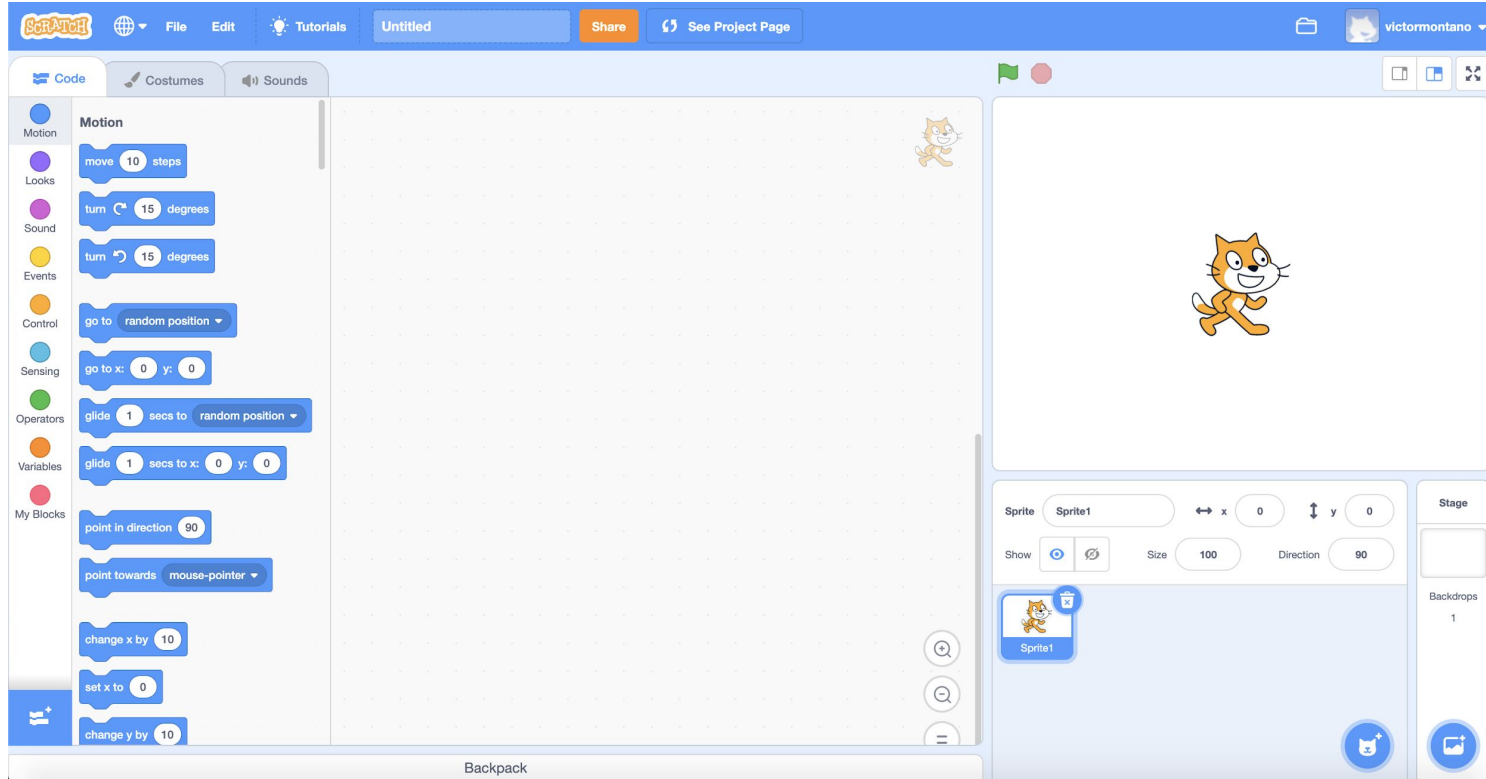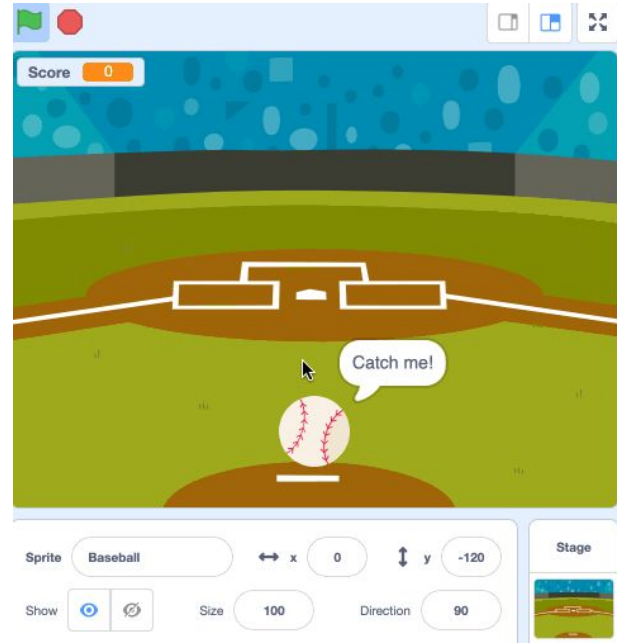# Coding in Scratch!

What is Scratch?

- Website to create block-based programs
- Contains lots of features for creativity
- Fun way to learn to code and make games!

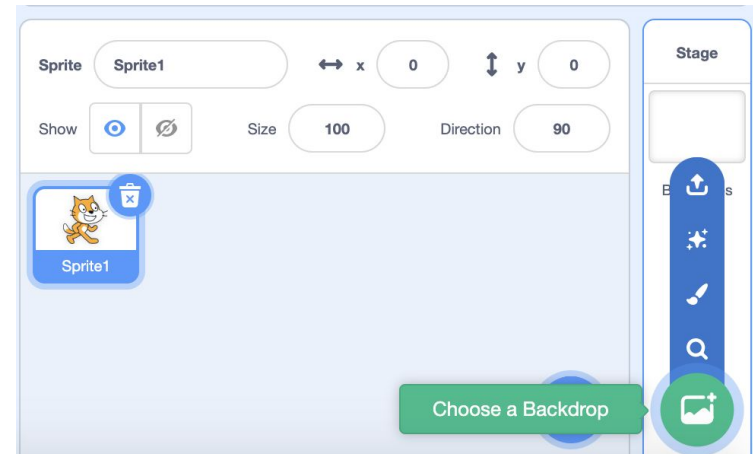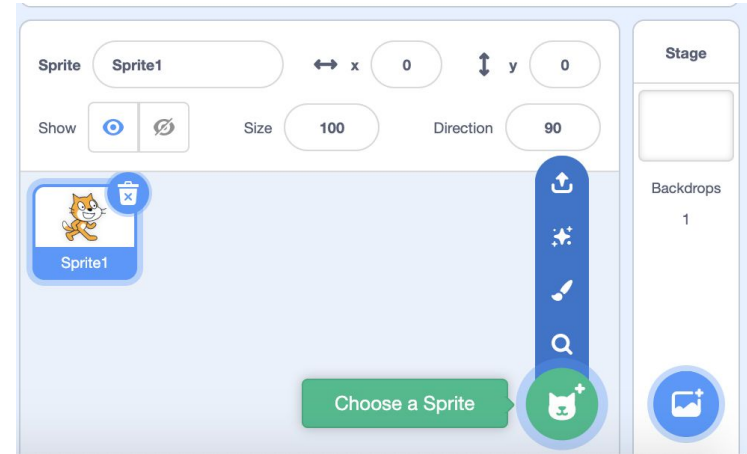Let's start coding on the Scratch website!

Let's Play Catch!

- Create an interactive game with a scoreboard
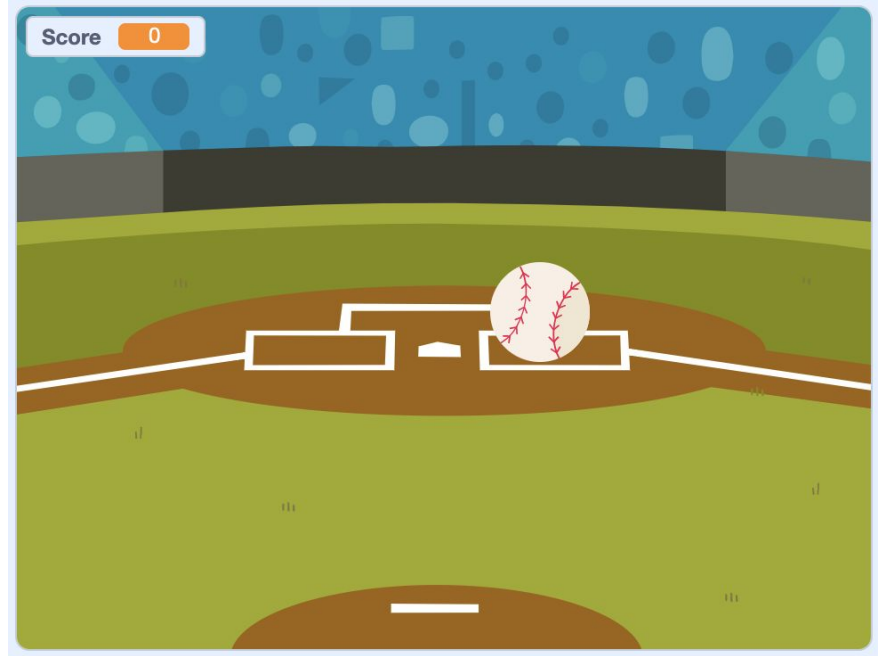- Understand how coordinates, loops, and random numbers work

Set up the stage

- Click on *Choose a Backdrop* and select *Baseball 1*
- Click on *Choose a Sprite* and select *Baseball*
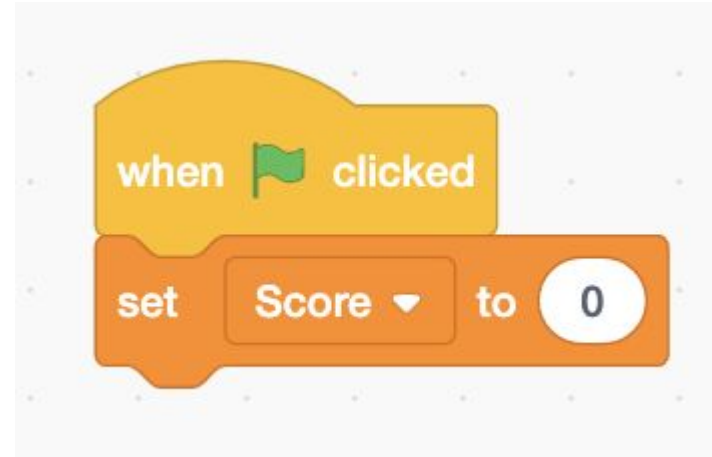- Delete *Sprite1*

Make a Variable

- Click on the *Variables* tab
- Click on *Make a Variable*
- Name it *Score*

Initialize Game

- Click on the *Events* tab and drag out
- Click on the *Variables* tab and drag out
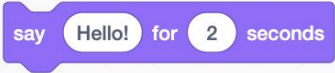 - Change *my variable* to *Score*

What are coordinates?

- Pair of numbers that give us the **position** of our sprite
- **X** coordinate represents the **horizontal** position
- **Y** coordinate represents the vertical position
- Drag the baseball around to see the coordinates change
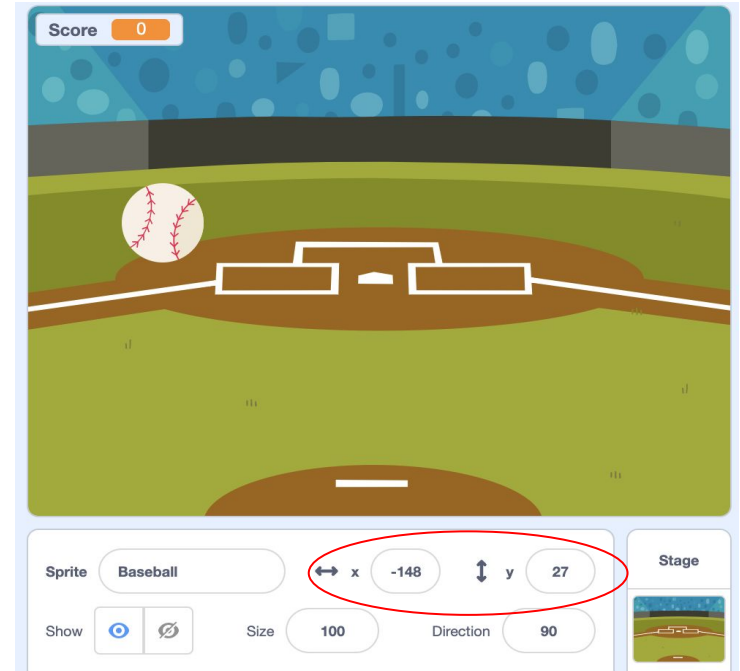
Initialize Baseball

- Click on the *Motion* tab and drag `go to x: -148 y: 27`
  - Set x to 0 and y to -120
- Click on the *Looks* tab and drag out `say Hello! for 2 seconds`
  - Change *Hello!* to *Catch me!*
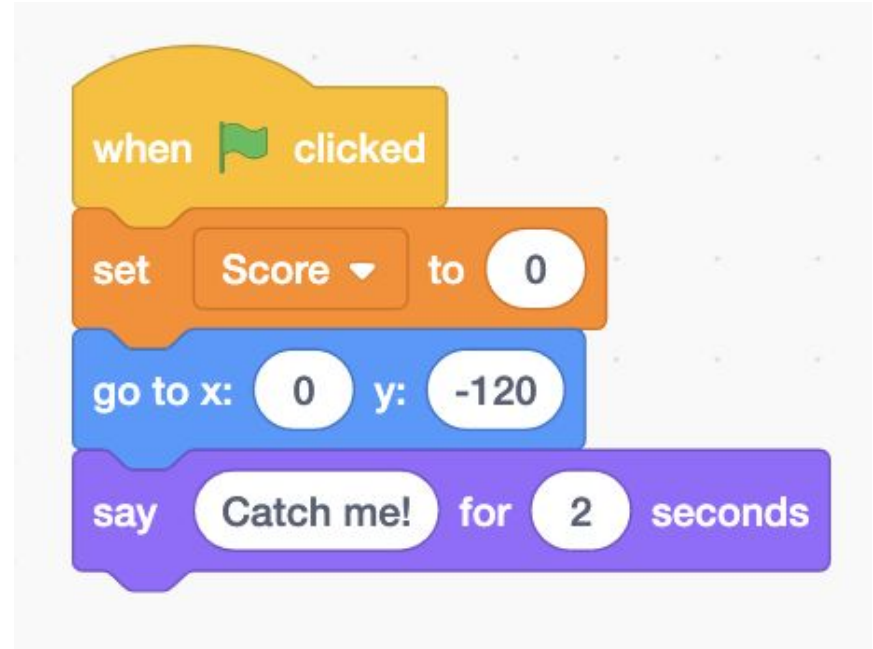
What are loops?

Loops in Scratch

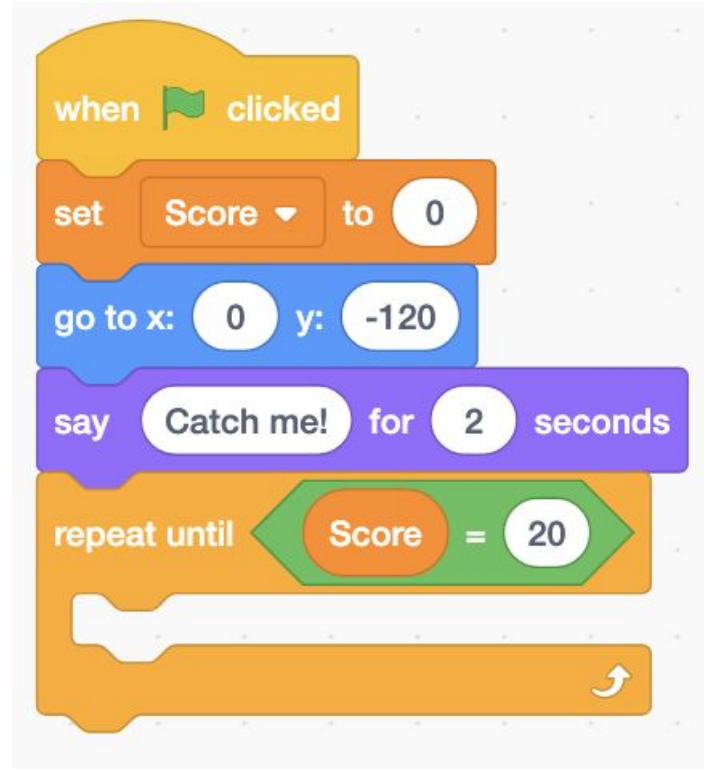Loop for a given number of times

Loop until a goal is met

Loop until program is stopped

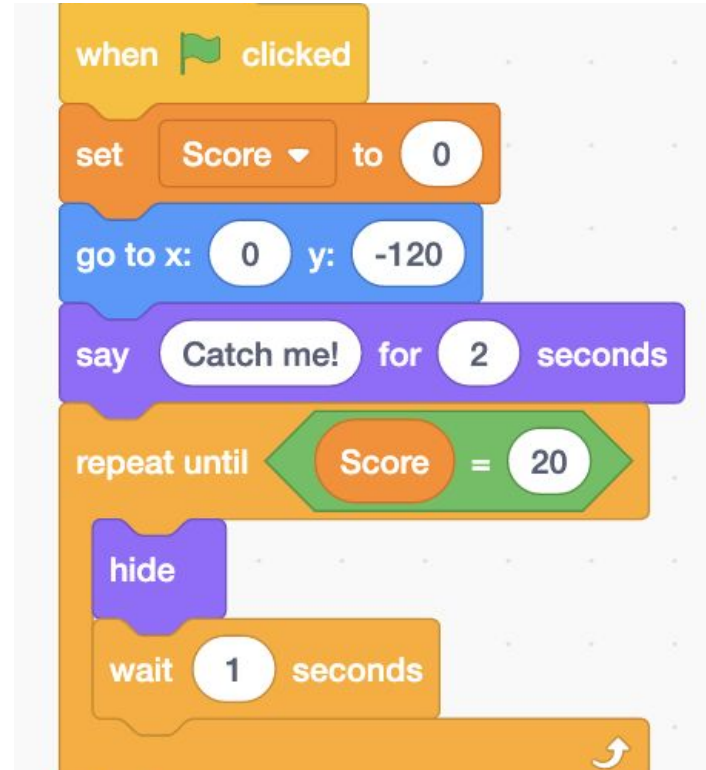# Initialize Loop

- Click on the *Control* tab and drag out [repeat until]
- Click on the *Operators* tab and drag out [= 50]
- Click on the *Variables* tab and drag [Score] into the blank space
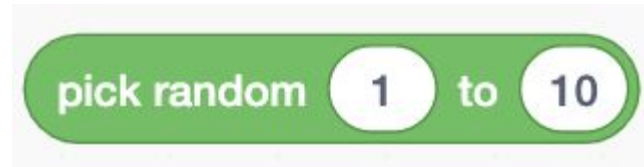- Change *50* to 20

Inside the Loop

- Click on the *Looks* tab and drag out hide
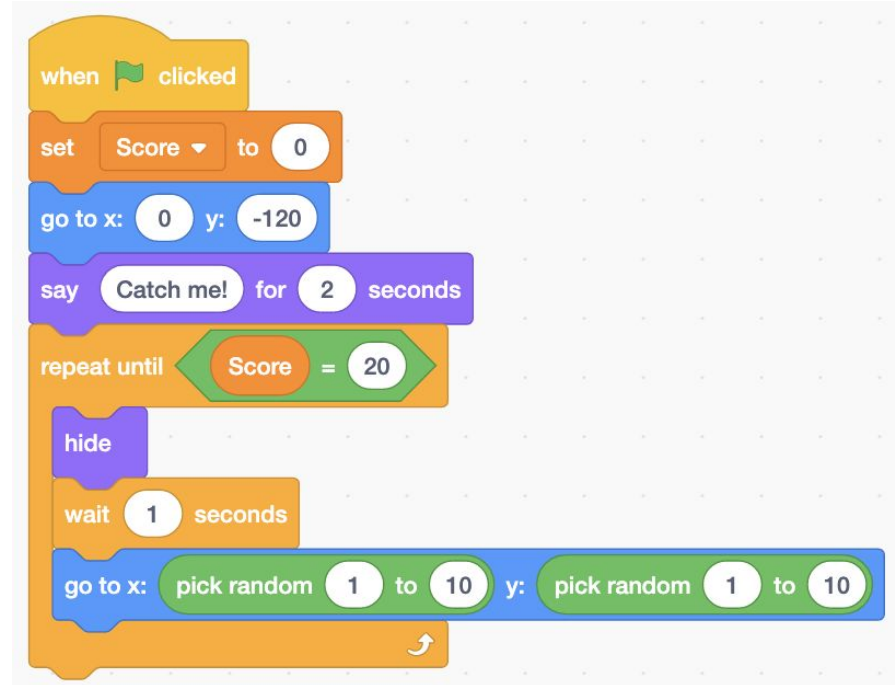- Click on the *Control* tab and drag out wait 1 seconds

What are random numbers?

- Just like rolling dice
- In Scratch, we set the minimum and maximum
- We will use them to change the baseball's position
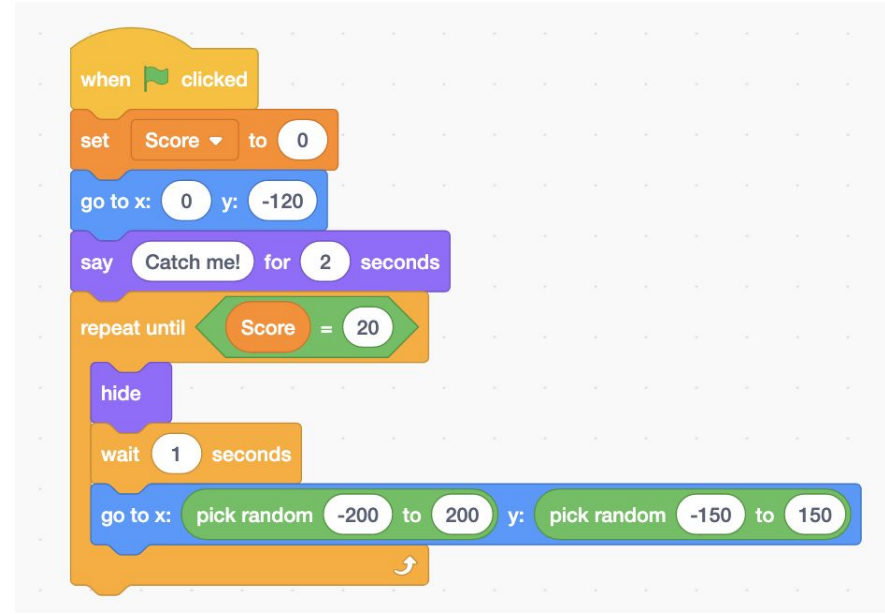
Inside the Loop Pt. 2

- Click on the *Motion* tab and drag out `go to x: -148 y: 27`
- Click on the *Operators* tab and drag out `pick random 1 to 10` two times to fill in x and y
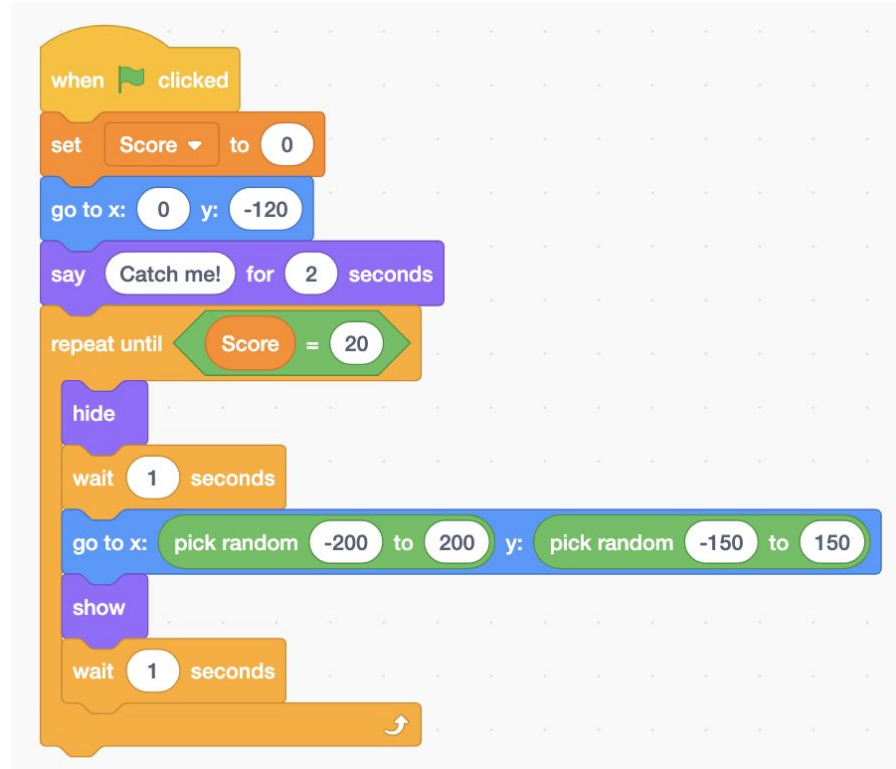
How do we find boundaries?

- Drag the baseball around the stage
- Keep track of minimum and maximum for x and y
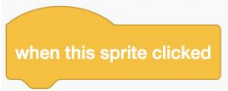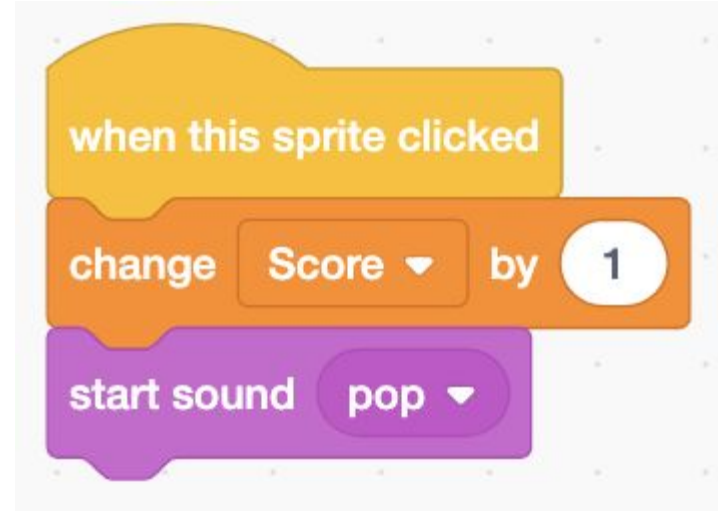- Once found, replace the values for

Inside the Loop Pt. 3

- Click on the *Looks* tab and drag out
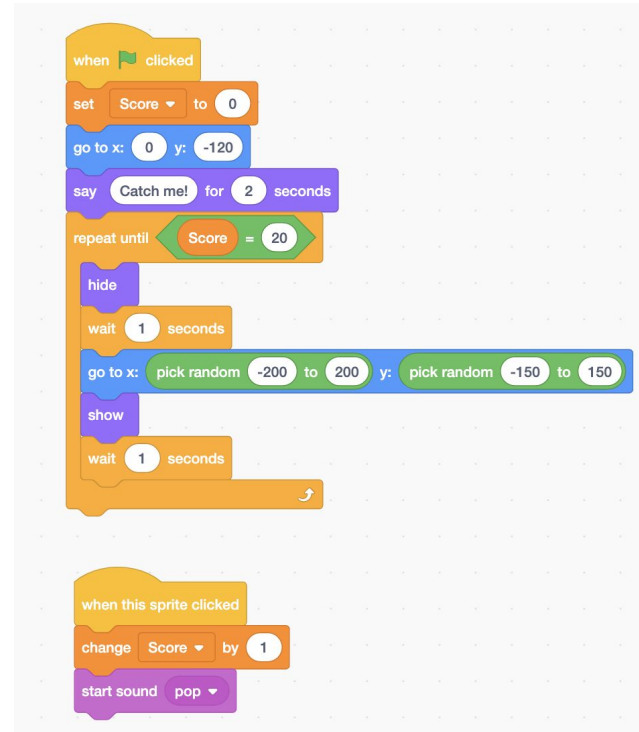- Click on the *Control* tab and drag out

Updating Score

- Click on the *Events* tab and drag out
- Click on the *Variables* tab and drag out
  - Change *my variable* to *Score*
- Click on the Sound tab and drag out

Congratulations!!!

- Created a game using Motion, Looks, Sound, Events, Control, Operators, and Variables
- Learned about coordinates, loops, and random numbers

What's Next?

- Customize sprite, backdrop, or sound
- Change repeat condition or use a different type of repeat
- Add more sprites worth different amounts of points