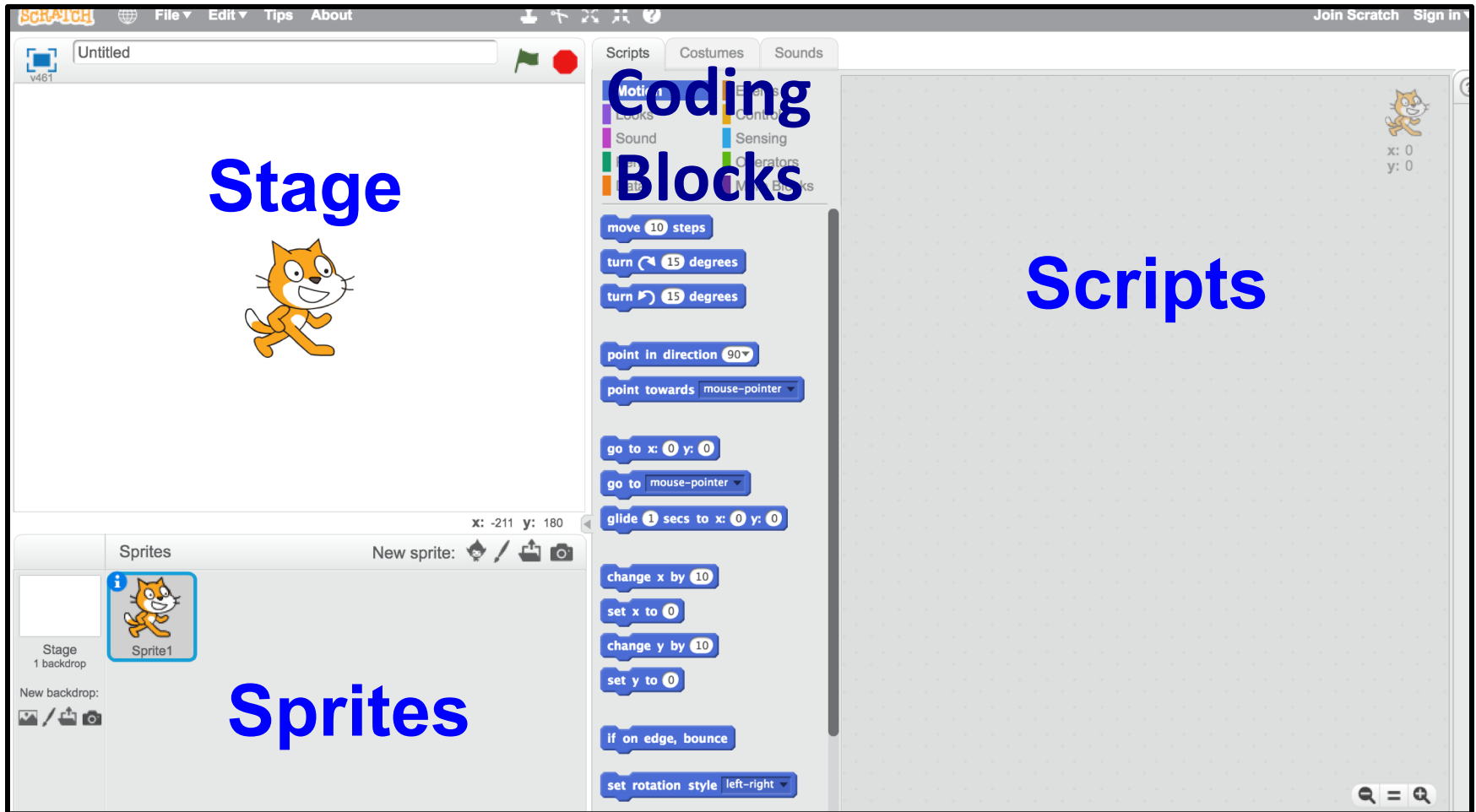
- Coding is about breaking down a big problem into smaller problems.
- Can you find out what the big and small problems of this coding challenge are?
Keep this in mind as we work through the challenge together 😊

Scratch

- Go to <https://scratch.mit.edu>
- Select « create new » from the bar at the top of the window



Exploring Scratch



A closer look at the coding blocks we will use today...

Scripts | Costumes | Sounds

Motion

- Looks
- Sound
- Pen
- Data

- Events
- Control
- Sensing
- Operators
- More Blocks

move 10 steps

turn 15 degrees

turn 15 degrees

point in direction 90

point towards mouse-pointer

Scripts | Costumes | Sounds

Motion | **Events**

- Looks
- Sound
- Pen
- Data

- Control
- Sensing
- Operators
- More Blocks

when clicked

when space key pressed

when this sprite clicked

when backdrop switches to backdrop

Scripts | Costumes | Sounds

Motion | **Looks**

- Sound
- Pen
- Data

- Events
- Control
- Sensing
- Operators
- More Blocks

say Hello! for 2 secs

say Hello!

think Hmm... for 2 secs

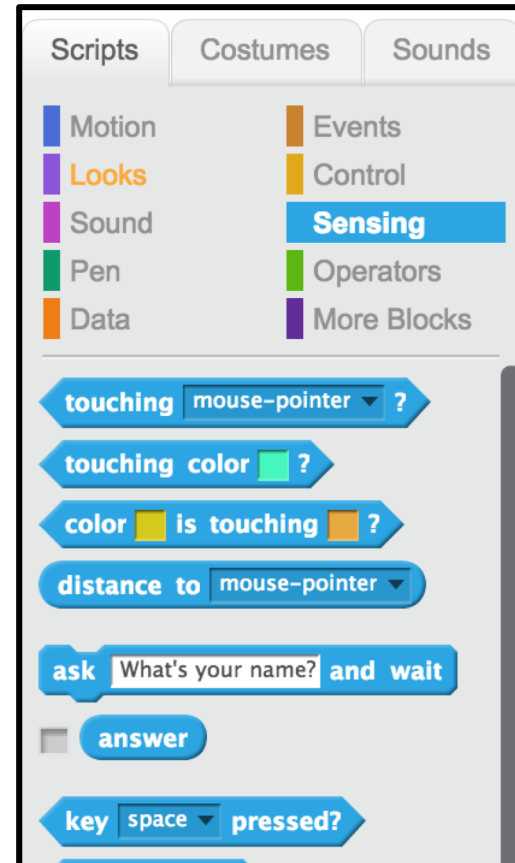
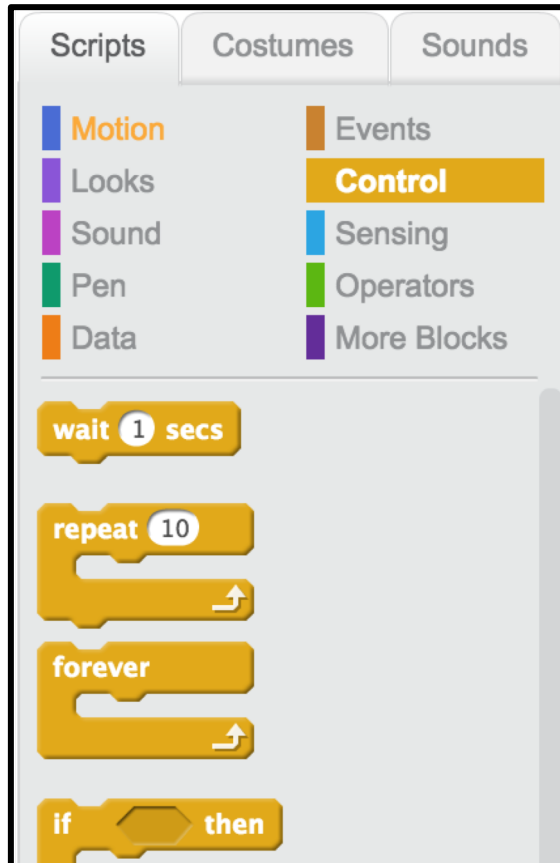
think Hmm...

show

hide

switch costume to costume2

A closer look at the coding blocks we will use today...



Let's create a sorting game!

- The challenge:
 - Together, we're going to code a game that sorts sources of light into categories of natural and artificial light!
 - Let's have a closer look...
 - <https://scratch.mit.edu/projects/237559853/#player>

Step 1: Create a Sprite

- Google a source of light (e.g., the sun)
- Right click on the image that you like, and select « save image »
- In Scratch, click on the file folder image to upload your saved picture
- OR
- In Scratch, click on the paintbrush image to draw your sprite



Step 1: Create a sprite

- Don't forget we will also need to create a Sprite that we can sort our light sources into!



Step 1: Create a Sprite

- We need to tell the Sprite that it can move when we drag it with the mouse.

Click on the small “i”

1



2



Check the “can drag in player”

Candle

x: -2 y: 125 direction: 90°

rotation style:

can drag in player: ☒

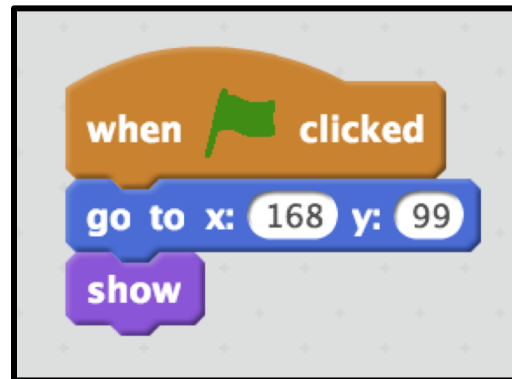
show: ☒

Step 2: Coding a light source

- We always begin by telling our Sprite *when* to start. What type of block tells us when to start?
- You can also tell your Sprite *where* to start, so that it begins each game in the same position. What type of block tells us *position*?
- If we want our Sprite to disappear when it touch the right box, then we need to tell it to appear as well! What type of block tells us about *appearance*?

Step 2: Code Check...

- Does your block of code look like the example?



Step 3: Hiding your Sprite

- We need to tell the Sprite when to disappear.
- To begin any action, we need an *Event* block.
- Click the small black arrow, and select « create a new message » from the drop down menu
- Now you can create a message that is specific to your Sprite. (e.g., « *name of Sprite* hide »)
- Next add a “Look” block that tells your Sprite to hide



Step 3: Code Check

- Does your code look like this?

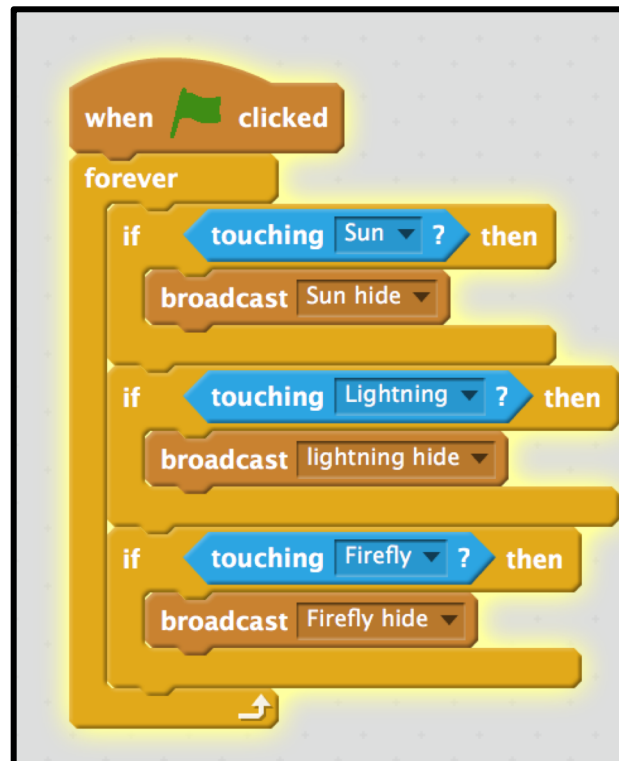


Step 4: Coding your sorting boxes

- Clues...we saw in the example that the light source disappeared when it was touching the sorting box and the sorting box was clicked
- Blocks needed: *Event, Control, Sensing*
- Take 5 minutes and try and make your code

Step 4: Coding Check

- Does your code look like this?



Your turn!

- Now that we've coded together, it's up to you to complete the challenge!
- Your game must include:
 - 3 sources of artificial light
 - 3 sources of natural light
 - 1 artificial light sorting box
 - 1 natural light sorting box
 - The light source must disappear when it is dropped onto the correct sorting box
- If you finish early, try adding sound, scores, animations, etc. Be as creative as you want to make the game your own!

Good luck scientists and have fun!