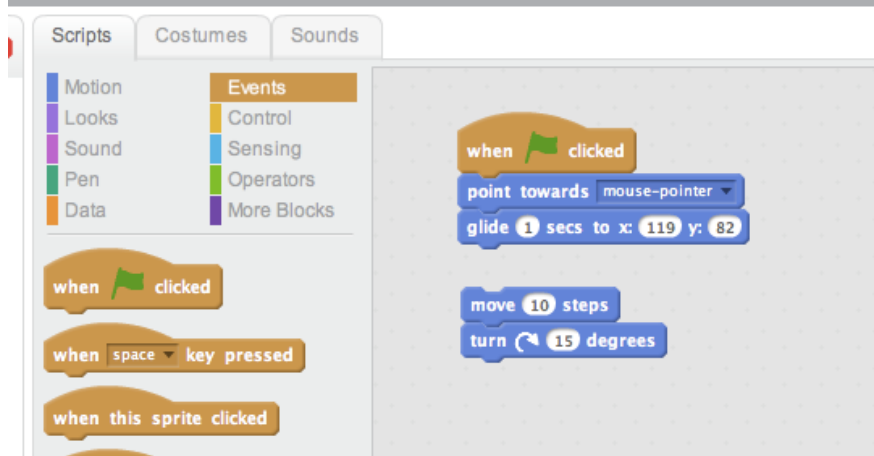
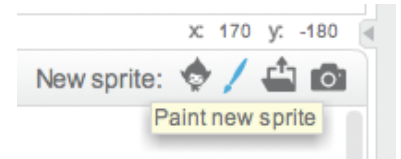


1. Log on to Scratch <http://scratch.mit.edu/>
2. Select “Try it out.”
3. Delete the cat.
4. Make a new sprite using the “Paint a new sprite” option.
 - 4.1. Click the info button in the corner of your new sprite and give it a name – it will be a ball, so “Ball” might be a good choice.
 - 4.2. Go to the “Costumes” tab (you may need to hide the “Tips” window).
 - 4.3. Select **Convert to Vector** (bottom right corner) and delete the invisible rectangle in the upper left quadrant. The costume size should now be 0.
 - 4.4. Draw a small circle around the center indicator. Size the circle so that it is about 30 x 30. Center it directly over the center of the “+” indicator on the costume grid. This will be important later as we start bouncing this ball off of other objects.
 - 4.5. Draw something inside the circle near the right side so you can see which way it is pointing.
 - 4.6. Dress it up or color it however you’d like, but keep the outside round.
5. Make your ball move by going to the **Motion** group in the Scripts tab while your ball is selected in the lower left pane. Try out each of the controls by dragging them into the programming space to the right and clicking on them. You can edit the numbers or group multiple controls together.
6. Make the following **event handlers** by going to **Events** group and dragging events to the programming pane.
 - 6.1. **When (flag) clicked:** Have your ball move to a specific position on the screen and point in whichever direction you prefer.
 - 6.2. **When Left Arrow key pressed:** Have your ball turn to the left.
 - 6.3. **When Right Arrow key pressed:** Have your ball turn to the right.



7. Make your ball move on its own
 - 7.1. Create a local variable called "Speed" (**Data Group, Make a Variable**) – choose "For this sprite only."
 - 7.2. Create two event handlers for **When Up Arrow Key Pressed** and **When Down Arrow Key Pressed** to **change Speed by 1** and -1 respectively (see **Data Group**).
 - 7.3. Create an infinite loop under the **When (flag) clicked** event handler by dragging a **Forever loop** out of the **Control** group.
 - 7.4. Stick a **move Speed steps** command in the **Forever Loop** and replace the number 10 with the variable "Speed."
 - 7.5. Set speed to 10 when the green flag is clicked.
 - 7.6. Click the flag and see what happens.
 - 7.7. We would like the ball to stay in the screen area. Is there something in the Motion group that could help? Fix it.
 - 7.8. What happens when **Speed** becomes negative?
 - 7.9. Modify the down arrow handler to prevent this from happening – try an **IF - THEN control** block. There are several ways to do this.
 - 7.10. You should now have a ball that bounces around in the square. It should speed up and slow down using the up and down arrows and you should be able to turn it left and right. It should not get stuck on the edges.

8. Save your work
 - 8.1. Find the File menu just above the output pane.
 - 8.2. Select **Download to your computer**.
 - 8.3. Give the file a name and store it in a location of your choosing.