

Scratch Button Lab Help

((**Completed project** is available on scratch.mit.edu → <http://scratch.mit.edu/projects/35816434/>
Project Title: Button Lab - Complete)))

Step 1

From your Dichotomous Key, form questions with answers.

Example 1:

1a. Button has metal
1b. Button does not have metal

→ becomes →

Does the button have metal?

- Yes
- No

Example 2:

2a. Button has loop
2b. Button has eyelets

→ becomes →

Does the button have a loop or eyelets?

- A Loop
- Eyelets

Example 3:

3a. Button has 2 eyelets
3b. Button has 4 eyelets

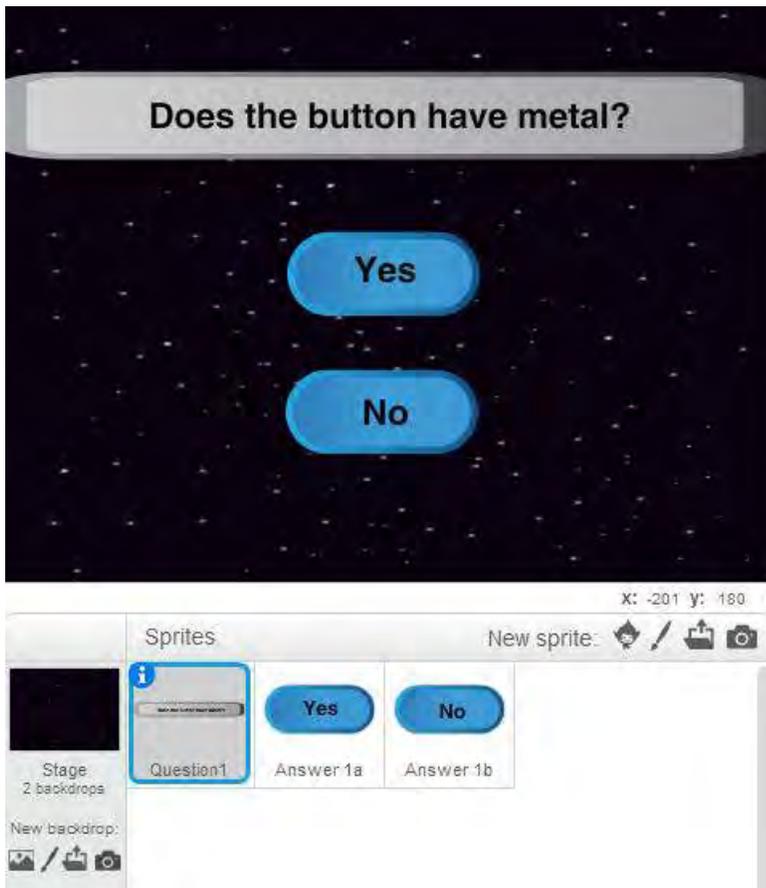
→ becomes →

How many eyelets does the button have?

- 2
- 4

Step 2

Choose 3 sprites: one sprite for the question, and two sprites for the answers



- Place the sprites where you would like

Step 3

Change the name of the sprites to match each question and answer pair

- Click the "i" icon

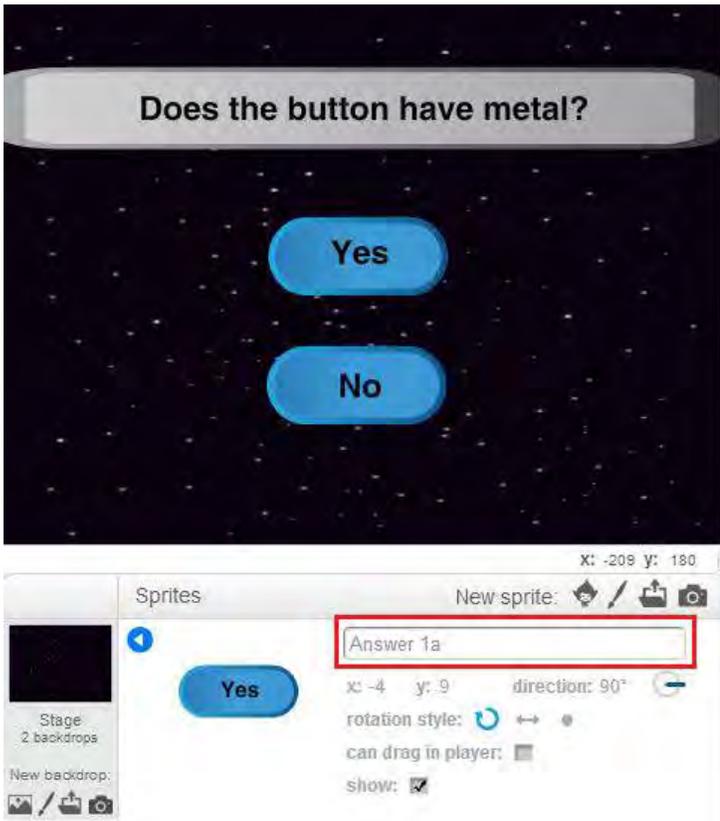


- Change the name

Example 1:



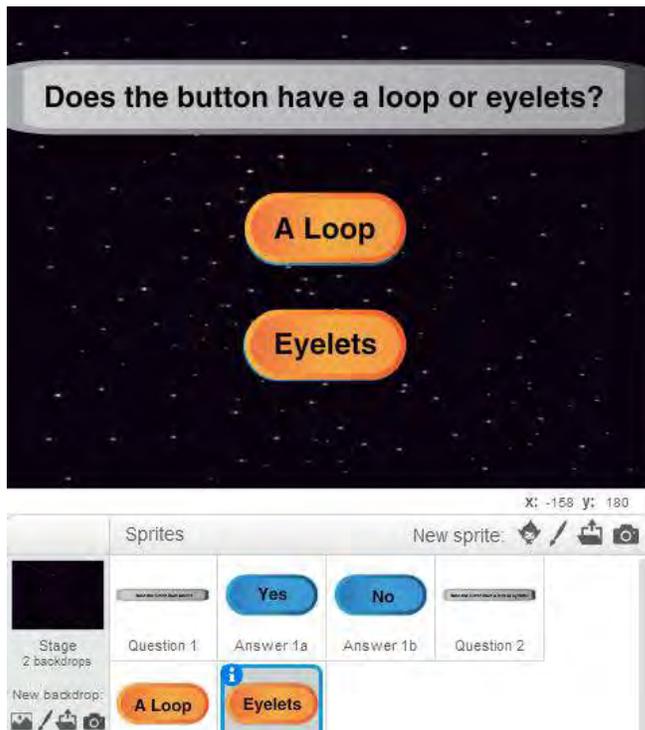
Example 2:



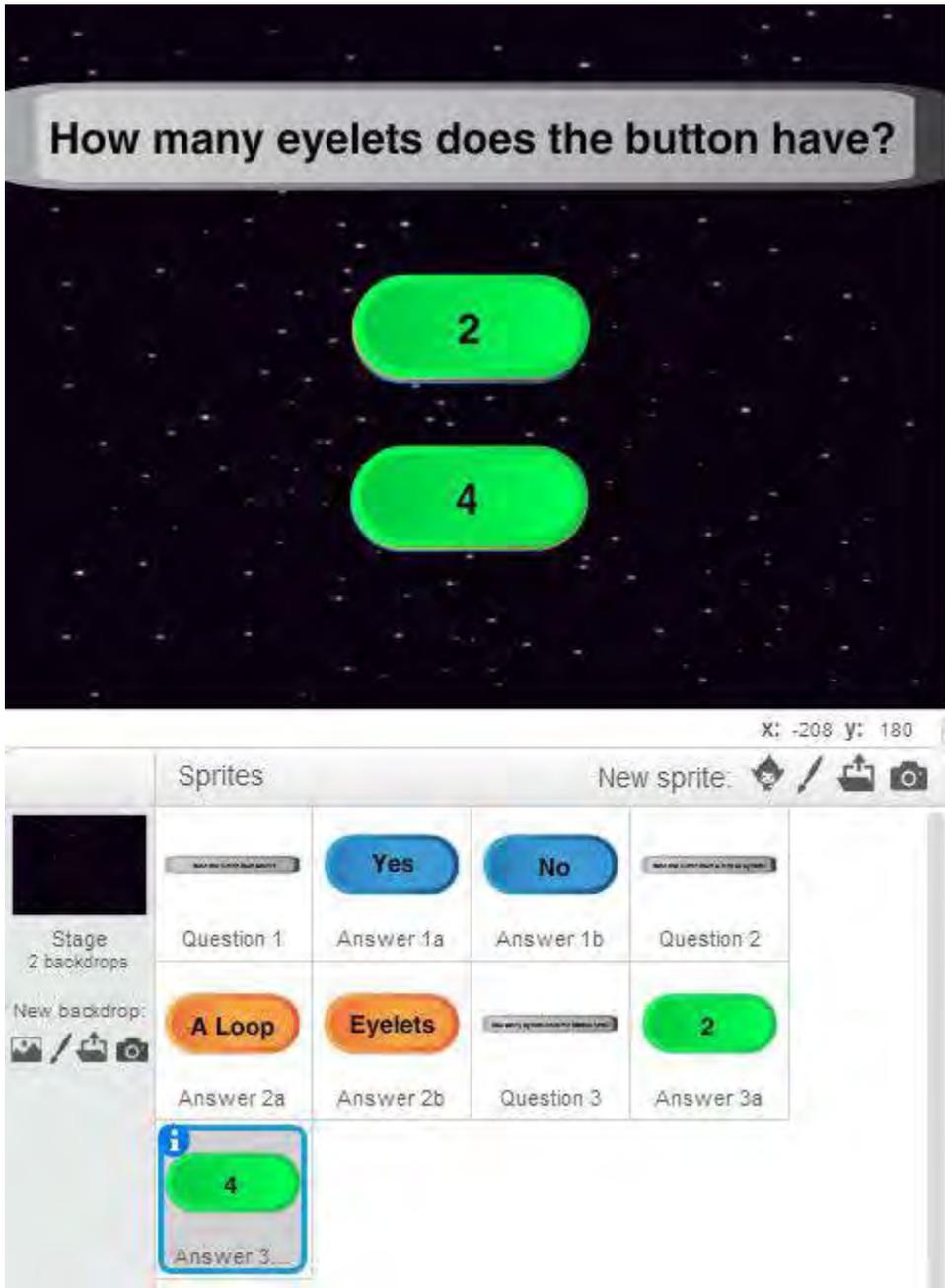
Step 4

For each question and answer pair, choose 3 sprites and place accordingly

Example 1

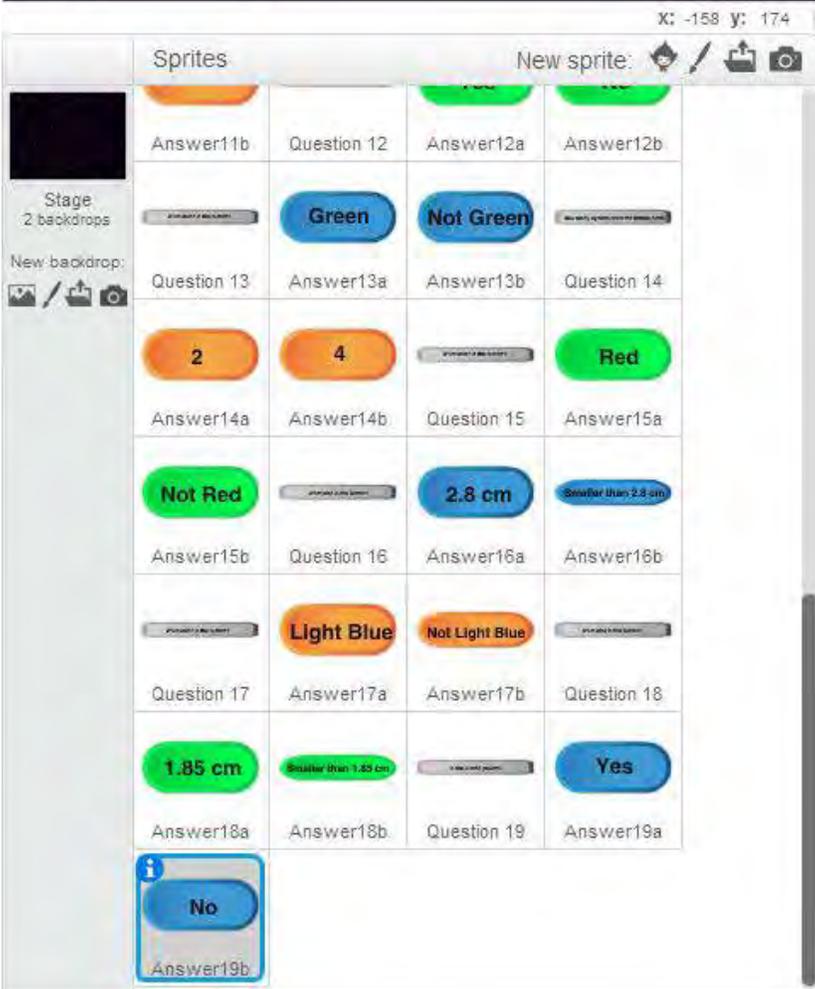
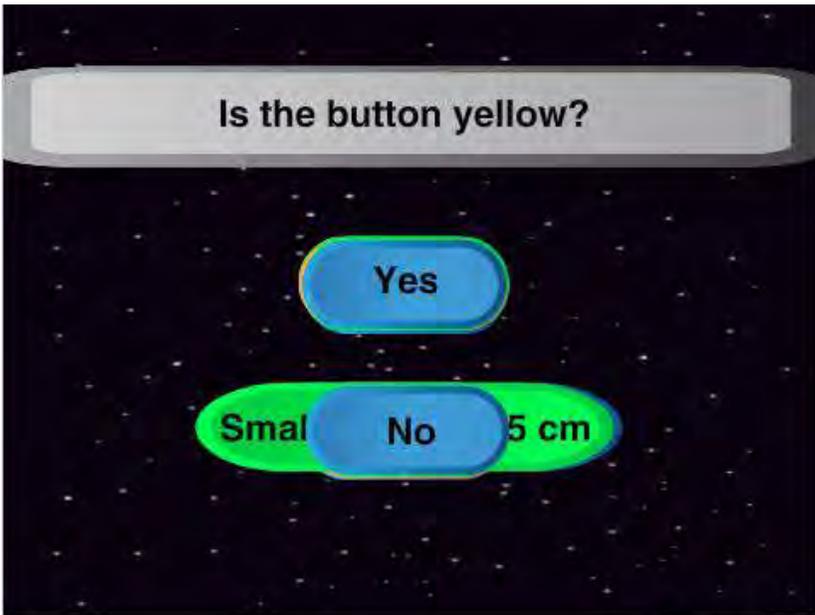


Example 2



Step 5

Repeat Step 3 for each question and answer pair



(Observe that all of the sprites have been named)

Step 6

- Choose 20 sprites for each scientifically named button
- Place appropriately
- Be sure to click the “i” icon to name each sprite



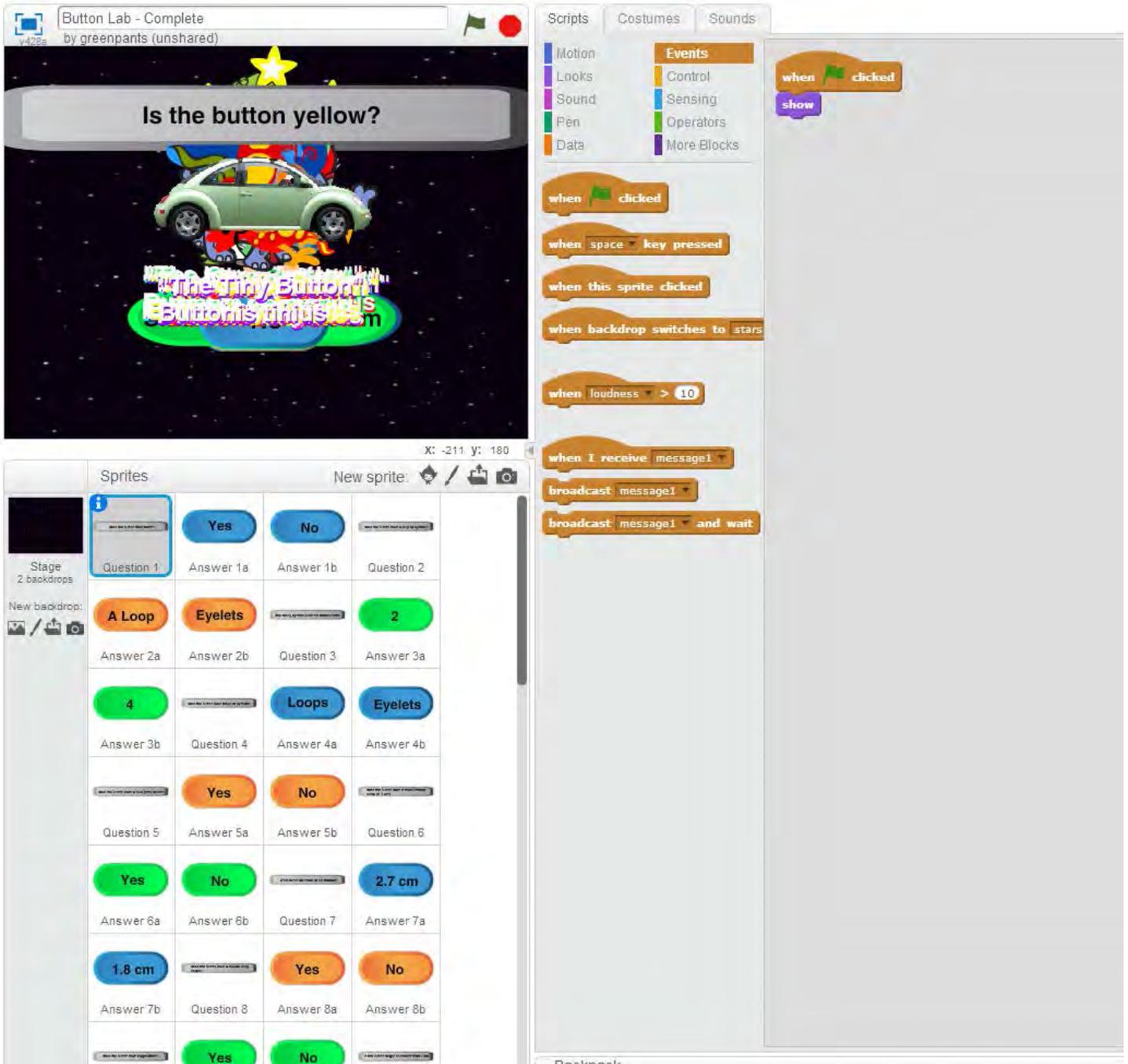
X: 240 y: 59

Sprites New sprite:

	Answer18a	Answer18b	Question 19	Answer19a
Stage 2 backdrops	Answer19b	B1	B2	B3
New backdrop: 				
	B4	B5	B6	B7
	B8	B9	B10	B11
	B12	B13	B14	B15
	B16	B17	B18	B19
	B20			

Step 7

For Question 1, in the **Scripts** tab, add the block **“when [flag] clicked”** from the **Events** category
 From the category **Looks**, add the block **“show”** and connect it to the previous block



For Answer 1a, in the **Scripts** tab, add the block “**when [flag] clicked**” from the **Events** category
 From the category **Looks**, add the block “**show**”, and connect it to the previous block

For Answer 1b, in the **Scripts** tab, add the block “**when [flag] clicked**” from the **Events** category
 From the category **Looks**, add the block “**show**” and connect it to the previous block

Step 8

For all of the **other sprites**, add the block “**when [flag] clicked**” from the **Events** category
 From the category **Looks**, add the block “**hide**”, and connect it to the previous block

Step 9

Click the green flag

All sprites should disappear except for the first question and its answers

If some sprites are still showing (besides Question 1, Answer 1a, Answer 1b), repeat Step 8

Step 10

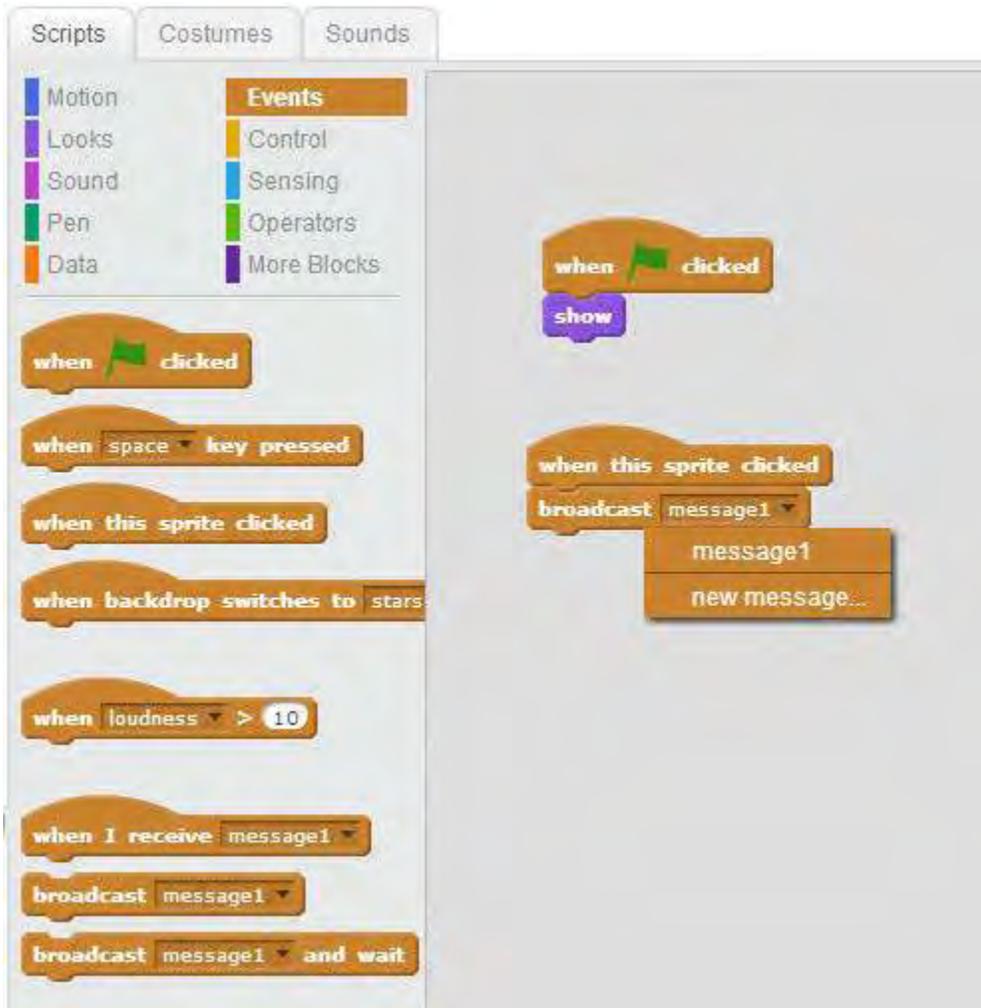
Click on the sprite for Answer 1a

The screenshot shows the Scratch software interface. The main stage displays a quiz question: "Does the button have metal?" with two blue buttons labeled "Yes" and "No". The background is a dark space with stars. The Sprites area shows a grid of sprites, with "Answer 1a" selected. The Scripts area is open, showing a list of blocks under the "Events" category. The "when this sprite clicked" block is highlighted in blue. Other blocks in the Scripts area include "move 10 steps", "turn 15 degrees", "point in direction 90", "point towards", "go to x: -4 y: 9", "go to mouse-pointer", "glide 1 secs to x: -4 y: 9", "change x by 10", "set x to 0", "change y by 10", "set y to 0", and "if on edge, bounce".

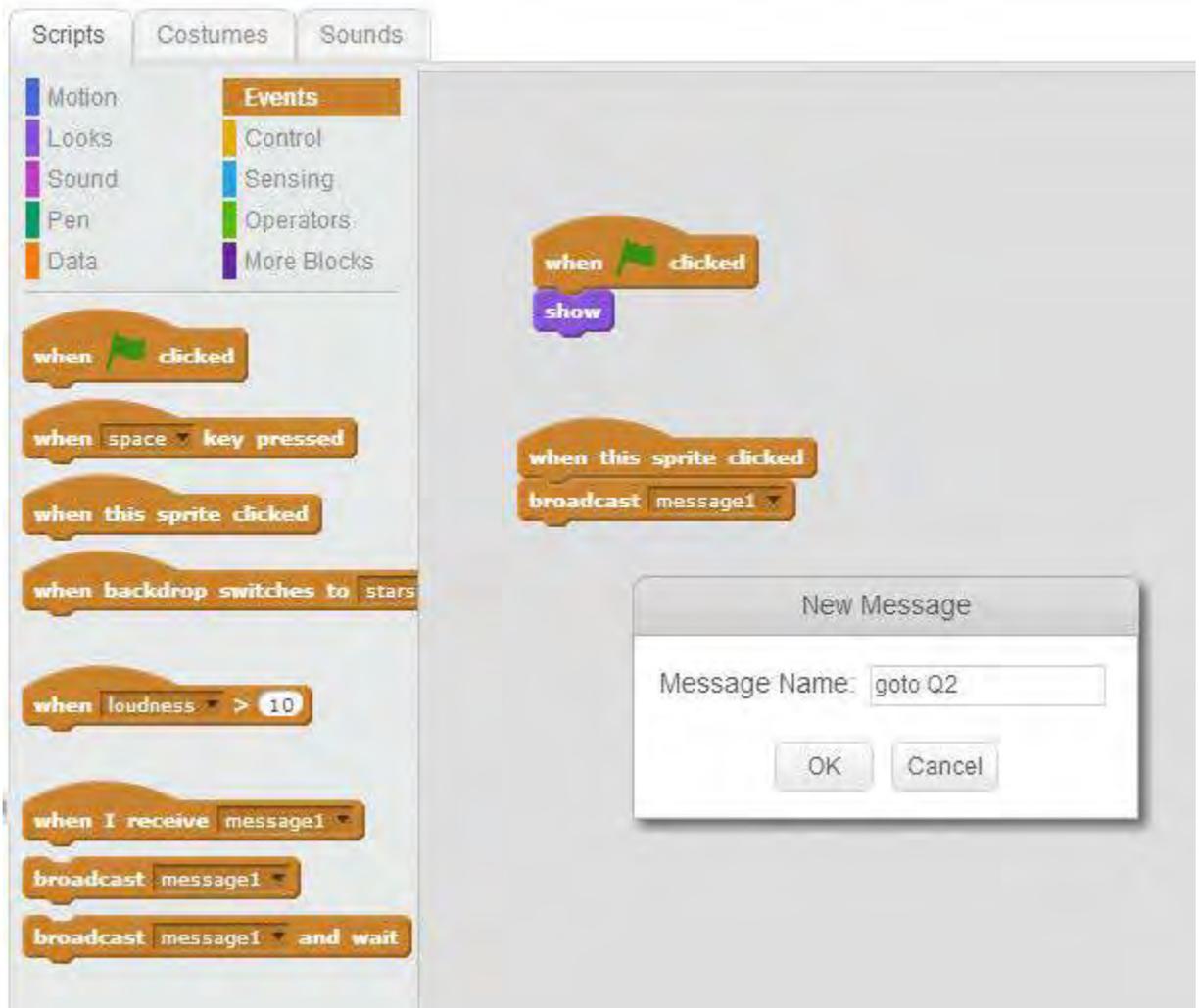
From the **Events** category, select and drag “**when this sprite clicked**” to the Scripts area

From the **Events** category, add the block “**broadcast [message1]**” and connect it to the previous block

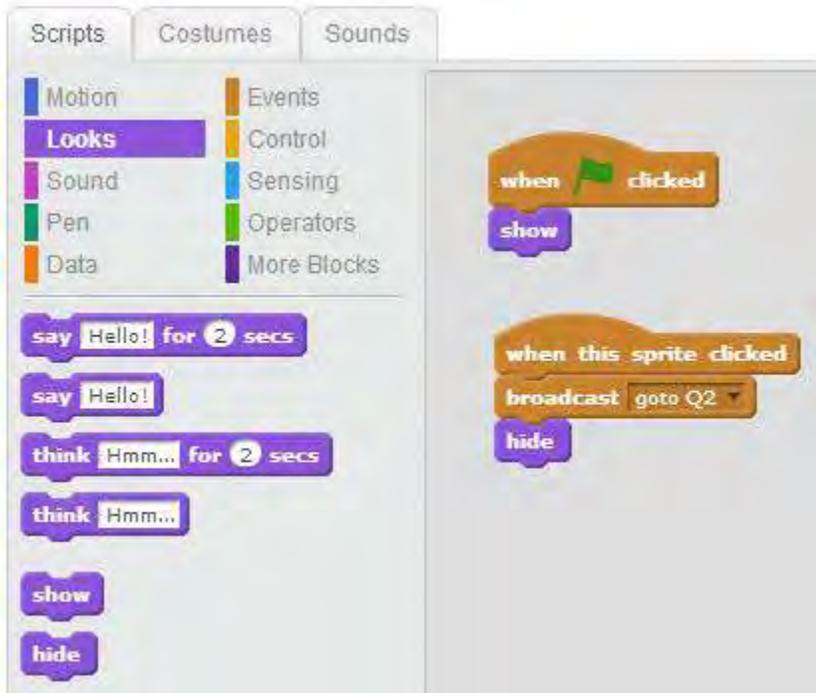
- Click the down arrow next to [message 1]



- Select new message and name it something meaningful
 - For example, I know that by clicking Answer 1a, it will take me to question 2.
 - Therefore, I will name the new message “goto Q2” (image on next page)

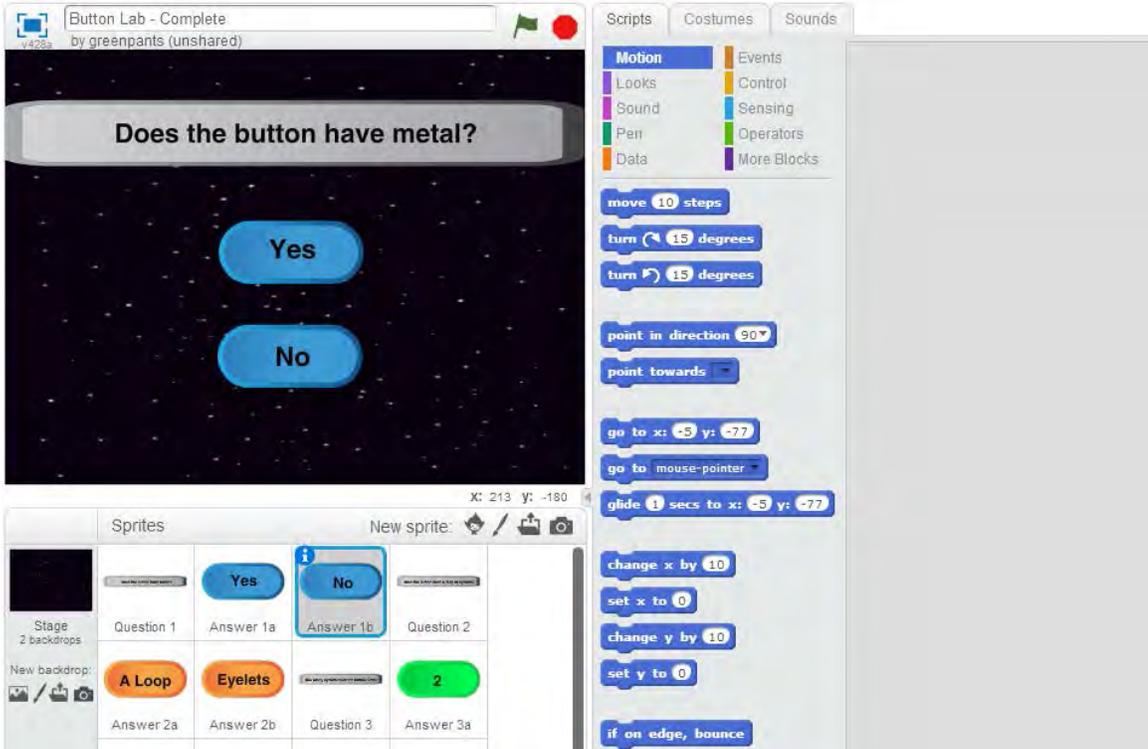


From the **Looks** category, add the block “hide” and connect it to the previous block



Step 11

Click on the sprite for Answer 1b

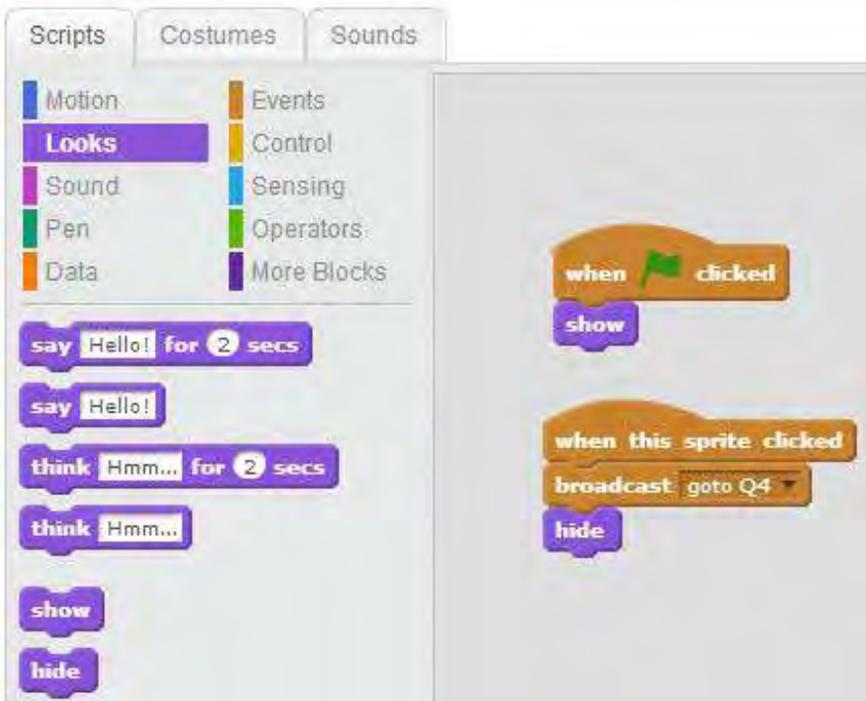


From the **Events** category, select and drag “**when this sprite clicked**” to the Scripts area

From the **Events** category, add the block “**broadcast [goto Q2]**” and connect it to the previous block

- Click the down arrow next to [goto Q2]
- Select new message and name it something meaningful
 - For example, I know that by clicking Answer 1b, it will take me to question 4.
 - Therefore, I will name the new message “goto Q4”

From the Looks category, add the block “hide” and connect it to the previous block



Step 12

Click on the sprite for Question 1

The screenshot displays the Scratch 4.2.0a interface. The stage shows a question: "Does the button have metal?" with two blue buttons labeled "Yes" and "No". The background is a dark space with stars. The Sprites area shows a sprite named "Question 1" with a question mark icon. The Scripts area contains the following code blocks:

- when clicked
- show
- move 10 steps
- turn 15 degrees
- turn 15 degrees
- point in direction 90
- point towards
- go to x: -2 y: 106
- go to mouse-pointer
- glide 1 secs to x: -2 y: 106
- change x by 10
- set x to 0
- change y by 10
- set y to 0
- if on edge, bounce

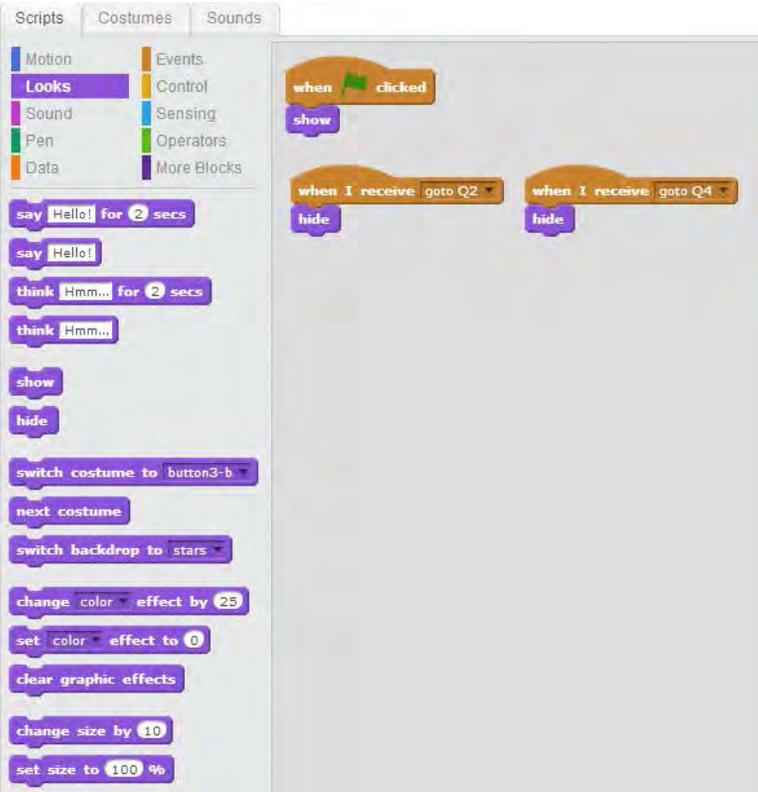
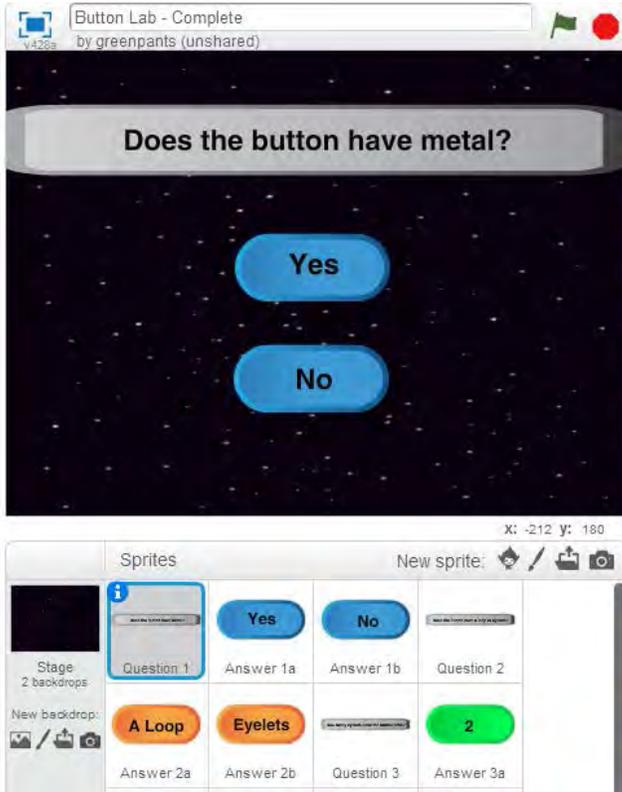
From the **Events** category, select and drag “when I receive [goto Q2]” to the Scripts area

From the **Looks** category, add the block “hide” and connect it to the previous block

From the **Events** category, select and drag “when I receive [goto Q2]” to the Scripts area

- Click the down arrow next to [goto Q2]
- Select [goto Q4] (or whatever you have named the message)

From the **Looks** category, add the block “hide” and connect it to the previous block

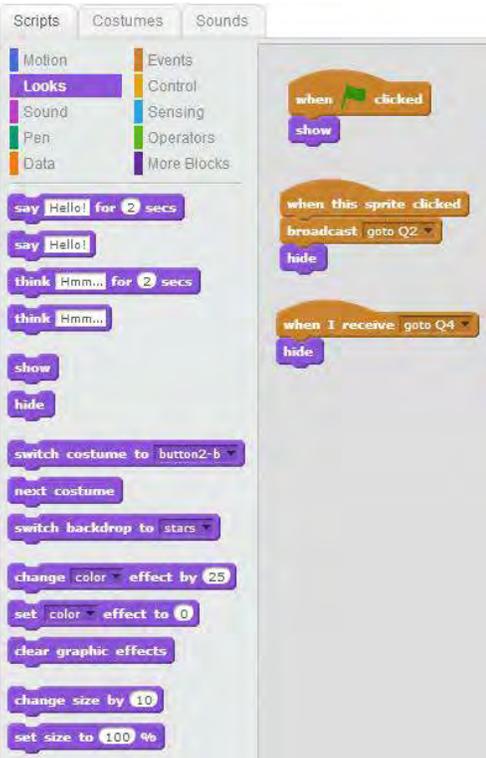
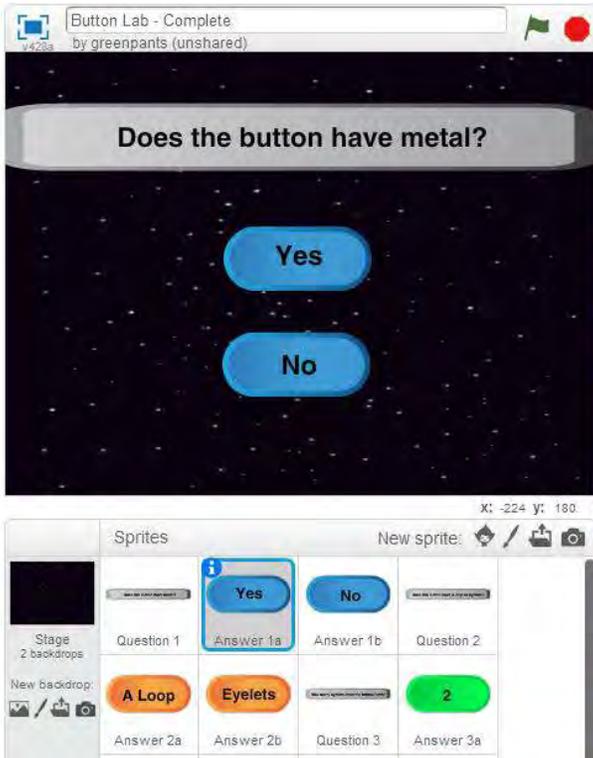


Step 13
Click on the sprite for Answer 1a
From the Events category, select and drag "when I receive [goto Q2]" to the Scripts area

From the **Looks** category, add the block "hide" and connect it to the previous block

- Click the down arrow next to [goto Q2]
- Select [goto Q4] (or whatever you have named the message that corresponds with the message that Answer 1b broadcasts)

From the **Looks** category, add the block "hide" and connect it to the previous block

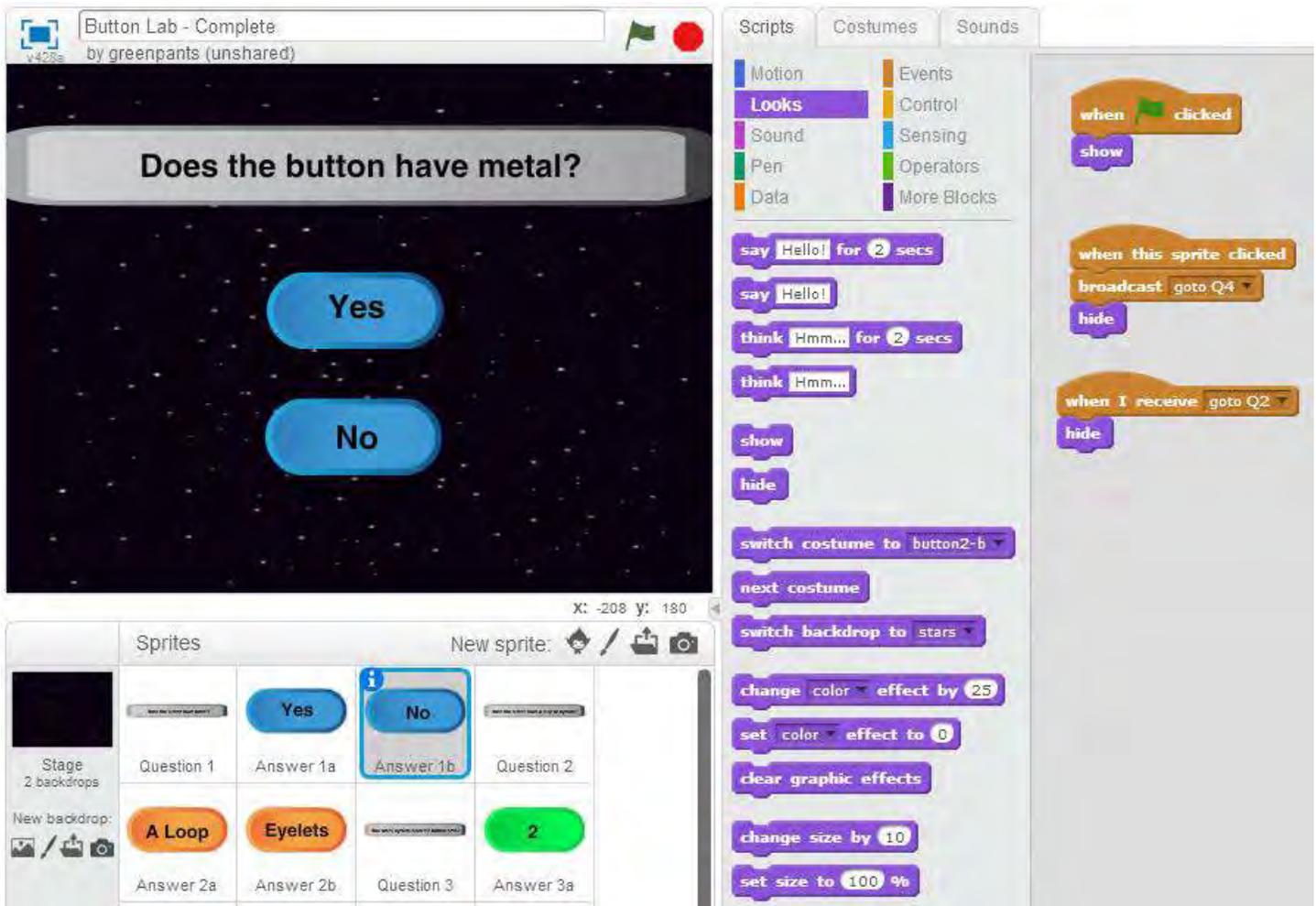


Step 14

Click on the sprite for Answer 1b

From the **Events** category, select and drag “**when I receive [goto Q2]**” to the Scripts area

- Click the down arrow next to [goto Q2]
- Select [goto Q2] (or whatever you have named the message that corresponds with the message that Answer 1a broadcasts)



From the **Looks** category, add the block “**hide**” and connect it to the previous block (image on next page)

Step 15

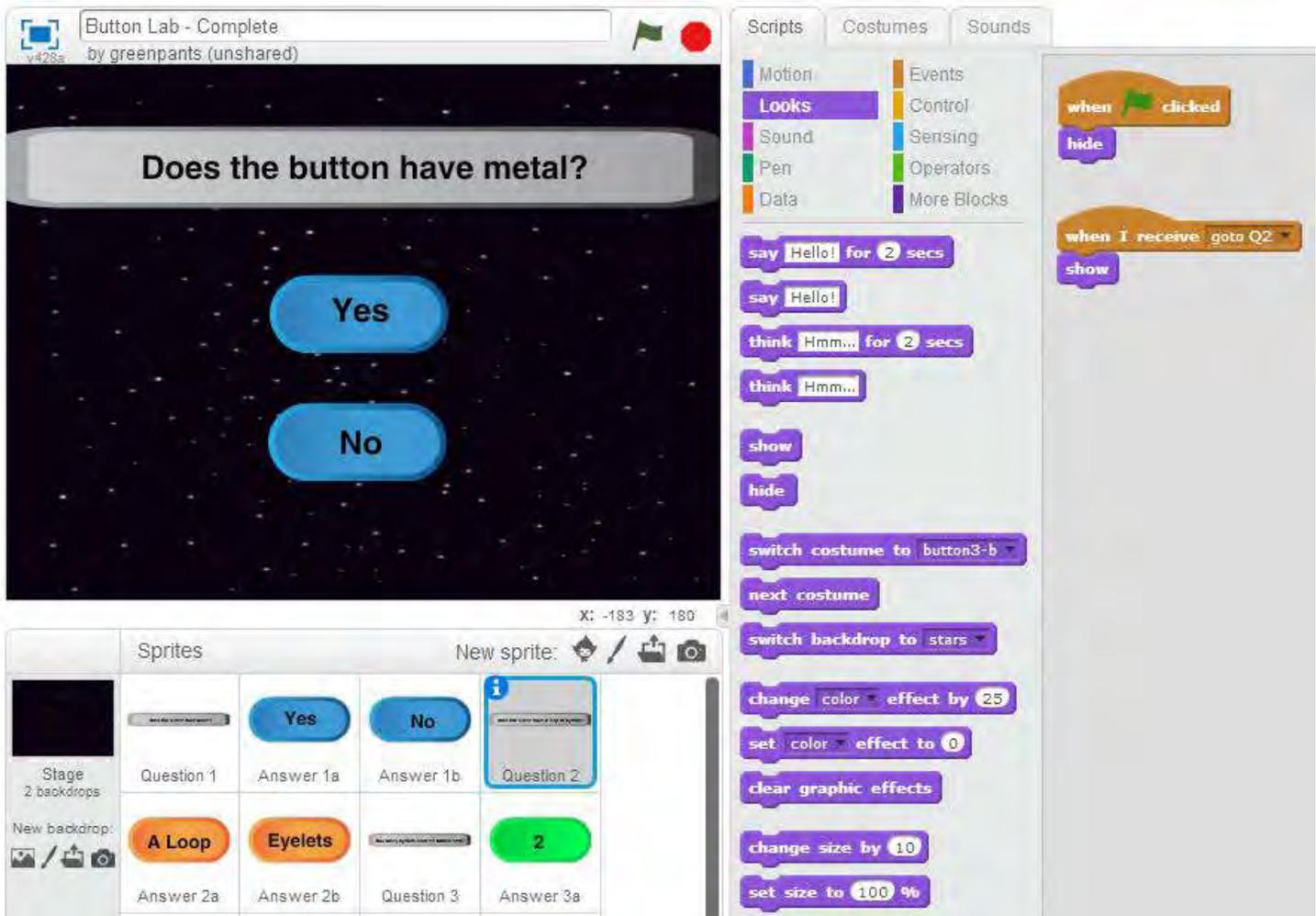
Click on the Question sprite that Answer 1a leads to

- For me, this will be Question 2

From the **Events** category, select and drag “**when I receive [goto Q2]**” to the Scripts area

- Click the down arrow next to [goto Q2]
- Select [goto Q2] (or whatever you have named the message that corresponds with the message that Answer 1a broadcasts)

From the **Looks** category, add the block “**show**” and connect it to the previous block



Step 16

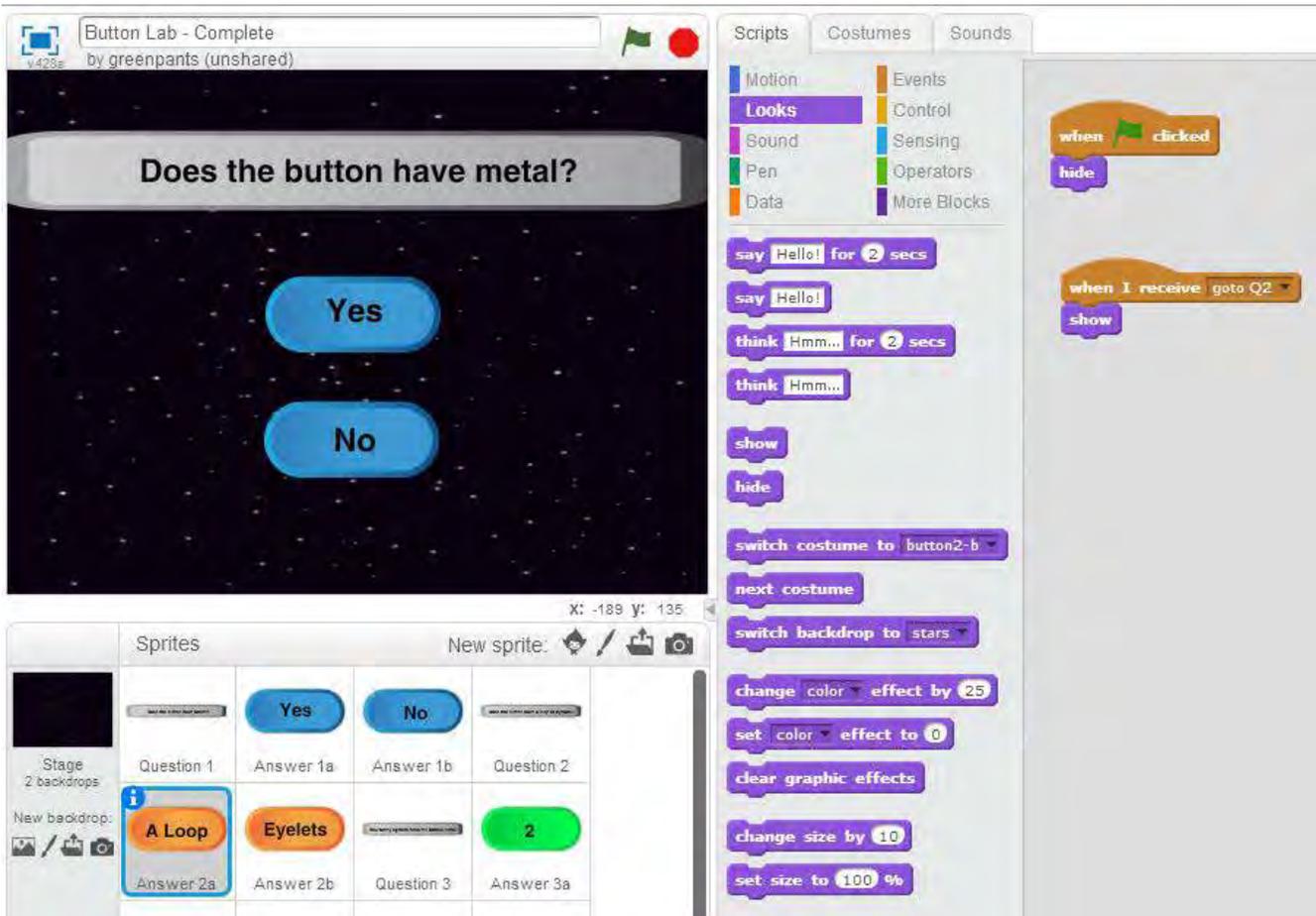
Click on one of the Answer sprites that Answer 1a leads to

- For me, this will be Answer 2a

From the **Events** category, select and drag "**when I receive [goto Q2]**" to the Scripts area

- Click the down arrow next to [goto Q2]
- Select [goto Q2] (or whatever you have named the message that corresponds with the message that Answer 1a broadcasts)

From the **Looks** category, add the block "**show**" and connect it to the previous block (image on next page)



From the **Events** category, select and drag “**when this sprite clicked**” to the Scripts area
 From the **Events** category, add the block “**broadcast [goto Q2]**” and connect it to the previous block

- Click the down arrow next to [goto Q2]
- Select new message and name it something meaningful
 - For example, I know that by clicking Answer 2a, it will take me to the scientific name of the button.
 - Therefore, I will name the new message “B1”

From the
connect

Looks category, add the block “**hide**” and
it to the previous block



Step
Click on

17
the other Answer sprites that Answer 1a

leads to

- For me, this will be Answer 2b

From the **Events** category, select and drag “**when I receive [goto Q2]**” to the Scripts area

- Click the down arrow next to [goto Q2]
- Select [goto Q2] (or whatever you have named the message that corresponds with the message that Answer 1a broadcasts)

From the **Looks** category, add the block “**show**” and connect it to the previous block

The screenshot displays the Scratch 3.0 interface for a project titled "Button Lab - Complete" by greenpants (unshared). The stage shows a question: "Does the button have metal?" with two blue buttons labeled "Yes" and "No". The Sprites area contains a sprite named "Eyelets" with a blue background. The Scripts area shows a sequence of blocks: "when I receive goto Q2" (selected), "show", "hide", "switch costume to button2-b", "next costume", "switch backdrop to stars", "change color effect by 25", "set color effect to 0", "clear graphic effects", "change size by 10", and "set size to 100%". The Sprites area also shows a grid of sprites with "Eyelets" selected.

From the **Events** category, select and drag “**when this sprite clicked**” to the Scripts area

From the **Events** category, add the block “**broadcast [B1]**” and connect it to the previous block

- Click the down arrow next to [B1]
- Select new message and name it something meaningful
 - For example, I know that by clicking Answer 2a, it will take me to question 3.
 - Therefore, I will name the new message “goto Q3”

From the **Looks** category, add the block “**hide**” and connect it to the previous block (image on next page)



Step 18

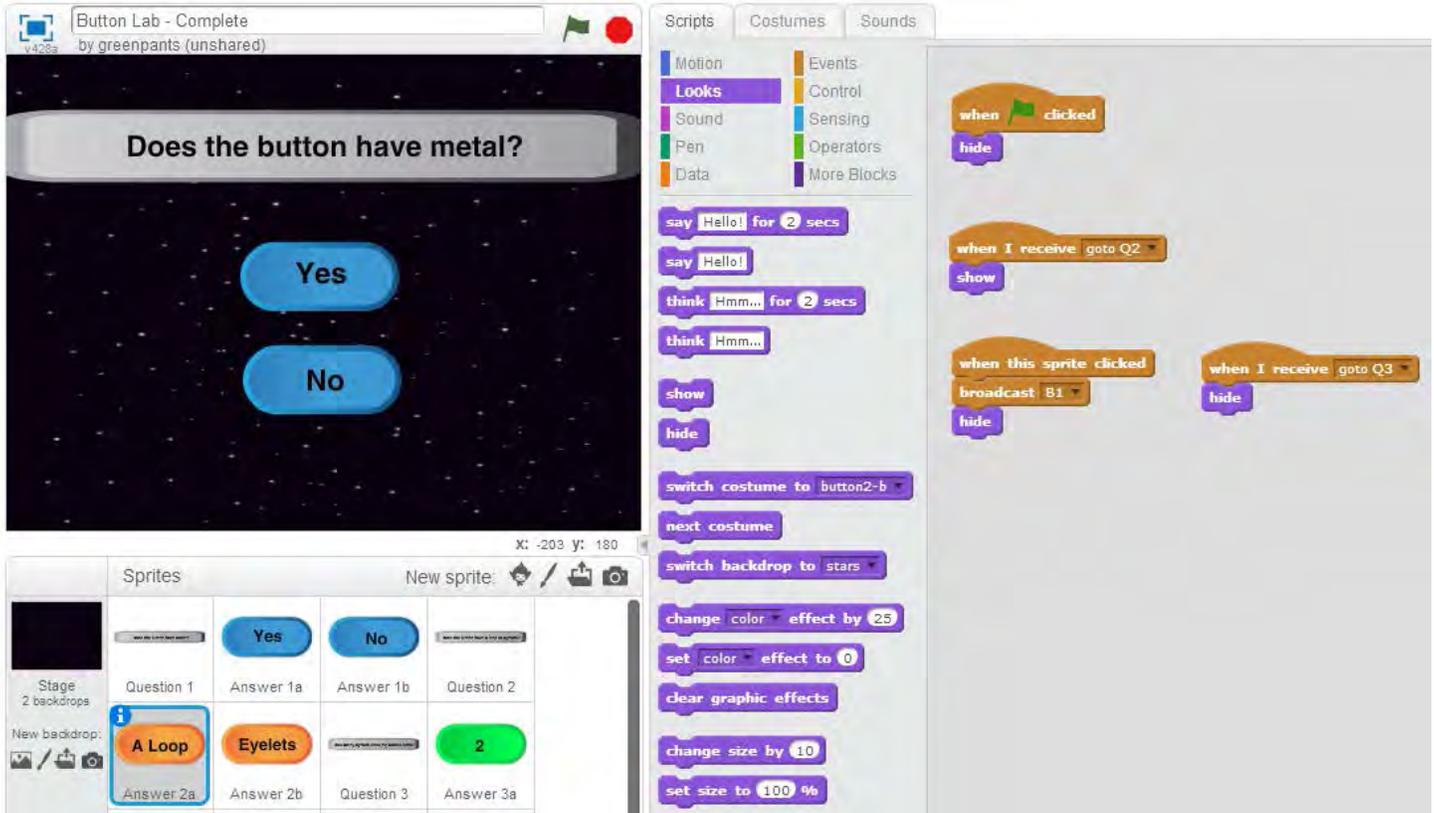
Click on one of the Answer sprites that Answer 1a leads to

- For me, this will be Answer 2a

From the **Events** category, select and drag “when I receive [B1]” to the Scripts area

- Click the down arrow next to [B1]
- Select [goto Q3] (or whatever you have named the message that corresponds with the message that Answer 2b broadcasts)

From the **Looks** category, add the block “hide” and connect it to the previous block



Step 19

Click on one of the Answer sprites that Answer 1a leads to

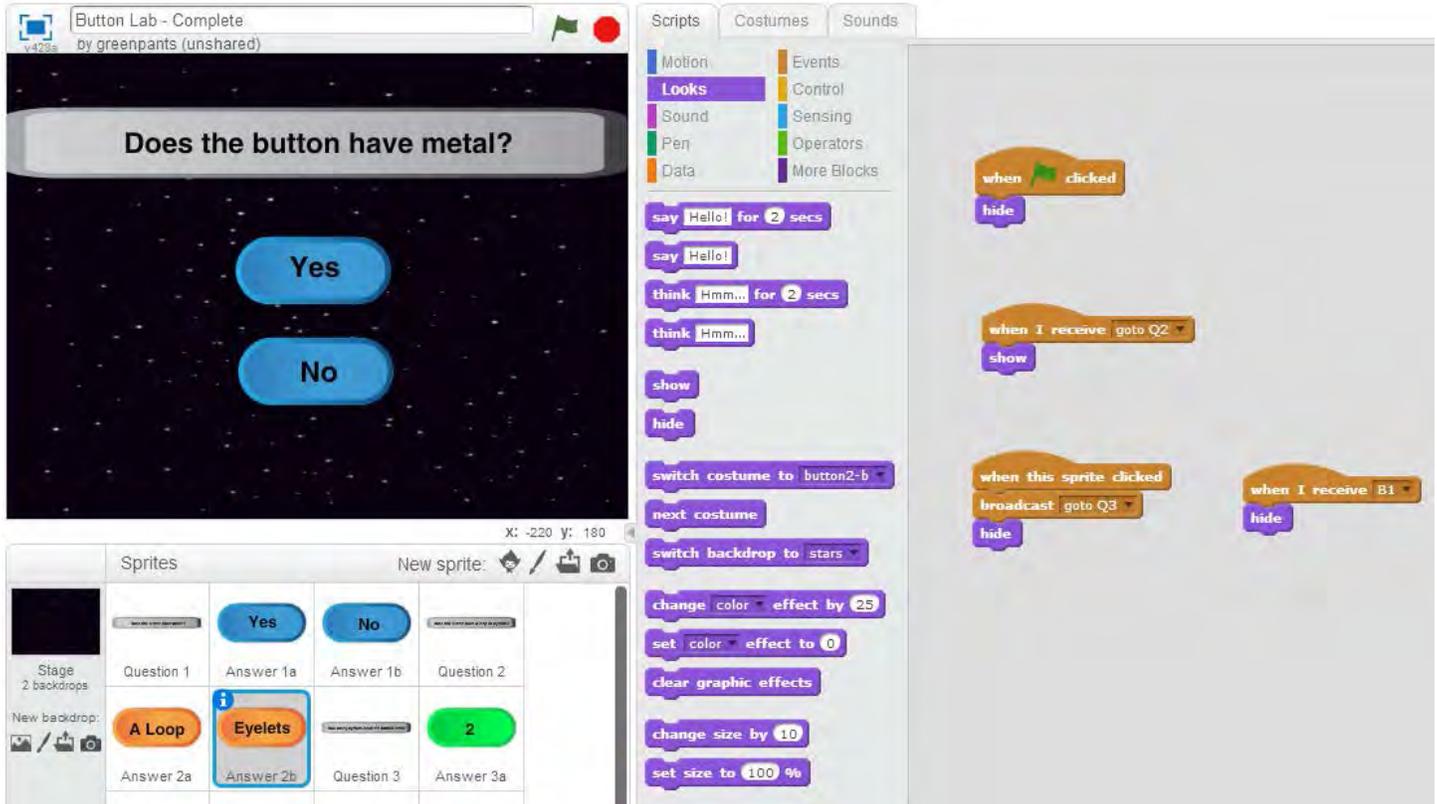
- For me, this will be Answer 2b

From the **Events** category, select and drag “when I receive [B1]” to the Scripts area

- Click the down arrow next to [B1]

- Select [B1] (or whatever you have named the message that corresponds with the message that Answer 2a broadcasts)

From the **Looks** category, add the block “hide” and connect it to the previous block



Step 20

Click on the Question sprite that Answer 1a leads to

- For me, this will be Question 2

From the **Events** category, select and drag “when I receive [B1]” to the Scripts area

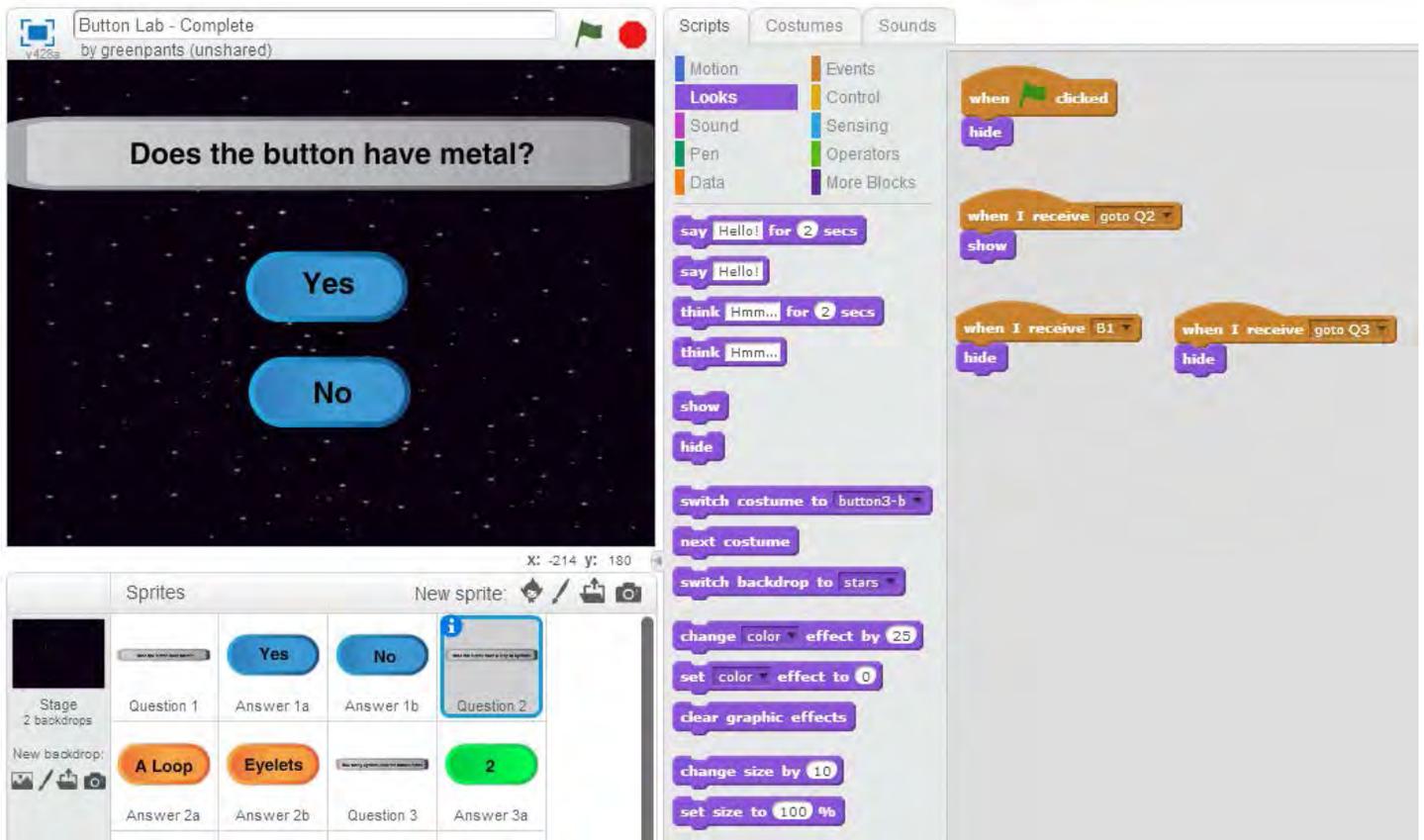
- Click the down arrow next to [B1]
- Select [B1] (or whatever corresponds to Answer 2a)

From the **Looks** category, add the block “hide” and connect it to the previous block

From the **Events** category, select and drag “when I receive [B1]” to the Scripts area

- Click the down arrow next to [B1]
- Select [goto Q3] (or whatever corresponds to Answer 2b)

From the **Looks** category, add the block “hide” and connect it to the previous block (image on next page)



Step 21

Repeat steps 15 - 20 for the remaining questions and their answers

Example 1 - Question 3

The screenshot displays the Scratch environment for a quiz titled "Button Lab - Complete". The stage shows a question: "Does the button have metal?" with two blue buttons labeled "Yes" and "No". The Sprites panel shows a grid of question and answer objects, with "Question 3" selected. The Scripts area contains the following code:

```

say Hello! for 2 secs
say Hello!
think Hmm... for 2 secs
think Hmm...
show
hide
switch costume to button3-b
next costume
switch backdrop to stars
change color effect by 25
set color effect to 0
clear graphic effects
change size by 10
set size to 100 %

```

The Scripts area also shows event-driven code:

```

when clicked
hide

when I receive goto Q3
show

when I receive B2
hide

when I receive B3
hide

```

Example 2 - Answer 3a

This screenshot shows the same Scratch environment as the first, but with "Answer 3a" selected in the Sprites panel. The code in the Scripts area is as follows:

```

say Hello! for 2 secs
say Hello!
think Hmm... for 2 secs
think Hmm...
show
hide
switch costume to button2-b
next costume
switch backdrop to stars
change color effect by 25
set color effect to 0
clear graphic effects
change size by 10
set size to 100 %

```

The event-driven code in the Scripts area is:

```

when clicked
hide

when I receive goto Q3
show

when this sprite clicked
broadcast B2
hide

when I receive B3
hide

```

Example 3 - Answer 3b

The screenshot displays the Scratch environment for a project titled "Button Lab - Complete" by greenpants (unshared). The main stage shows a question: "Does the button have metal?" with two blue buttons labeled "Yes" and "No". The background is a dark space with stars.

The code editor on the right contains the following script:

```

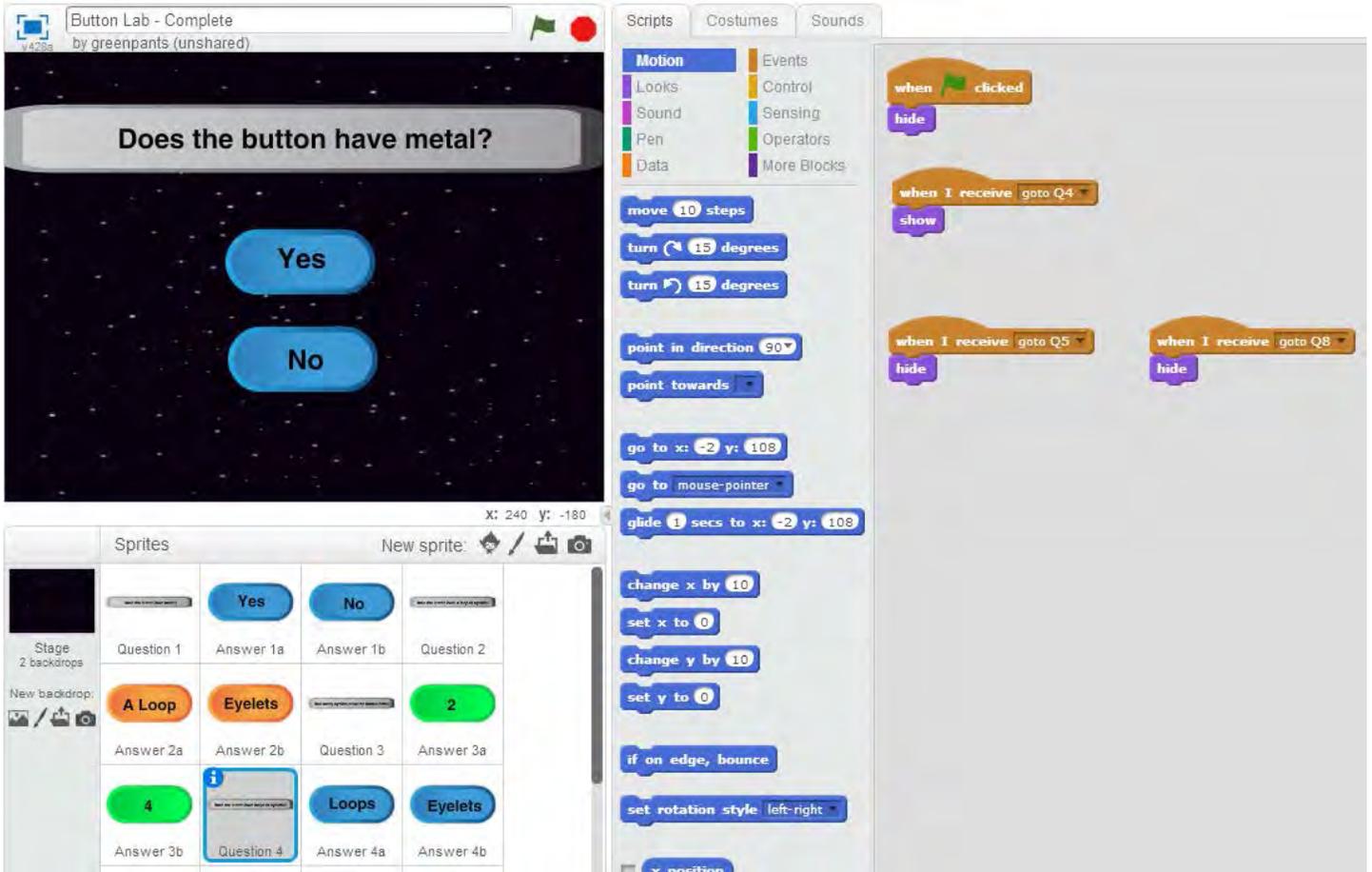
when green flag clicked
  hide
  when I receive goto Q3
  show
  when this sprite clicked
    broadcast B3
    hide
  when I receive B2
    hide
  say Hello! for 2 secs
  say Hello!
  think Hmm... for 2 secs
  think Hmm...
  show
  hide
  switch costume to button2-b
  next costume
  switch backdrop to stars
  change color effect by 25
  set color effect to 0
  clear graphic effects
  change size by 10
  set size to 100 %
  go to front
  go back 1 layers

```

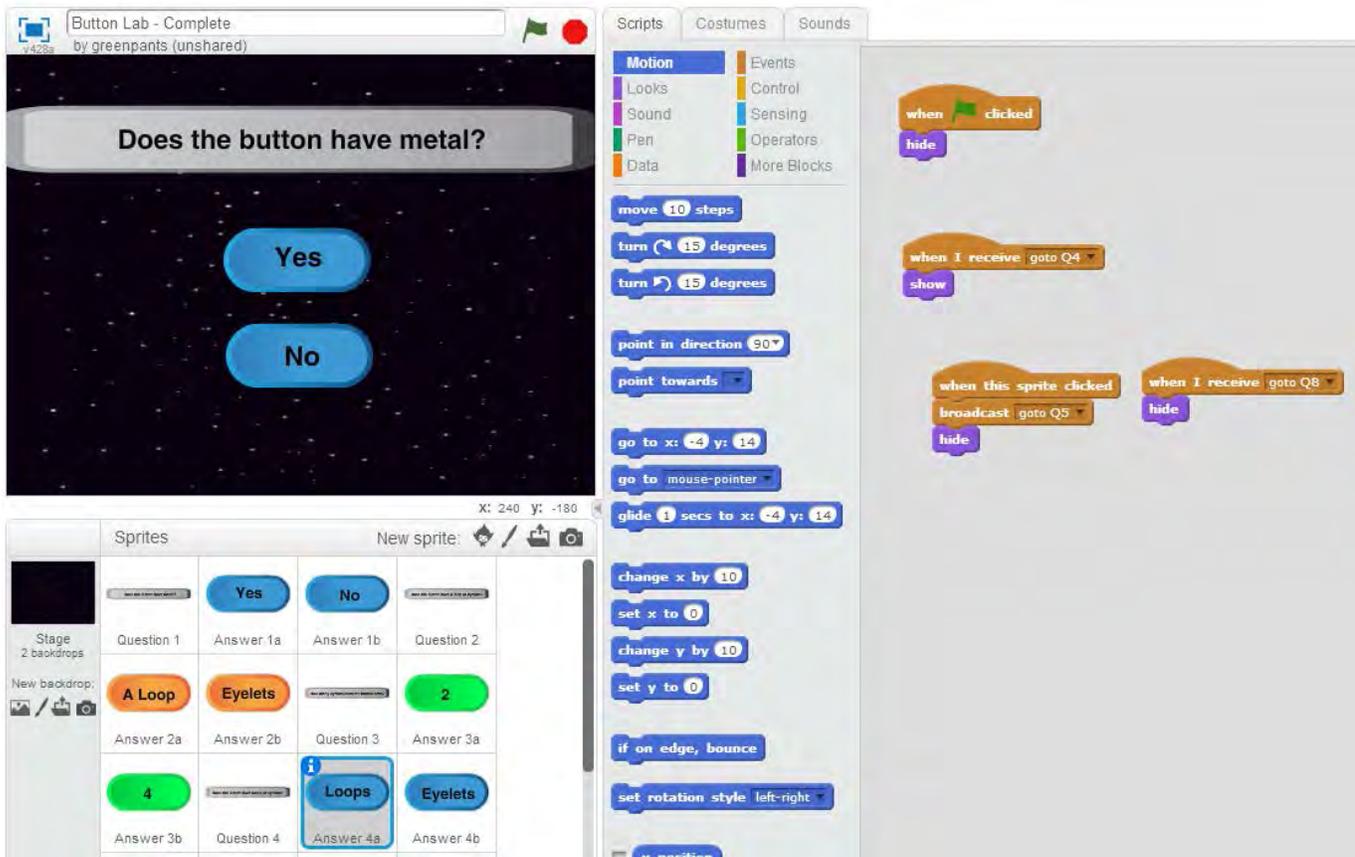
The Sprites panel at the bottom left shows a grid of question and answer buttons. The "4" button is highlighted with a blue border. The grid is as follows:

Question 1	Answer 1a	Answer 1b	Question 2
Answer 2a	Answer 2b	Question 3	Answer 3a
4	Loops	Eyelets	
Answer 3b	Question 4	Answer 4a	Answer 4b

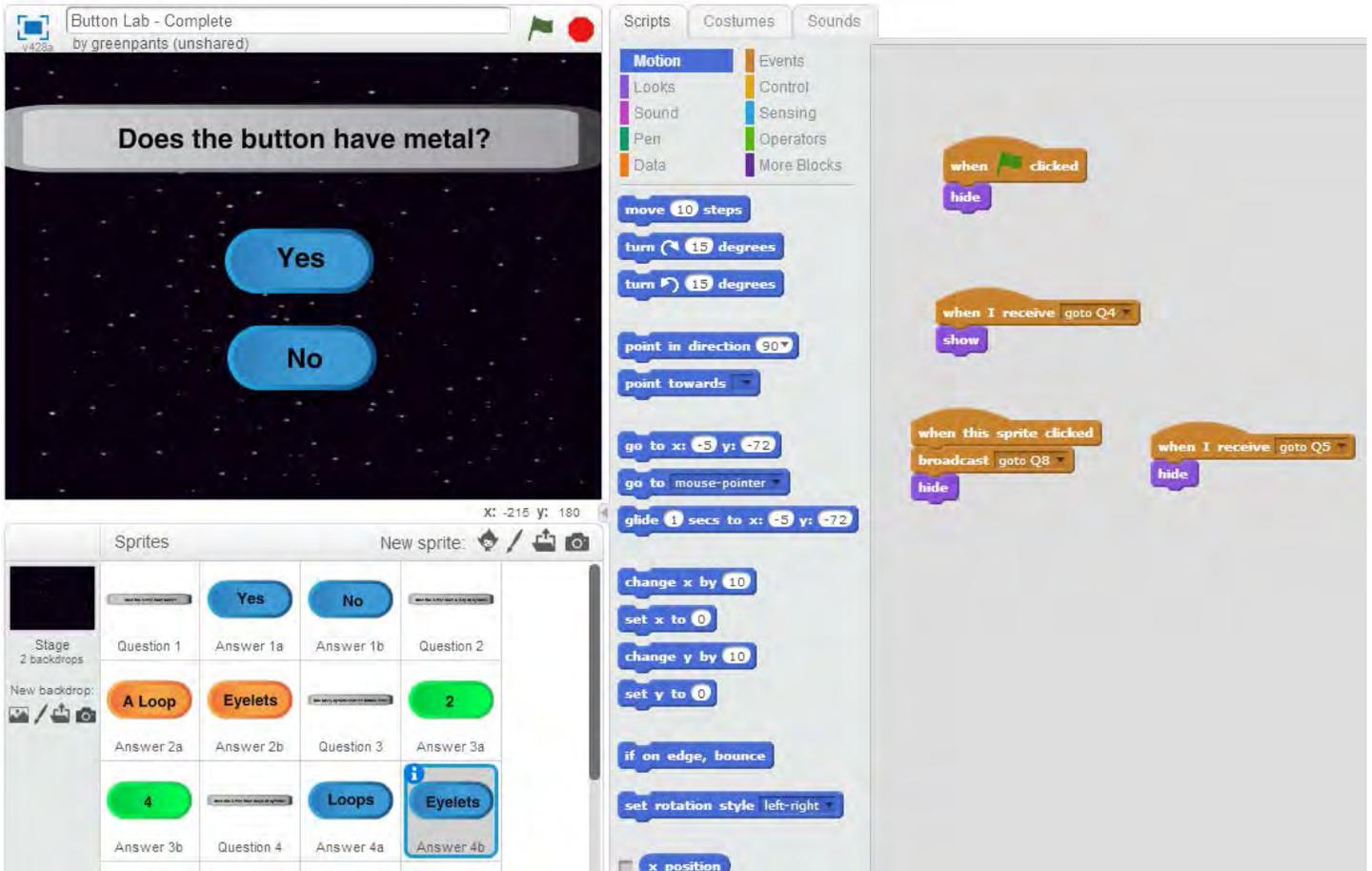
Example 4 - Question 4



Example 5 - Answer 4a



Example 6 - Answer 4b



Step 22

For each sprite that represents the scientific name of the button,
 From the **Events** category, select and drag **"when I receive [goto B1]"** to the Scripts area

- Click the down arrow next to [goto B1]
- Select [B#] (or whatever you have named the message that corresponds with the sprite that shows the scientific name of the button)

From the **Looks** category, add the block “**show**” and connect it to the previous block

*****Note:** In the images below, each sprite that represents the scientific name of the button does NOT contain code for “**when this sprite clicked.**” This is because the user must click the [flag] button to return to Question 1. However, you *can* add code if you want something to happen when the sprite is clicked. The completed button lab (available on Scratch) does contain code to react to the sprite being clicked.***

Example 1

The screenshot shows a Scratch project titled "Button Lab - Complete" by greenpants. The stage displays a question: "Does the button have metal?" with two blue buttons labeled "Yes" and "No". The background is a starry space scene.

The Sprites panel shows a grid of sprites. Sprites B1 through B7 are visible, each with a small information icon and a scientific name. B1 is "The Large Button" (Batrisca gigawattus), B2 is "The Small Button" (Batrisca gigawattus), B3 is "The Small Button" (Batrisca gigawattus), B4 is "The Small Button" (Batrisca gigawattus), B5 is "The Small Button" (Batrisca gigawattus), B6 is "The Small Button" (Batrisca gigawattus), and B7 is "The Small Button" (Batrisca gigawattus).

The Scripts panel shows the following code blocks:

- when green flag clicked
- hide
- when I receive B1
- show
- say Hello! for 2 secs
- say Hello!
- think Hmm... for 2 secs
- think Hmm...
- show
- hide
- switch costume to bat1-b
- next costume
- switch backdrop to stars
- change color effect by 25
- set color effect to 0
- clear graphic effects
- change size by 10
- set size to 100 %
- go to front

Example 2

Button Lab - Complete
by greenpants (unshared)

Does the button have metal?

Yes

No

Scripts | Costumes | Sounds

- Motion
- Looks**
- Sound
- Pen
- Data
- Events
- Control
- Sensing
- Operators
- More Blocks

```

when green flag clicked
  hide

when I receive B14
  show

say Hello! for 2 secs
say Hello!
think Hmm... for 2 secs
think Hmm...
show
hide
switch costume to bat1-b
next costume
switch backdrop to stars
change color effect by 25
set color effect to 0
clear graphic effects
change size by 10
set size to 100 %
go to front
go back 1 layers
costume #
backdrop name
size

```

X: -223 y: 180

Sprites | New sprite:

Answer18a	Answer18b	Question 19	Answer19a

Example 3

The screenshot displays the Scratch IDE for a project titled "Button Lab - Complete" by greenpants (unshared). The stage features a dark starry background with a question "Does the button have metal?" and two blue buttons labeled "Yes" and "No".

The Sprites panel shows a grid of 20 sprites (B1-B19) and a "No" button. Sprite B16, "The Large Button Buttons' singular", is selected.

The Scripts panel contains the following code:

```

when green flag clicked
  hide
  when I receive B16
    show
    say Hello! for 2 secs
    say Hello!
    think Hmm... for 2 secs
    think Hmm...
    show
    hide
    switch costume to bat1-b
    next costume
    switch backdrop to stars
    change color effect by 25
    set color effect to 0
    clear graphic effects
    change size by 10
    set size to 100 %
    go to front
    go back 1 layers
    costume #
    backdrop name
    size
  
```

Completed project is available on [scratch.mit.edu](http://scratch.mit.edu/projects/35816434/) → <http://scratch.mit.edu/projects/35816434/>
 Project Title: Button Lab - Complete

Here is the General Form of the Algorithm:

Button Lab General Algorithm

