

If you are new to Scratch 3.0, pick up a copy of the Scratch Basics Sheet to help with the screen layout

Start Your Project

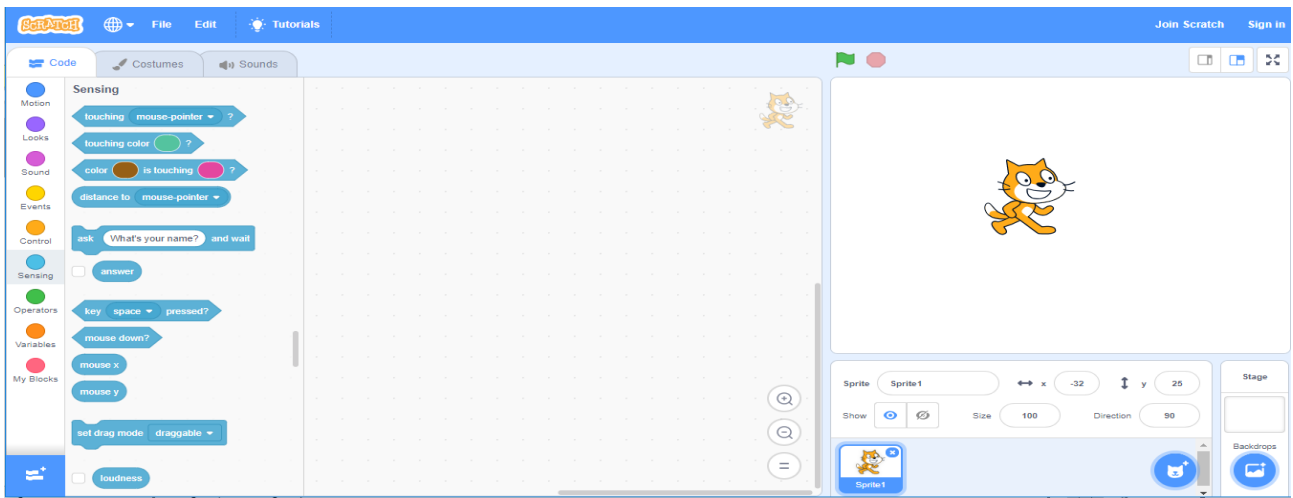
1 Open up Scratch

For today’s Project, we are going to create a new Sprite, and then create a game around it.

Before we do anything, let’s check everything is in the right place.

Click on the Code tab in the top left of the screen.

Make sure the mini cat Sprite has a blue highlight around it. This shows which sprite you are coding – really useful when you have more than one sprite. It should look something like this.

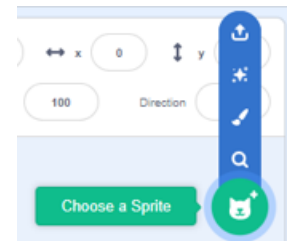


2 First click on the x by the cat sprite to delete the cat.

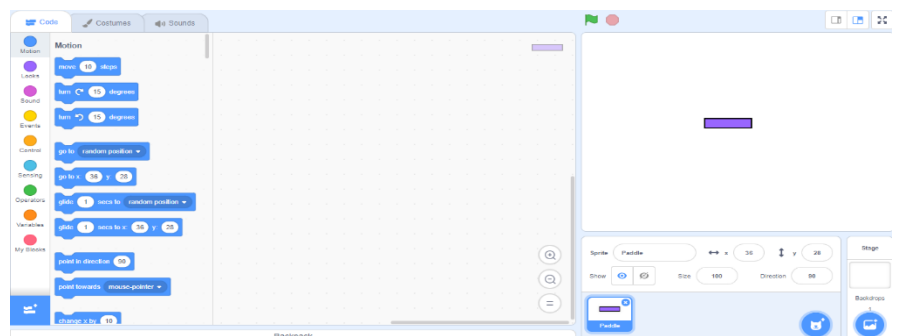
Go to the bottom right of the screen to the Sprites and select the paintbrush.

You will notice the tabs at the top left have changed and you now have a Costumes tab.

For today’s Project, we are going to start by creating a simple paddle.



- You will notice a big graph page appears on the coding stage.
- Select the square and use it to create a rectangle. Now select the paint pot, pick a colour and colour it in.
- Under the stage you will now see your sprite and some info above it. Click on “Sprite” and rename it “Paddle”.
- Your page should look something like this.
- Click on the Code tab and you’re all set to code.



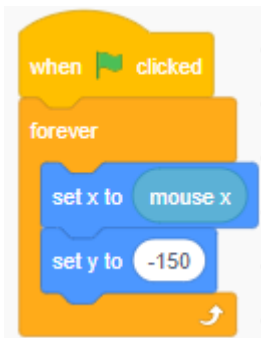
3 Now let's make the paddle move.

- Click on the Code Tab at the top of the page.
- Go to the “Events” section and find the “When (picture of a green flag) clicked” and drag it to the blank script page on the right.
- Next go to the “Control” section and find the block which says “forever” with an arrow.

This is an example of a loop. Everything we put inside a loop will happen again and again until the conditions are met – in this example forever – whilst the game is in play.

- Now go to “Motion” section and add a “set x to” block. Drop it in the gap inside the forever loop.
- From the same section add a “set Y to” block.

Notice the yellow forever loop opens wider to fit in the new block.



- Next go to “Sensing” and drag the “mouse X” block and drop in into the number section in the “Set x to” block.

This will make sure you can control your paddle with your mouse.

- Finally change “set y to 0” to “set y to -150” by clicking on the 0 and typing in the new number.

This keeps the paddle at the bottom of the page.

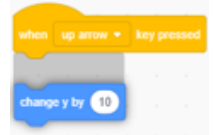
Your code should look something like this.

Save your project so you don't lose all your hard work, by clicking on “File” at the top of the page and select “Save to your computer” from the drop-down menu. The first time you will need to give it a name.

Now test your work

- ✓ Click on the green flag.
- ✓ Make sure your paddle is at the bottom of the page and moves left and right when you move your mouse.
- ✓ What happens if you change the values for y?
- ✓ Don't forget to put the values back to the code above, so I know where you are up to.

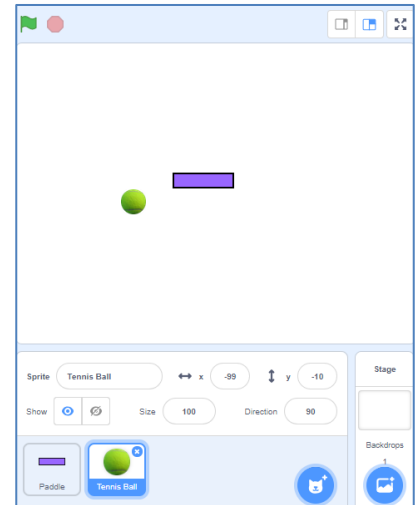
Did you know? ...When you hold a new block just under an existing command, you will see a shadow. When you see this, you can drop the new command, they stick – Just like Lego!!



We Have A Paddle – We Need A Ball

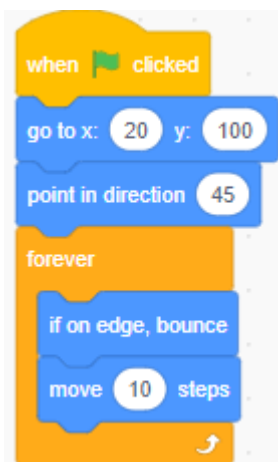
4 Now let's create a ball for the paddle to hit.

- We do this by creating a new Sprite.
- Use the same skills you have learned but this time create a ball not a paddle.
 - Call it "Ball".
- Or you can use one of the pre-made sprites in the library.
 - To do this click on the Cat face, which takes you to the "Sprite library".
 - Click on the Sprite you want to use - I've picked the "Tennis Ball". You can pick the same or choose something different – it's your game.
 - Click to select it, which also takes you back to the coding screen and now you have 2 sprites.



5 Let's make the ball do something with code.

- As before you need to make sure your ball has an outline and click on the Scripts tab and we will start by adding a "When (picture of a green flag) clicked" and drag it to the blank script page on the right.
- Go to the "Motion" section and add a "go to x: y:" block. Change x value to 20 and y value to 100.
 - This sets the starting point of the ball on the screen.
- From the same "Motion" section add in the "point in direction" and change the value to 45 - See the "Did you know" box on the right for a tip. This sets the angle of the ball when it bounces.
- From the "Control" section, add a "Forever" loop as before. This time add the following blocks from the



"Motion" section.

"If on edge, bounce" and "move steps".
change the value to 10.

Your code should look something like this.

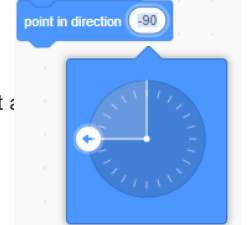
Ok time to Save.

Now test to see what happens

- ✓ Click the green flag. Click on the red hexagon to stop.
- ✓ Why not have a play with your code to see what happens.
- ✓ Change 10 steps to 20 steps – what happens when you go?
- ✓ Change 45 to 90 – what happens when you go?
- ✓ Change x to 80 and y to 20 – what happens when you go?
- ✓ Don't forget to put the values back to the code above, so I know where you are up to.

Did you know? ...

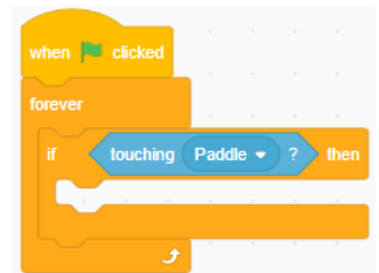
When you click on the number of the point in direction block, you also get a dial. You can drag the arrow symbol to the direction you want



6 Now let’s make the paddle and the ball work together.

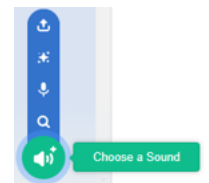
- Once again you need to make sure your ball has an outline and click on the Scripts tab.
- You should see your existing script.
- In a new area of the coding page, add another “When (picture of a green flag) clicked” block.
- Add a “Forever” loop.
- This time from the “Control” section add an “if then” loop
- and add a “touching” block from the “Sensing” section.
- Click on the down arrow and select “Paddle” from the options.

Your code should look something like this.



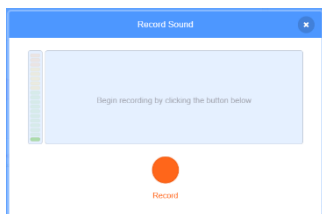
7 Let’s make a noise by adding a sound.

- Click on the Sound’s tab at the top. This opens the Sounds page.
- There is already one selected called “Pop”, you can use this, or you can pick a different one.
- Check out the library for lots for pre-made options by clicking on the speaker button.
 - I’ve chosen one called “Collect”, and then deleted the Pop option.



Or you can make you own by clicking on the  record button.

This makes the following screen appear - you may also get a pop up asking to use your PC’s

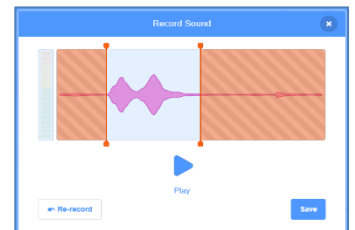


Microphone. Just click “allow”.

Click on the Orange button and speak into the microphone. Click stop when you have finished - It may help if you use a quiet area.

When you have recorded your sound you can edit it, by sliding the orange line at the start and

end of your sound profile to make it shorter or longer. You can also re-record if you’re not happy.



Once you are happy click save. Don’t forget to give it a name in the box at the top

8 Once you have chosen your sound, go back to the Code tab, and make sure your ball sprite has an outline and your code is showing.

To make your sound work with your ball, you need to go to the “Sound” section and pick the “play sound “ block. Click on the down arrow and select the sound you have just created. If you have deleted the other, it may already be showing. Add this to you code in under the “if touching Paddle then” loop.

Your code should look like this.



Time to save

And now test

- ✓ Does the game work as expected?
- ✓ Can you change to a different sound?
- ✓ What happens if you pick a long sound?
- ✓ What happened if you change the numbers in your code?
- ✓ As always, don’t forget to put the values back to the code above, so I know where you are up to.

Let's Make the Game More Fun

9 Let's make it interesting by sending the ball at different angles once it hits the paddle.

- In "Motion", find the "turn \curvearrowright degrees" block and add it under the "play sound" block in your code.
- Now in "Operators" find the "pick random to" block and put it into the white section.
- Finally, from "Motion" add the "move steps" block and change the number to 15.


Your code should now look something like this.



- ✓ A quick save and test before we move on – we can play with the numbers later.

10 What happens when the ball misses the paddle? The game keeps going! Let's make it a little harder so you MUST hit the ball otherwise – GAME OVER!!!

We do this by stopping the game if the ball is below the paddle, here's how:

- Continuing to work on the ball's Script page (the ball is highlighted in blue and has a white cross on it).
- Find a space on the page and start a new piece of code in the same way as before with a "When (picture of a green flag) clicked" block and add a "Forever" loop and add an "if then" loop like before.
- Now a tricky bit...
 - In the "Operators" section grab the  block.
 - Insert this into the "if then" loop.
 - Now go to the "Motion" section and grab the "y position" block.
 - Insert this into the first white box in the green block.
 - In the second white block type -160.
 - Now back to the "Control" section and grab the "stop all" block.

Your code should look like this.



Save your work.

Now time to test and play.

- ✓ Does the game work as expected?
- ✓ What happens if you change the numbers in your code?
- ✓ As always, don't forget to put the values back to the code above, so I know where you are up to.

11 I thought this game was called “Another Brick Out of the Wall” but where’s the Brick?

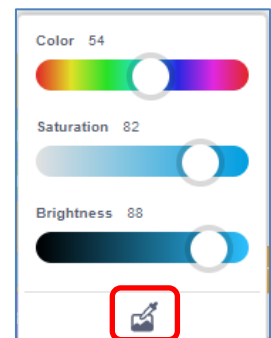
OK, let’s build a Brick.

- Create a new sprite in the same way as you created the paddle – if you need any help - follow the instructions in step 1.
- This time call your new sprite “Brick”.
 - Or you can pick one from the library – I’ve chosen one called “*Button3*” – but it wasn’t quite what I wanted, so I have deleted the costume I didn’t want and used the options to re-size and reshape it. I then renamed it “Brick” - Give it a try.
- On the Code page for the Brick, create the following piece of code.

You have done most of this before, so it should all be quite straight forward – remember the colours are your friends - apart from one little bit where you may need a little help.



When you click on the colour, you will get a pop-up. At the bottom, you will see a *dropper* icon. Click on this and then move to your Brick. The pointer will change to a magnifying glass and you will be able to click on the colour of your block. If you get white, or another colour, you have probably missed, so give it another try



Save your work.

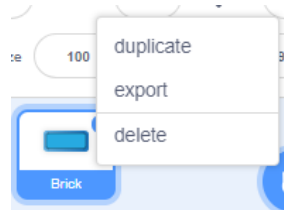
Now time to test and play.

- ✓ Does the game work as expected?
- ✓ What happens if you change the numbers in your code?
- ✓ What else can you chose instead of ghost? What happens?
- ✓ What happens if you change the colour?
- ✓ *As always, don't forget to put the values back to the code above, so I know where you are up to.*

One Brick is OK, Let's Have Lots More

12 One Brick is OK, how about a few more to add a bit of variety to the game.

Make sure your Brick has a blue square around it and Right click. You will see a small menu.

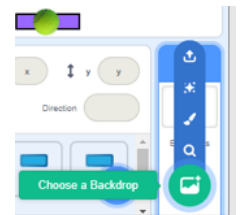


- Click on duplicate a few times until you have 4 in total. If you want to be more creative, you can create a new sprite from the library – maybe one of the other costumes, maybe a shark or a jelly fish.
 - Duplicating also copies the code, so if you do decide to use a new sprite, you will also need to add the same code from the first Brick to the others. Also make sure the colour bit we did in section 11 also matches the new Sprite.
 - your game, your rules

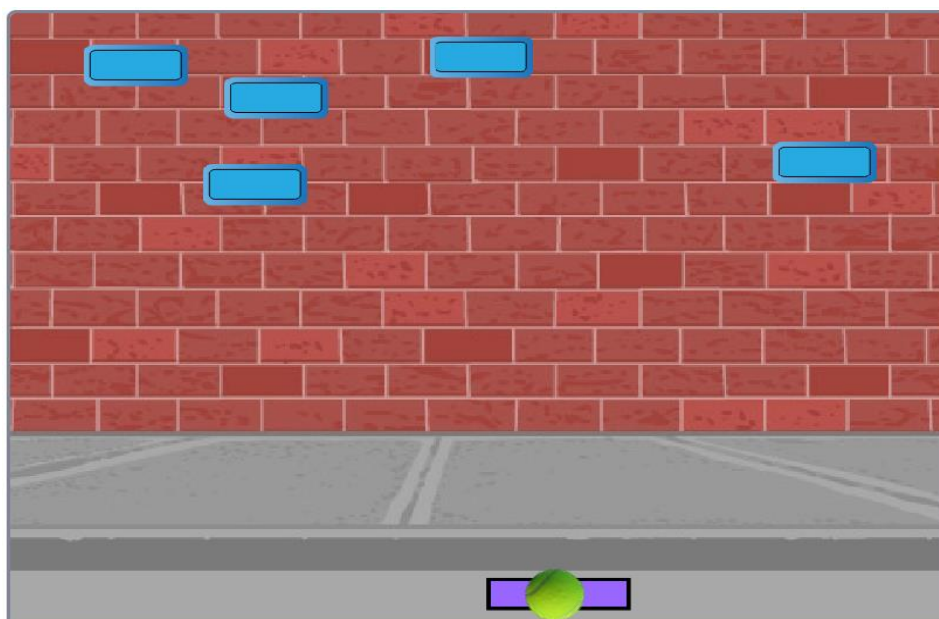
Time to save and test, before we do one final thing.

13 Let's put these Bricks in a more interesting setting.

On the far right, you'll find the backdrops. Click on the first one and this will take you to the library. Pick one of the backdrops by simply clicking on it. I chose "Wall 1" – This looks far better.



Here's my finished game



Final save before playtime 😊😊

14 The game is finished! CONGRATULATIONS 😊

Or should I say, that's my game finished, but this is YOUR game not mine. Time to put your own stamp on it and really show off what you've learned.

Customise it now and add your own features to the game.

Here are some ideas:

- ✓ More things to target – they don't have to be bricks.
- ✓ A variety of targets – they don't have to be all the same.
- ✓ Good targets that increase your score, and bad targets that reduce your score.
- ✓ Sound effects.
- ✓ More than one backdrop – it could change as you get to level 2, and level 3, and....
- ✓ Allow your paddle move up and down, as well as left and right.
- ✓ Vary how far you throw the ball.
- ✓ Can you make the ball hit different bricks and rack up your score as you go? This was an arcade games years ago called "Breakout".

Now List down some of your own ideas and try to make them happen.

- ✓
- ✓
- ✓
- ✓
- ✓
- ✓
- ✓

You can ask your friends or any of the leaders if you need any help.