Rebounder

Code the Basketball

Overview

Fundamentals are important in coding and when you're playing basketball. In this activity, you will make a rebounding game. This first part will be focused on setting up the project and coding the basketball.

Materials

- Computer or Chromebook
- Internet connection
- Web browser

Let's Get Started

If you can, join Scratch by signing up for an account so that you can easily save your work and also share it with us when you're finished. Please make sure you have permission from a caregiver.

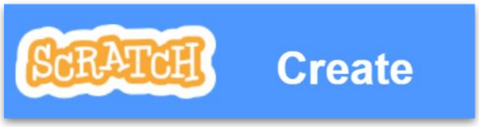
Guide for joining scratch:
https://spursgive.org/scratch-account-setup_scratch-offline-english-1/

Project Setup

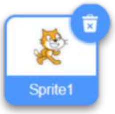
1 Make sure you have a connection to the internet, then open a web browser and type **scratch.mit.edu** into the address bar. Log into your account if you have already created one. *You won't be able to share your project unless you have a Scratch account with a confirmed email address.

scratch.mit.edu

2 Click on Create to start a new project.



3 Delete the default Scratch Cat sprite. You can always add it back later if you think your game needs a cat.



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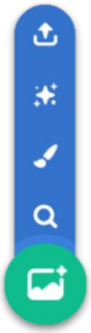
4 Add the **backdrop**.

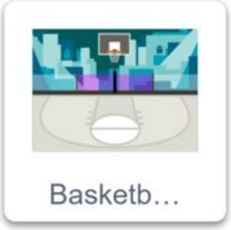
a

Click on the icon of the portrait in the bottom right of the Scratch workspace to choose a backdrop from the Scratch library.



b

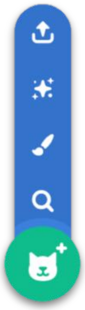
For this project we will use the backdrop labeled **Basketball 1** - it looks like an illustration of half of a basketball court. Click on the thumbnail to select this backdrop.



5 Add the **basketball sprite**.

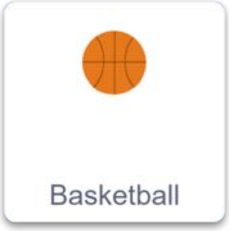
a

Click on the icon of the cat in the bottom right of the sprite pane to choose a sprite from the Scratch library.



b

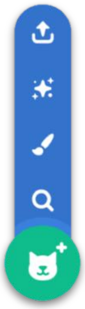
For this project we will use the sprite labeled **Basketball** - this is what we will code today! Click on the thumbnail to select this sprite.



6 Add the **player sprite**.

a

Click on the icon of the cat in the bottom right of the sprite pane to choose a sprite from the Scratch library.



b

For this project we will use the sprite labeled **Max**. You can always change the name of the sprite to whatever you want in the sprites pane. Click on the thumbnail to select this sprite.

c

There are also 3 other sprites that will work well for this game, but you might have to adjust some of the sprite-specific code.

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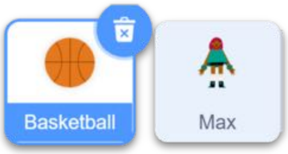
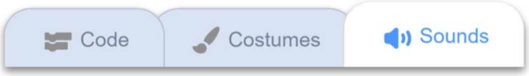
7 Add **sound**.

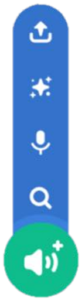
a Make sure you have the basketball sprite selected in the sprites pane.



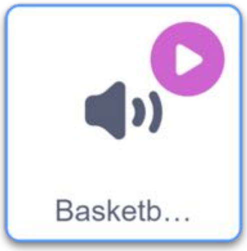
b Select the sounds tab above the blocks palette.



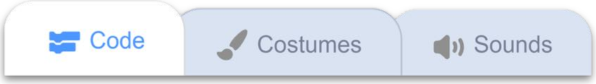
c Click on the icon of the speaker in the bottom left to choose a sound from the Scratch library.



d This sound will be for the basketball bouncing off of the rim. Choose the sound labeled **basketball bounce**.

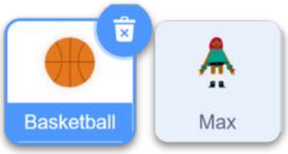


e Return to the **code** tab.

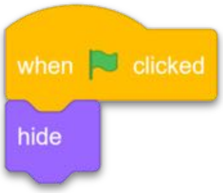


Add some code to the basketball

1 Make sure you have the basketball sprite selected in the sprites pane.

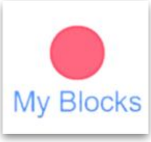


2 Add a **when green flag clicked** event block and attach a hide block from the looks palette. If you click the green flag, the sprite will disappear from the stage - don't worry, it's still there!

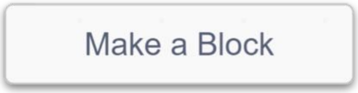


3 Add a block to define what the basketball will do - we want it to "brick" off of the rim and then bounce in a random direction so that we can rebound.

a Click on the **My Blocks** palette.

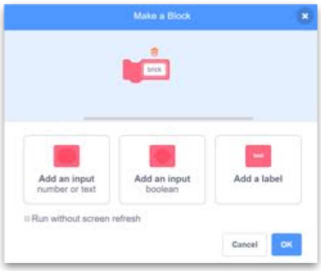


b Click on the **Make a Block** button.

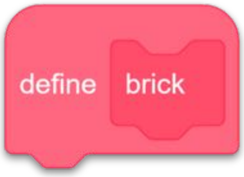


3 continued:

c **Name** your block. Something descriptive like ‘brick’ or ‘miss shot’ works best.



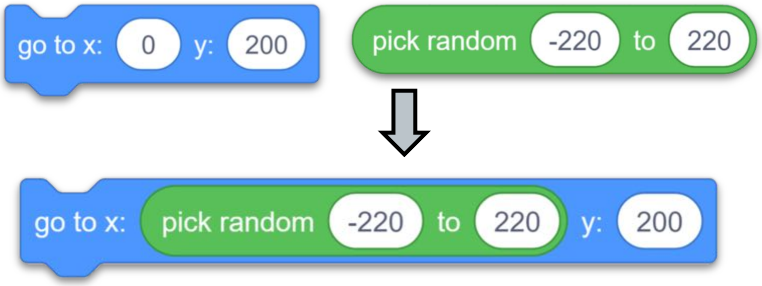
d You should now have a **define brick** block on your workspace. Next, we’ll attach a procedure of actions for the basketball that will happen (in order!) when you use the brick block in your game.



```
define brick
```

4 Make the procedure for the ball.

a Make some random starting positions for the ball by butting a block inside of another block. Start with a **go to (x) (y)** block. Then get a **pick random** block from the math palette and place it inside of the (x) value in the go to block.



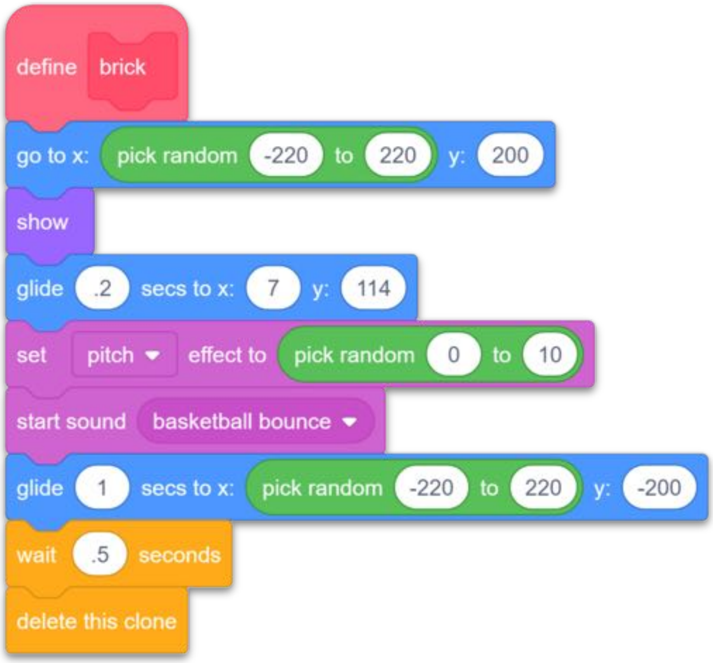
```
go to x: (0) y: (200)        pick random (-220) to (220)

go to x: (pick random (-220) to (220)) y: (200)
```

b Attach the block created in the previous step to the **define brick** block. In the same way, attach the rest of the code for what the basketball does when it “bricks.”

There are 9 more blocks here. If you can’t find the block you need, look at the color. The color of the blocks match the color of the palette where they are stored.

Don’t forget to add the negatives or the decimals in the value where they are needed.



```
define brick
go to x: (pick random (-220) to (220)) y: (200)
show
glide (.2) secs to x: (7) y: (114)
set [pitch ▾] effect to (pick random (0) to (10))
start sound [basketball bounce ▾]
glide (1) secs to x: (pick random (-220) to (220)) y: (-200)
wait (.5) seconds
delete this clone
```

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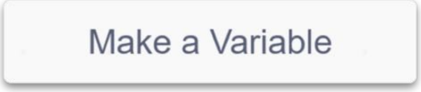
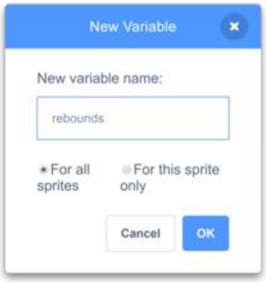
5 Make a variable to store the number of rebounds collected.

a In the palette labeled **Variables**, click on the **Make a Variable** button.



Make a Variable

b You should name variables something that describes the values that they will store. “**rebounds**” is a good name since you will be storing the number of rebounds you have collected in the game. Press ok to make the variable.



New Variable ×

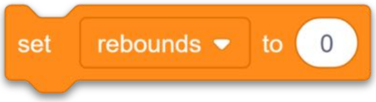
New variable name:

rebounds

● For all sprites ○ For this sprite only

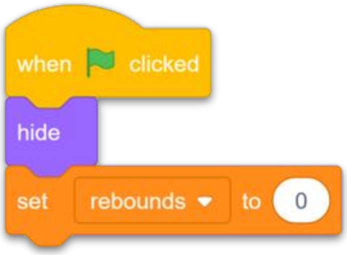
Cancel OK

c Find a **set variable** block in the Variables palette. The variable you created should be available through the dropdown menu.



```
set rebounds ▾ to 0
```

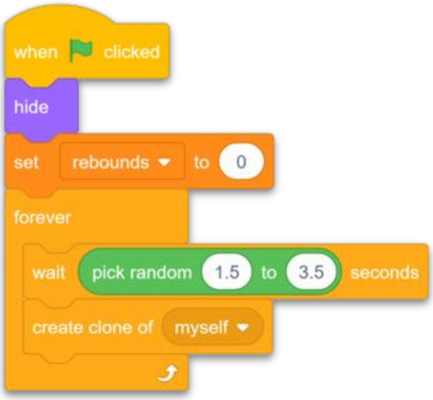
d Attach the **set rebounds to ( )** block underneath the hide block in the Green Flag event block that you created earlier.



```
when 🏁 clicked
hide
set rebounds ▾ to 0
```

6 Add a loop to continuously clone the ball at random intervals.

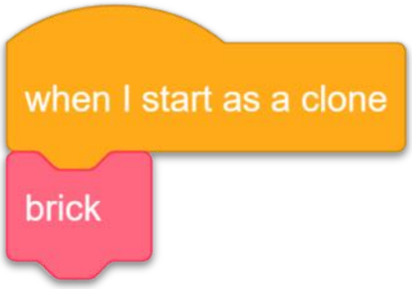
Underneath the set variable block, attach a **forever** loop. Inside the forever loop, attach a **wait ( ) seconds** block and a **create clone of (myself)** block. Put a **pick random ( ) to ( )** block inside of the wait block. You can play around with these numbers to decide how quickly the next ball will spawn.



```
when 🏁 clicked
hide
set rebounds ▾ to 0
forever
    wait pick random 1.5 to 3.5 seconds
    create clone of myself ▾
↩
```

7

Call the brick procedure when the ball is cloned. Add a **when I start as a clone** block from the control palette and attach the **brick** block from the My Blocks palette.



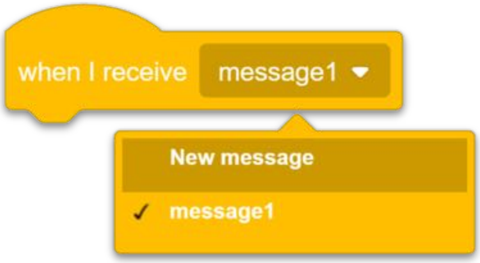
```
when I start as a clone
brick
```

8

Almost done! You should be able to spawn basketballs at this point, but we're going to add one more bit of code to help us communicate with the player sprite.

a

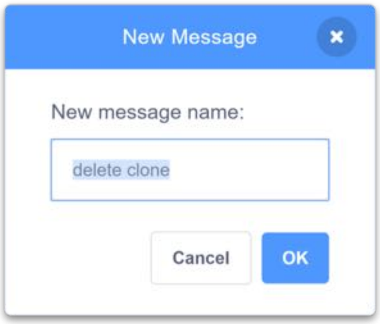
Add a **when I receive (message)** block to the coding area from the events drawer. Click the dropdown arrow and click on **New Message**.



```
when I receive [message1 ▾]
```

b

Type a name for the message. The message will be sent from the player sprite to tell the clone of the ball to delete when the player rebounds.



New Message ×

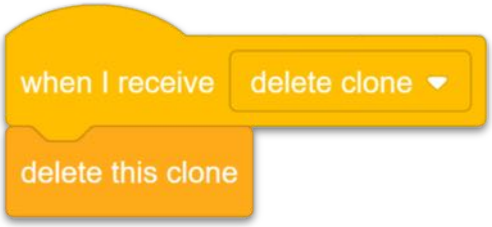
New message name:

delete clone

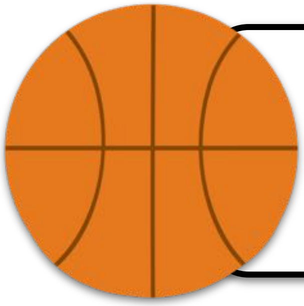
Cancel OK

c

Attach a **delete this clone** block to the when I receive (message) block and you're done with coding the basketball!



```
when I receive [delete clone ▾]
delete this clone
```



Post a screen capture of your project,
or a picture of you
coding and use
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Scratch is a project of the Scratch Foundation, in collaboration with the Lifelong Kindergarten Group at the MIT Media Lab. It is available for free at https://scratch.mit.edu

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