

Learn to Code – Plastic in the Ocean Worksheet

Learning outcomes

Learn about why plastic in the ocean is a problem, and what can be done to stop it. Code a game that simulates a machine collecting plastic from the ocean and learn about job roles that you could do with these skills.

Activity

Introduction

Plastic in the Ocean – why do you think plastic in the ocean is a problem?

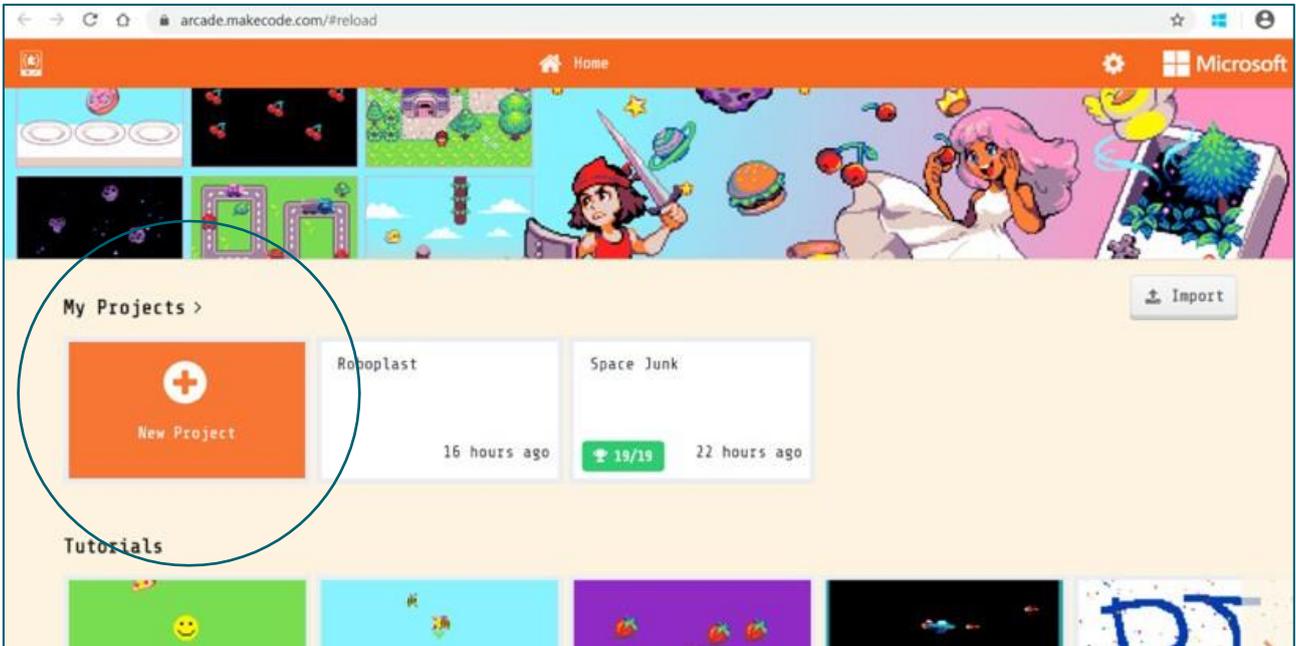
Eight Million (8,000,000) tonnes of plastic are dumped in our oceans each year. This causes harm to the environment and the ocean life.

[Watch this video](#) (1) about a plastic seahorse's journey when it ends up in the ocean.

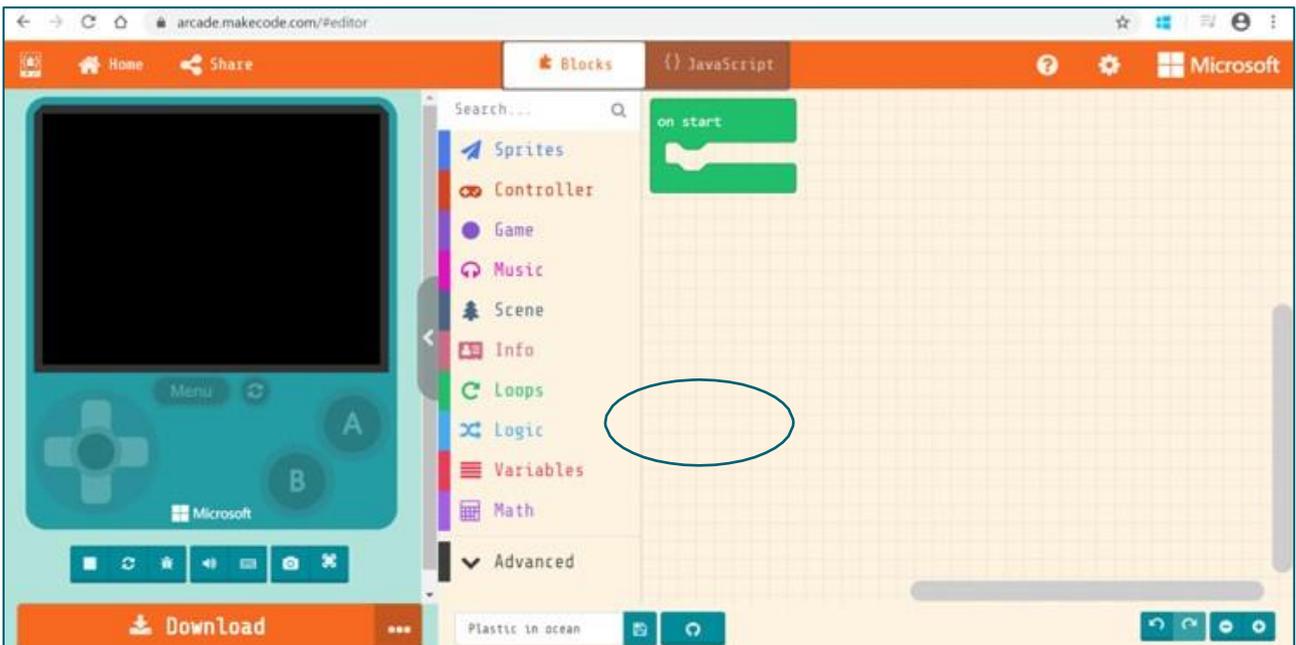
Activity on next page...

Let's see if we can collect all the plastic in the ocean with our game!

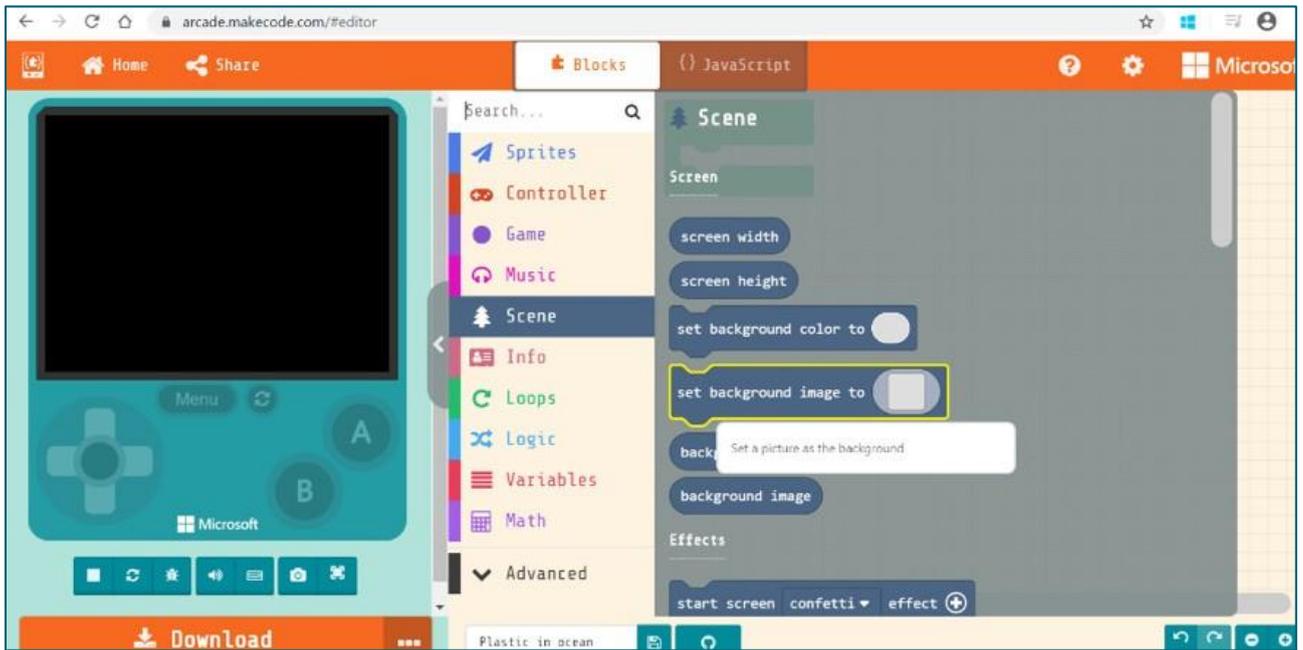
1. Go to: [MakeCode](#) (2)
2. Select New Project:



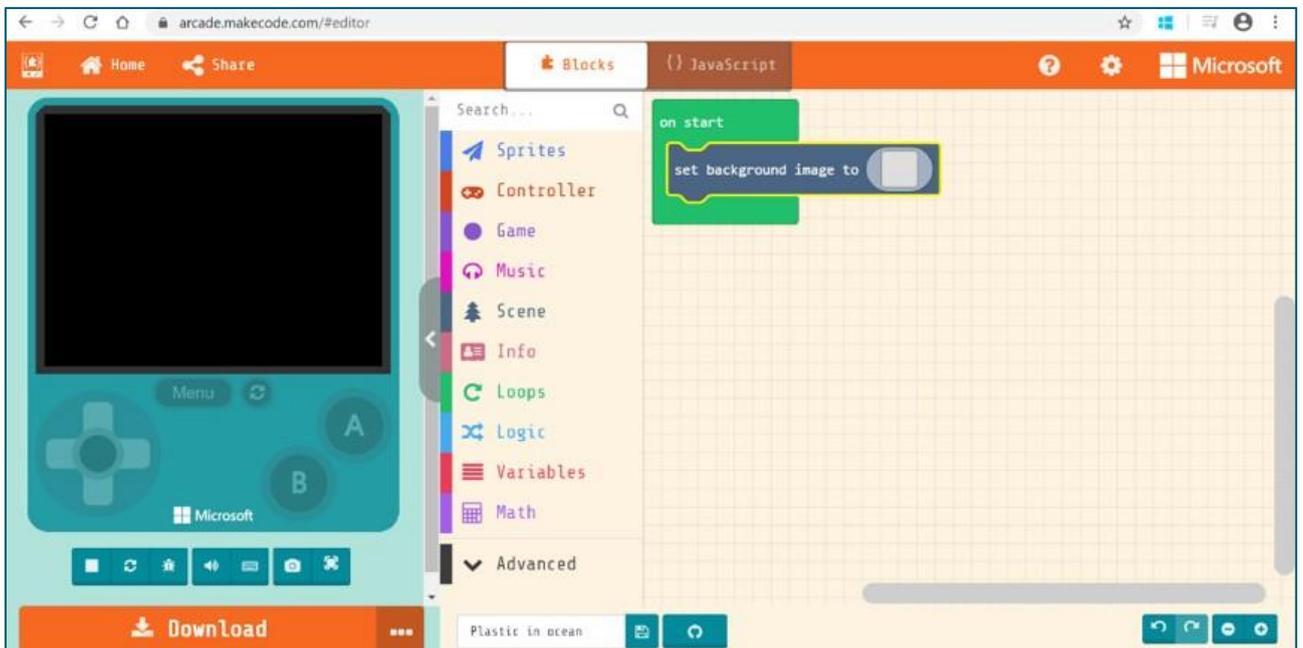
3. You will be prompted to give your project a name. Type in a name and click Create.
4. You will be taken to this screen. You are ready to code! Select the Scene menu on the left-hand side:



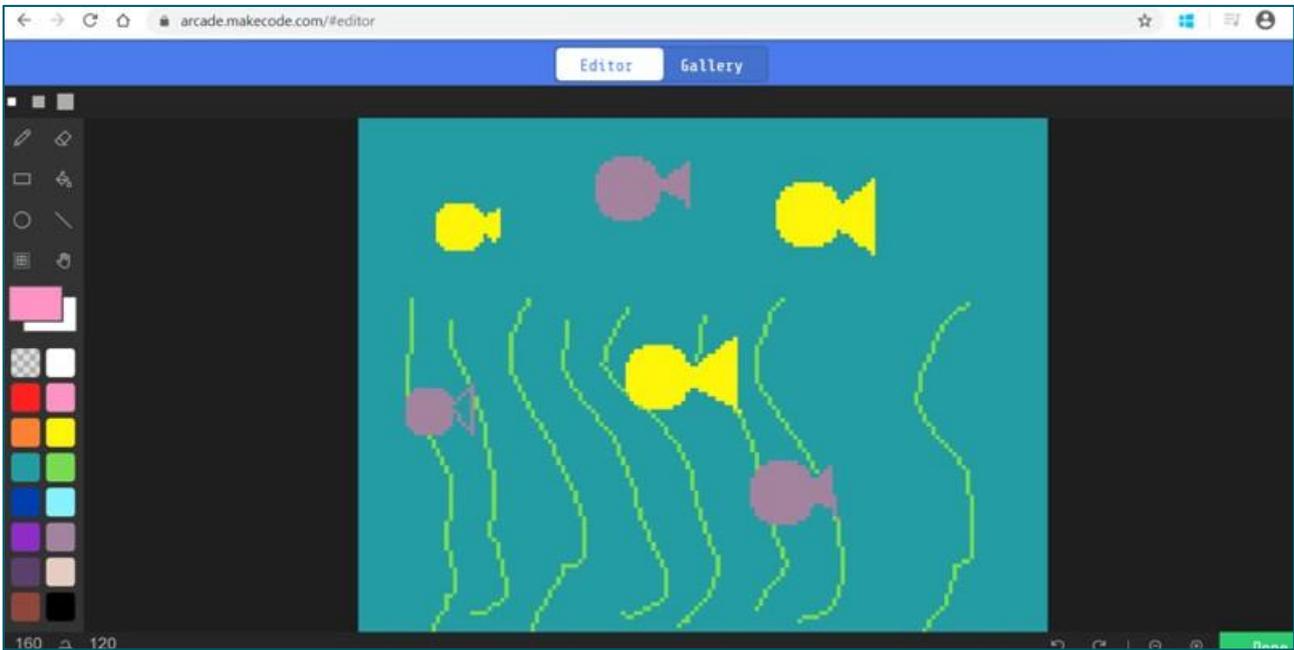
5. Choose the “Set background image to” block.



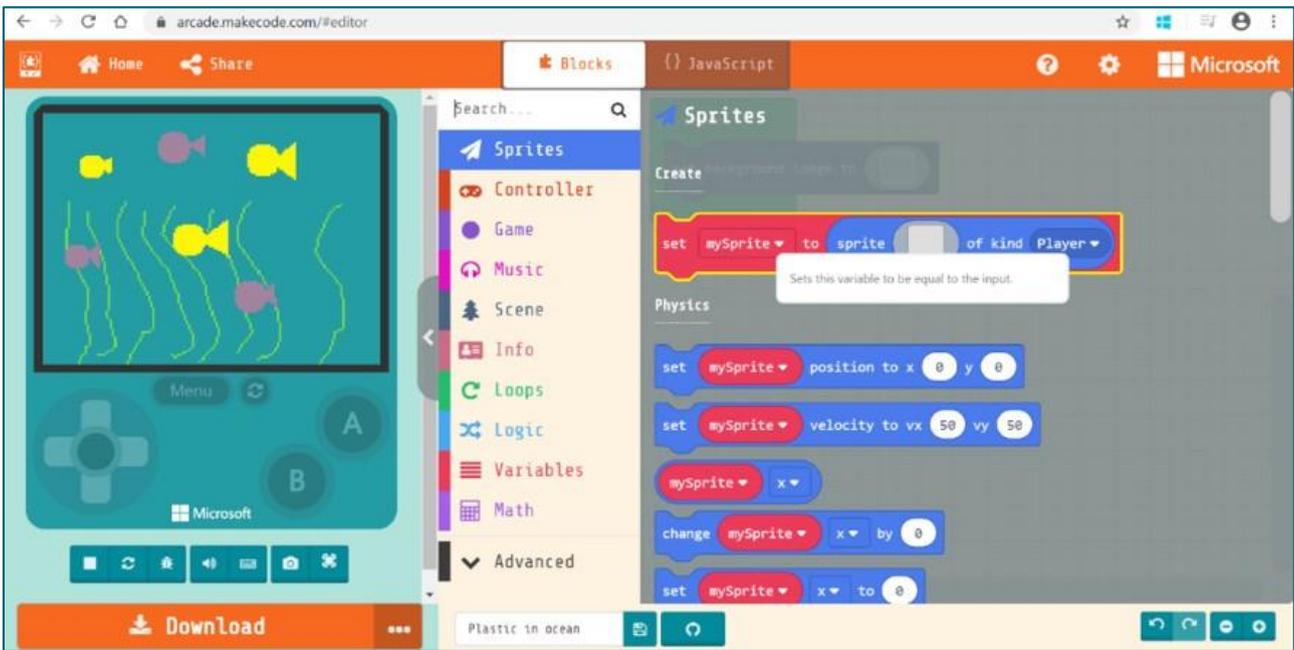
6. Place this inside the “on Start” block:



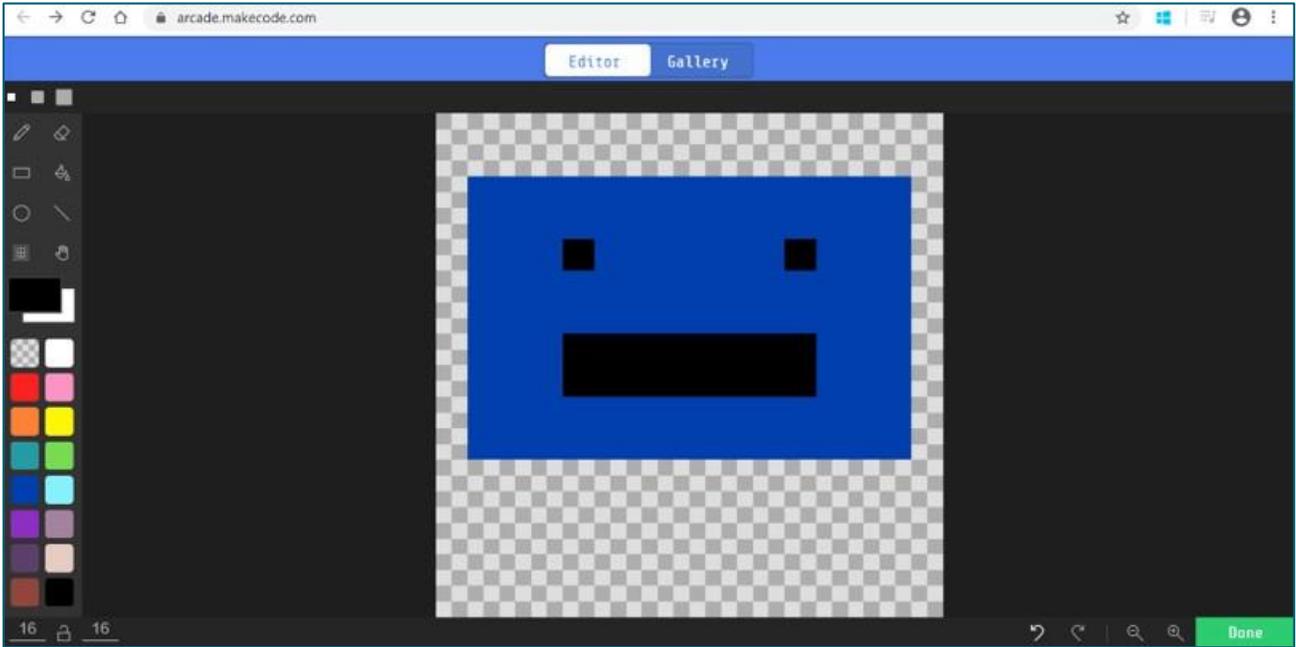
- Click on the grey square inside the block. Use the tools to create your ocean background. This does not need to be fancy. When you have completed this. Click done to return to your coding screen.



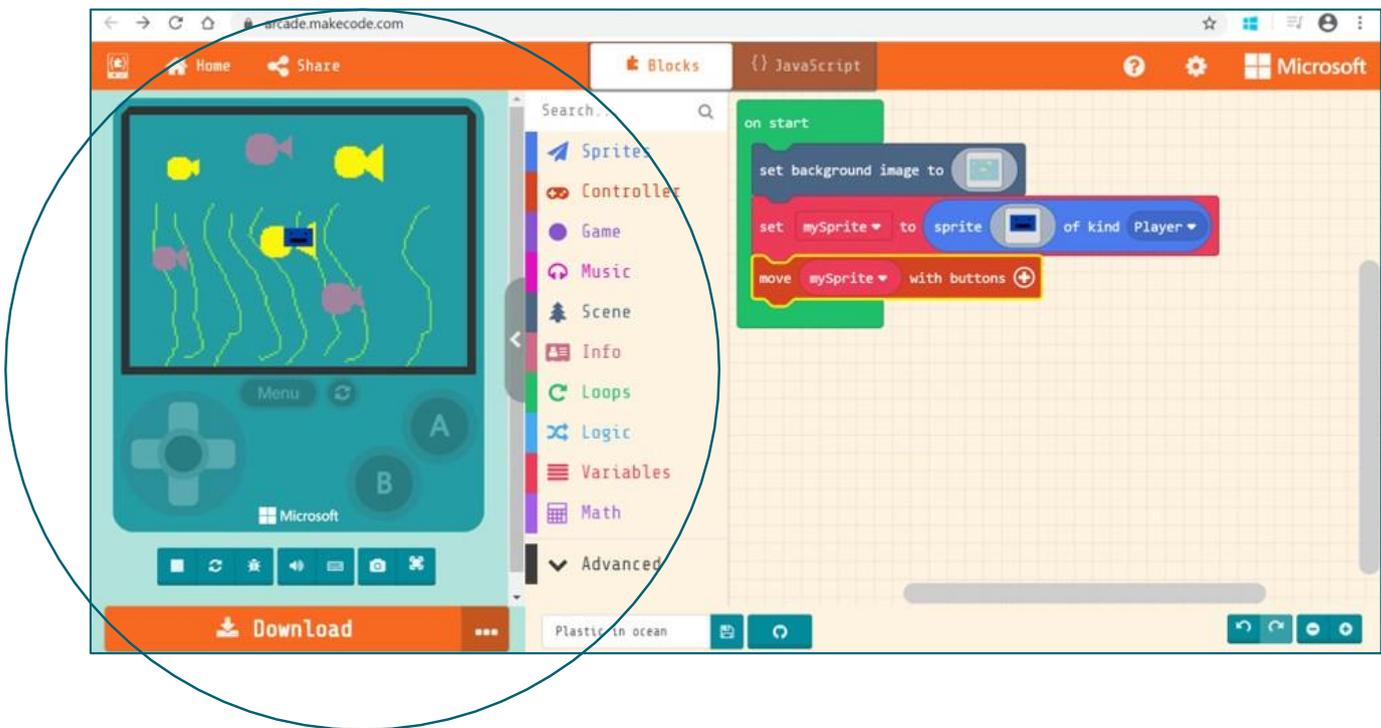
- Go to the Sprites menu. Select the “set mySprite to” block.



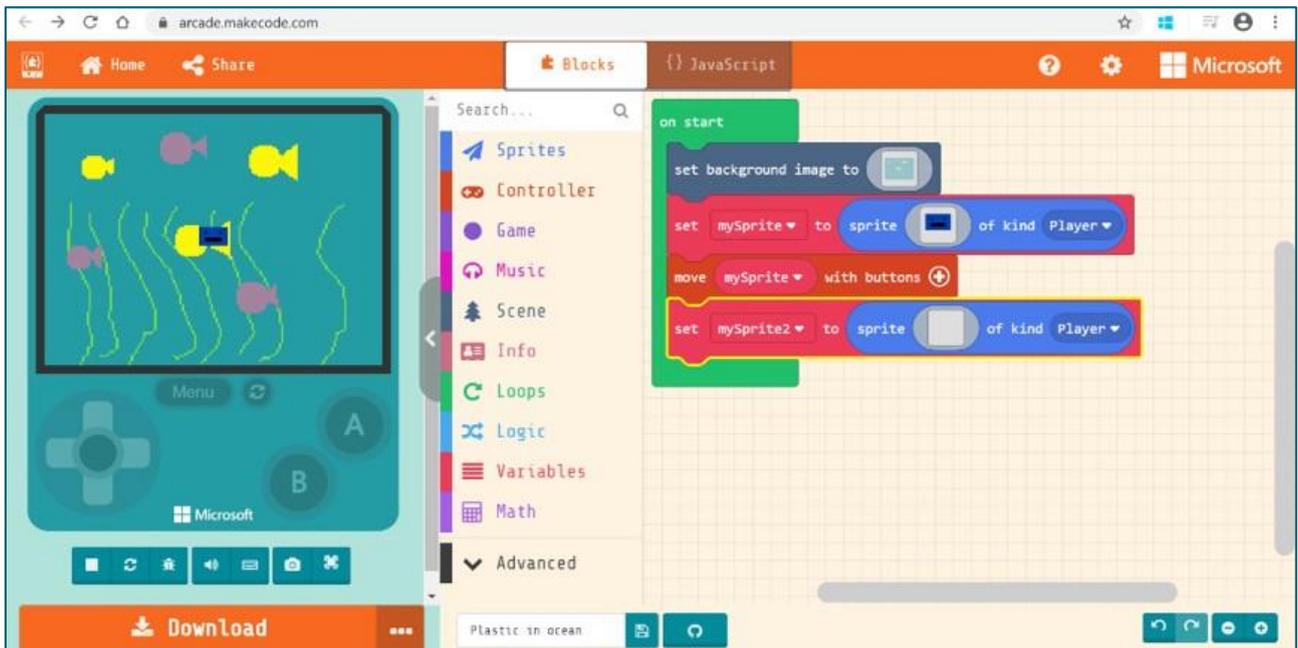
9. Insert this into the “On Start” block.
10. Click on the grey box inside the block to create your plastic sorting robot.



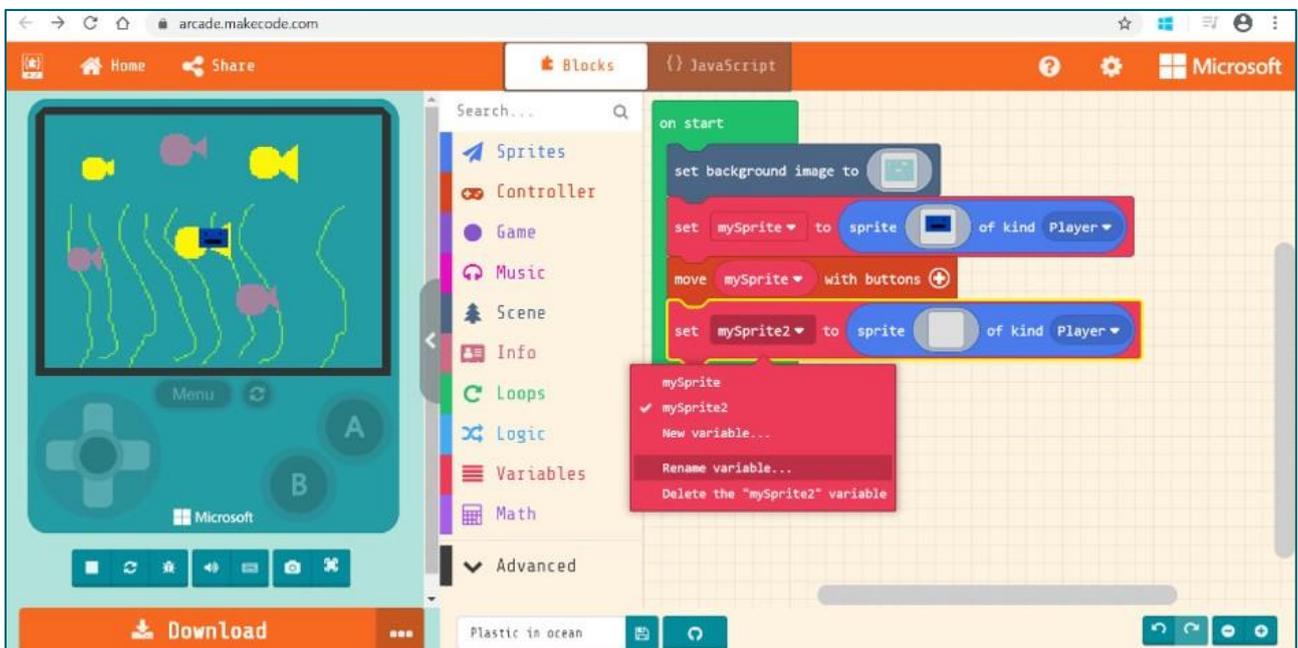
11. Go to the controller menu and select “Move mySprite with buttons.” Place this inside the “On start” block. Now you can move your robot around the screen on the left-hand side.



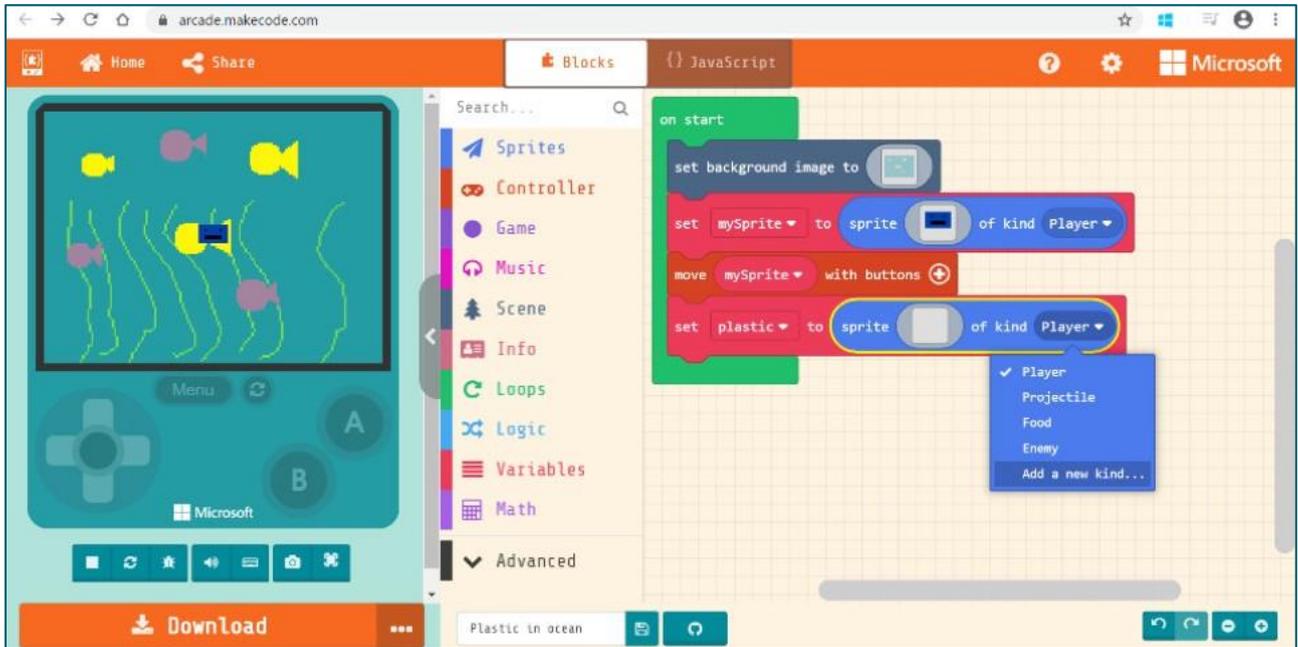
12. Go back to the Sprites menu and select “Set mySprite2”. Place this into the “On start” block.



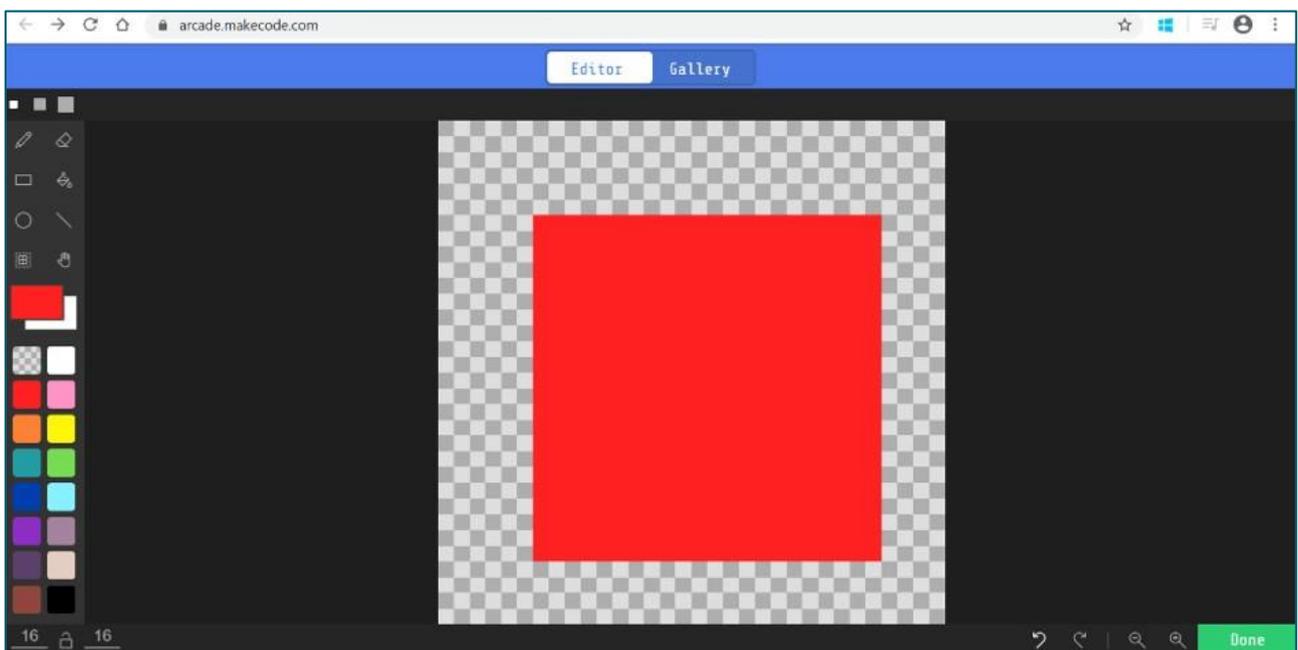
13. Click on the arrow beside “mySprite2” and select “rename variable”



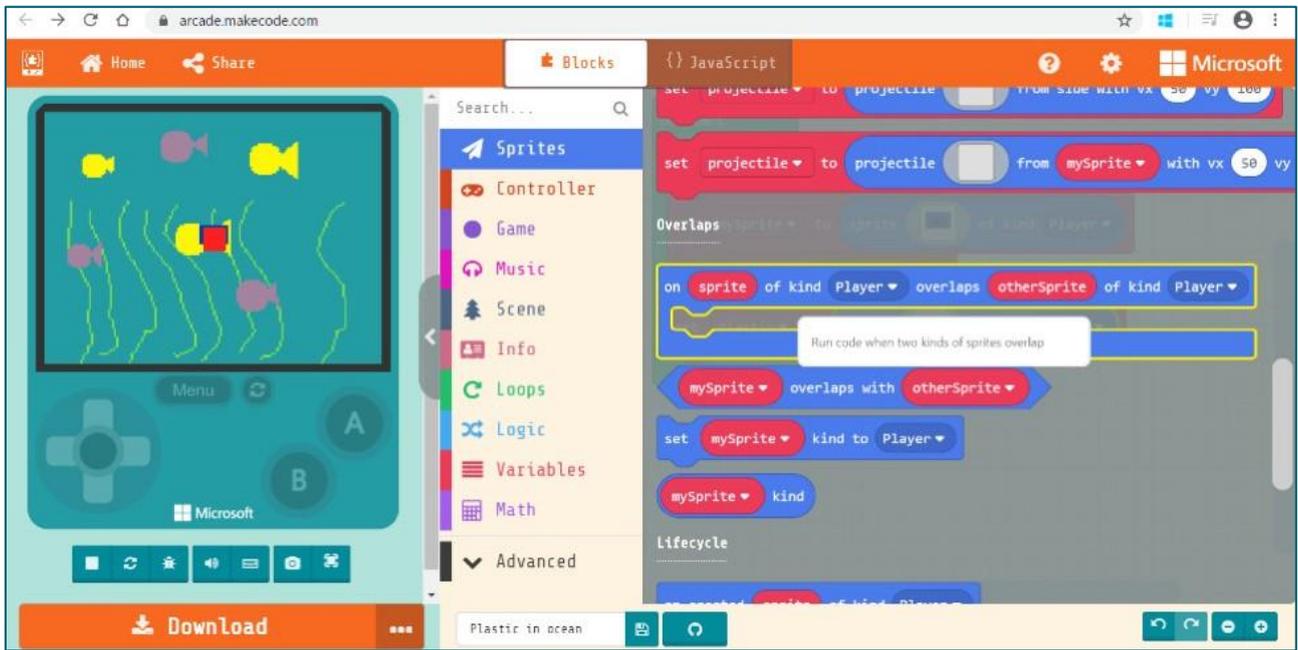
14. Rename the variable to "Plastic"
15. Select the arrow beside "player" and select "Add a new kind"



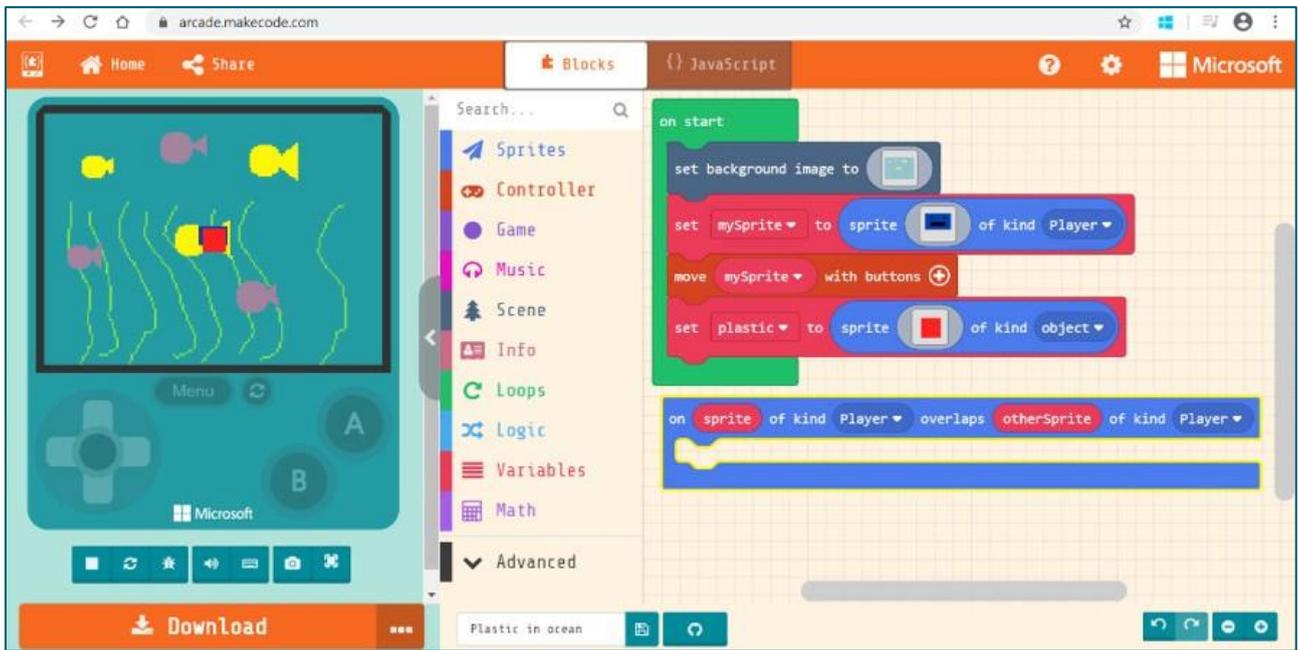
16. Name the new kind "object"
17. Click on the grey square. Use the tools to create a shape that will represent the plastic in the ocean. Make sure this is a different colour from your background.



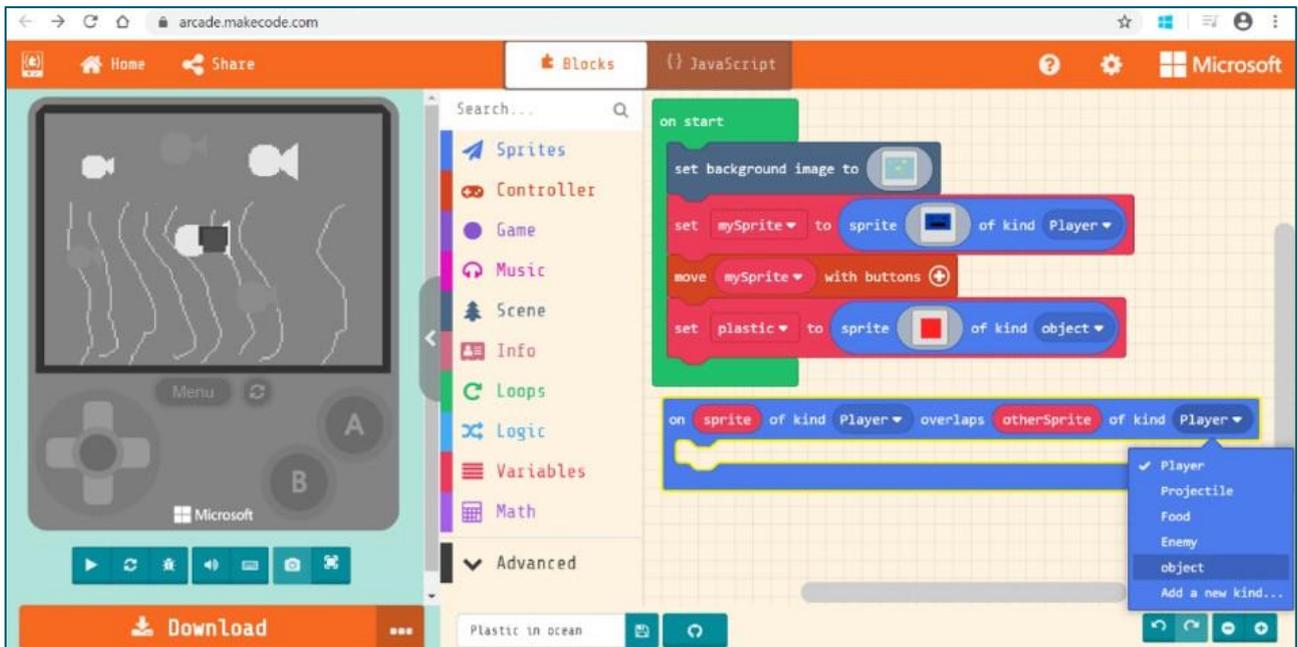
18. Go back to the Sprites menu. Scroll down to Overlaps and select the “on sprite of kind (player) overlaps otherSprite of kind (player) block.”



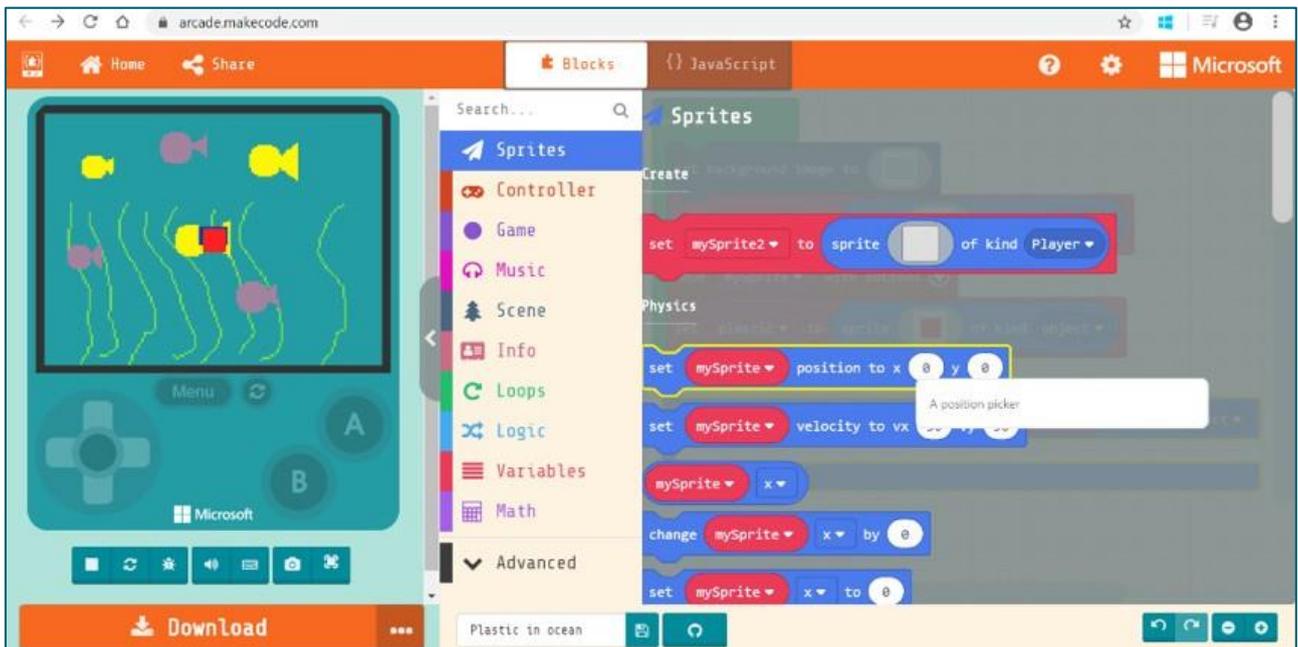
19. Place this anywhere in the screen – it does not have to be inside the “on start” block.



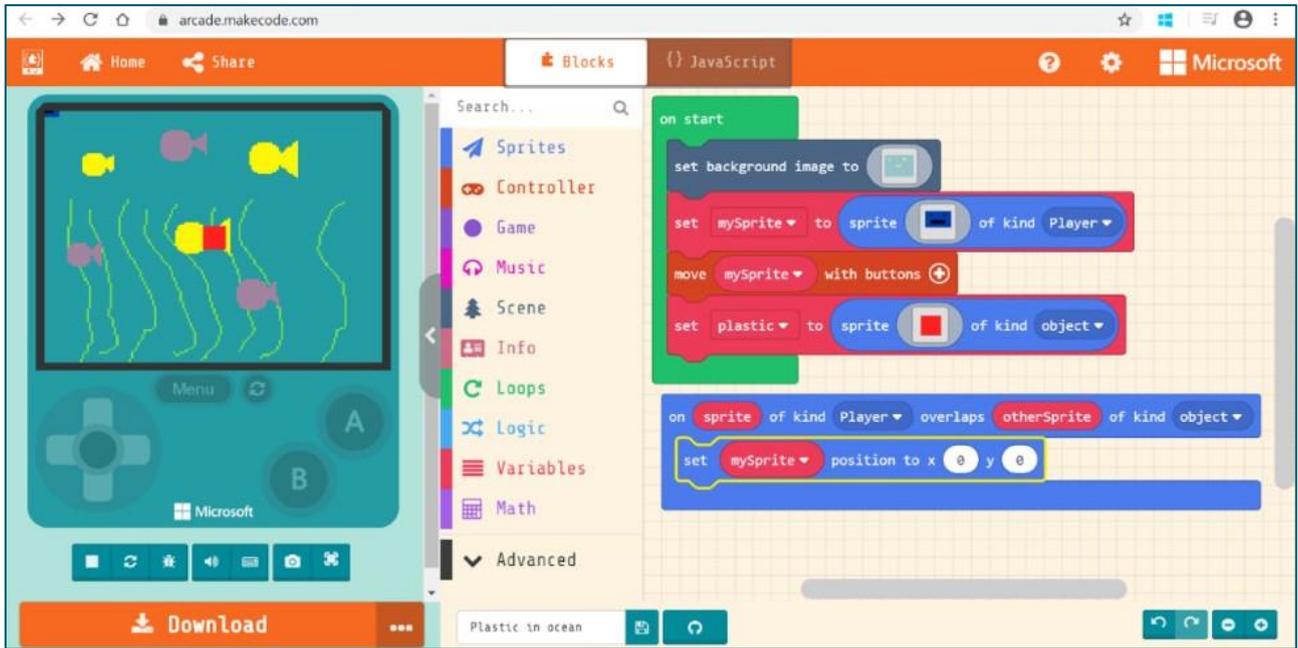
20. Select the arrow beside the second “Player” and change this to “object.”



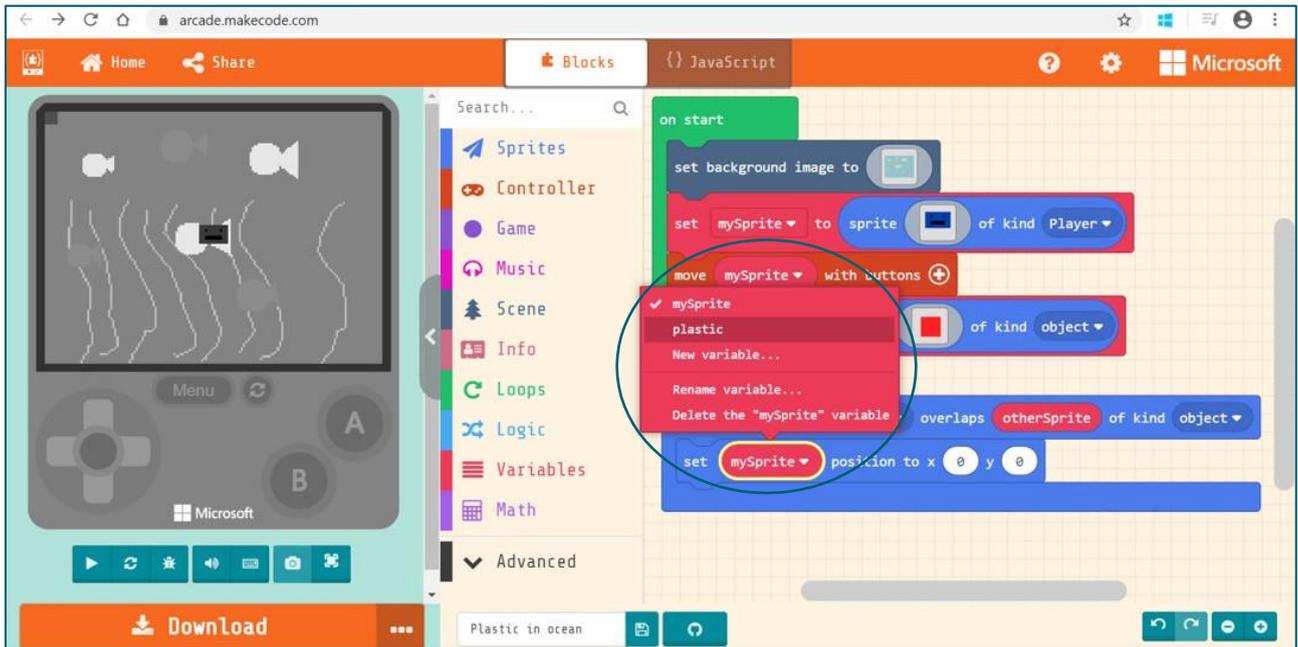
21. Go back to the Sprites menu and select the “Set mySprite position to” block.



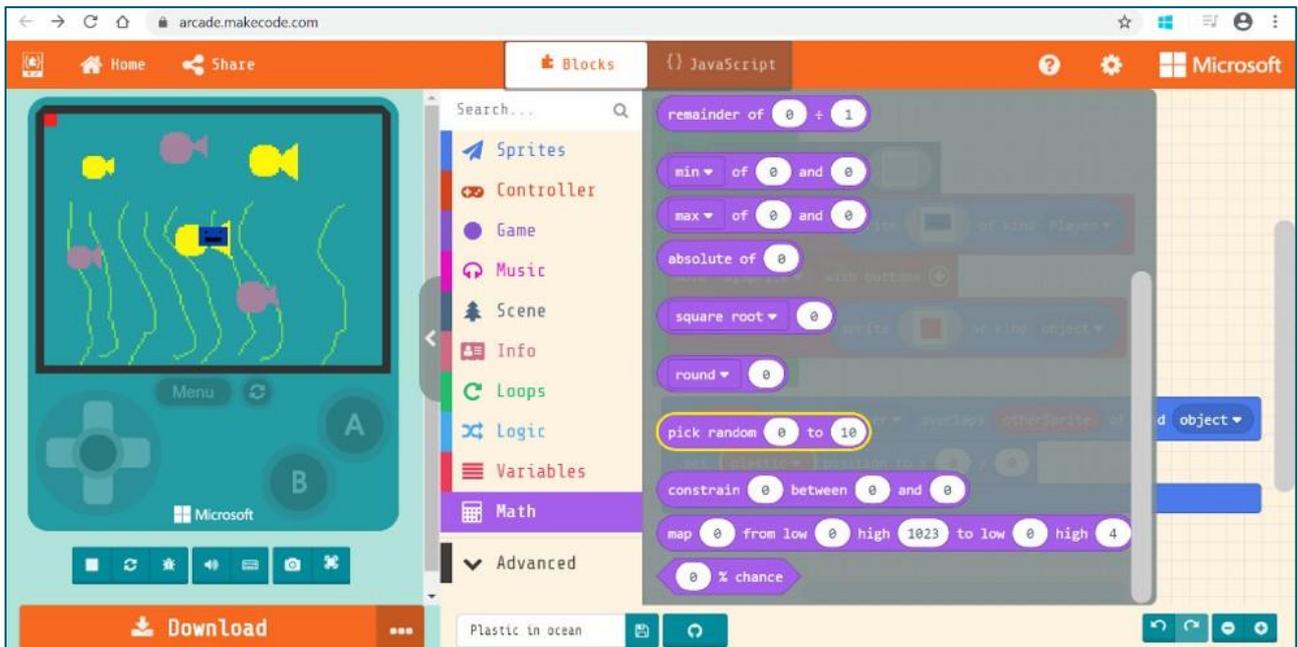
22. Place this inside the “on sprite of kind (player) overlaps otherSprite of kind (object) block.



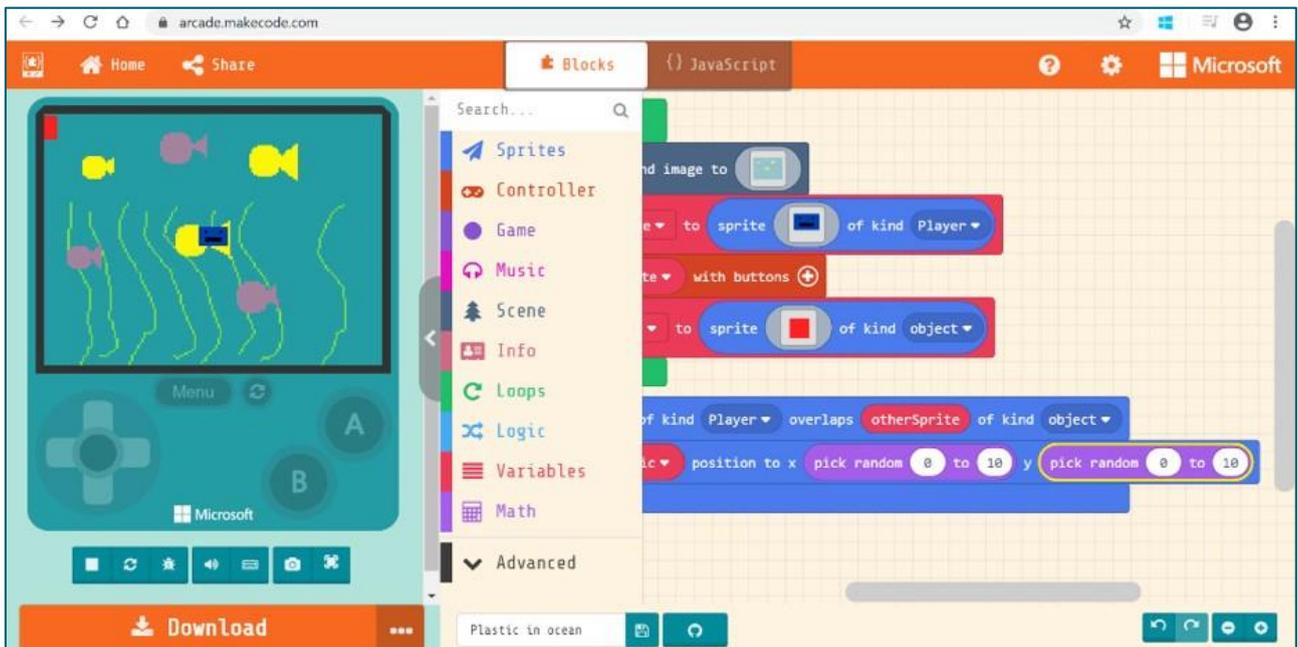
23. Change “mySprite” to “plastic”



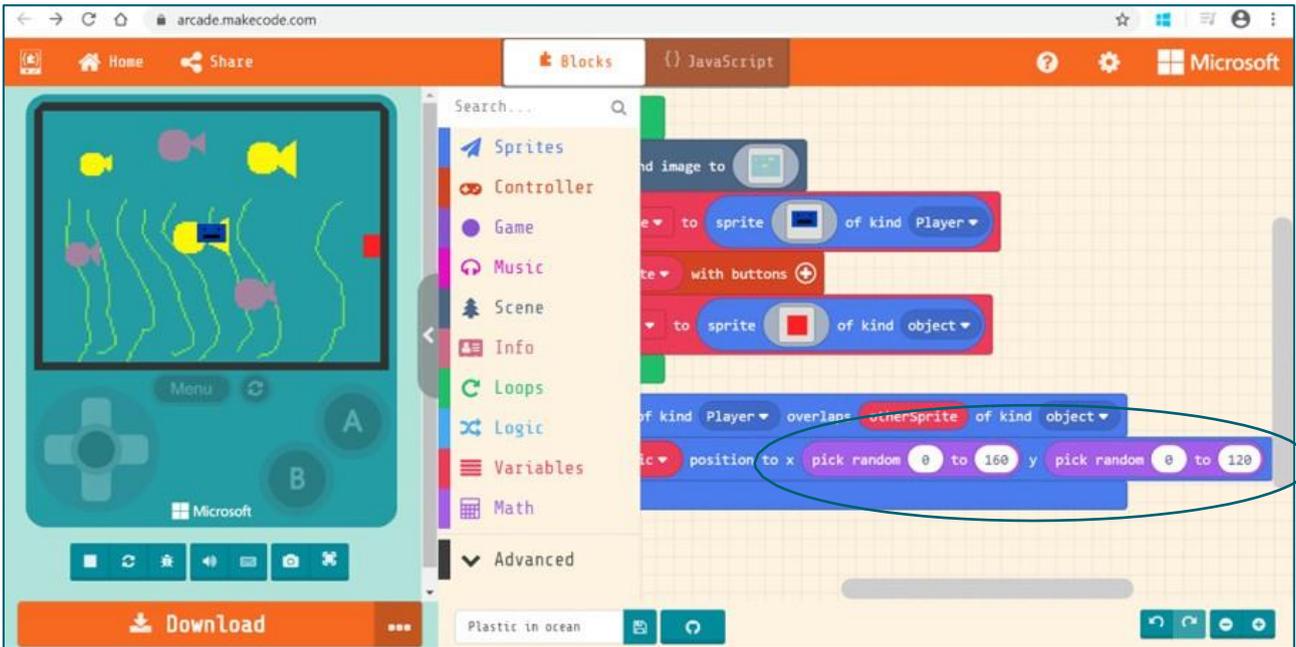
24. Go to the Math menu. Select the “pick random 0 to 10” block.



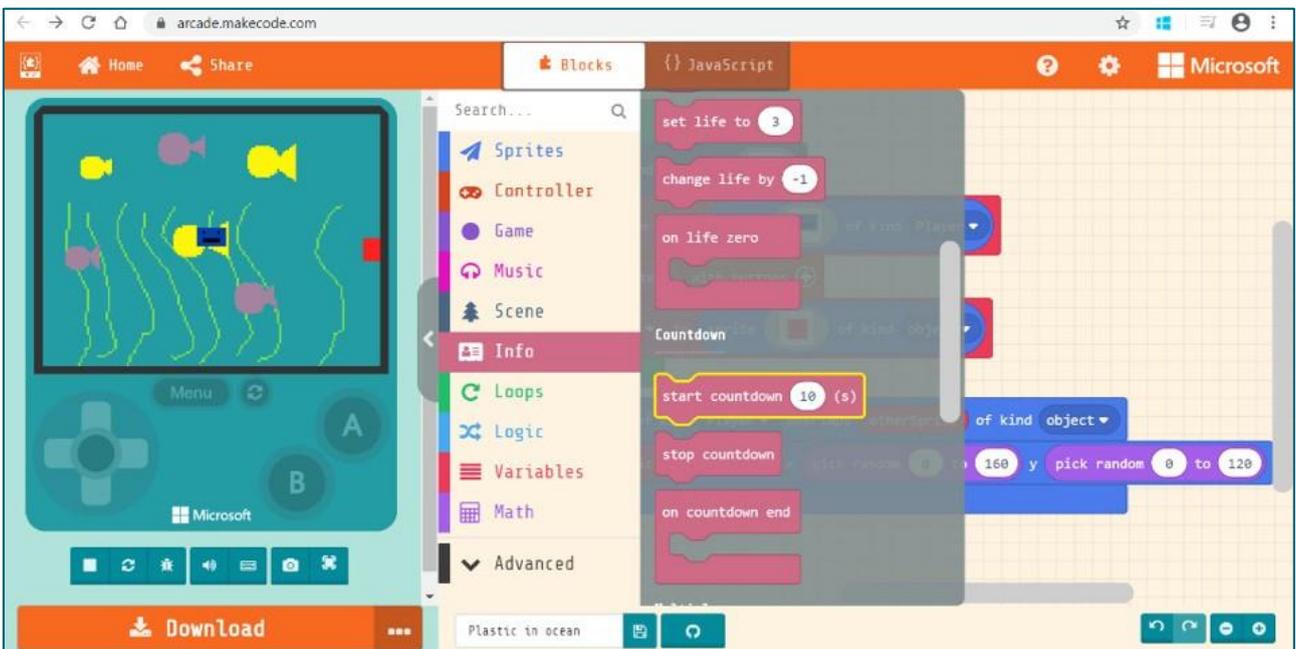
25. Place this over the 0 beside x on the set position block. Do the same with the 0 beside y.



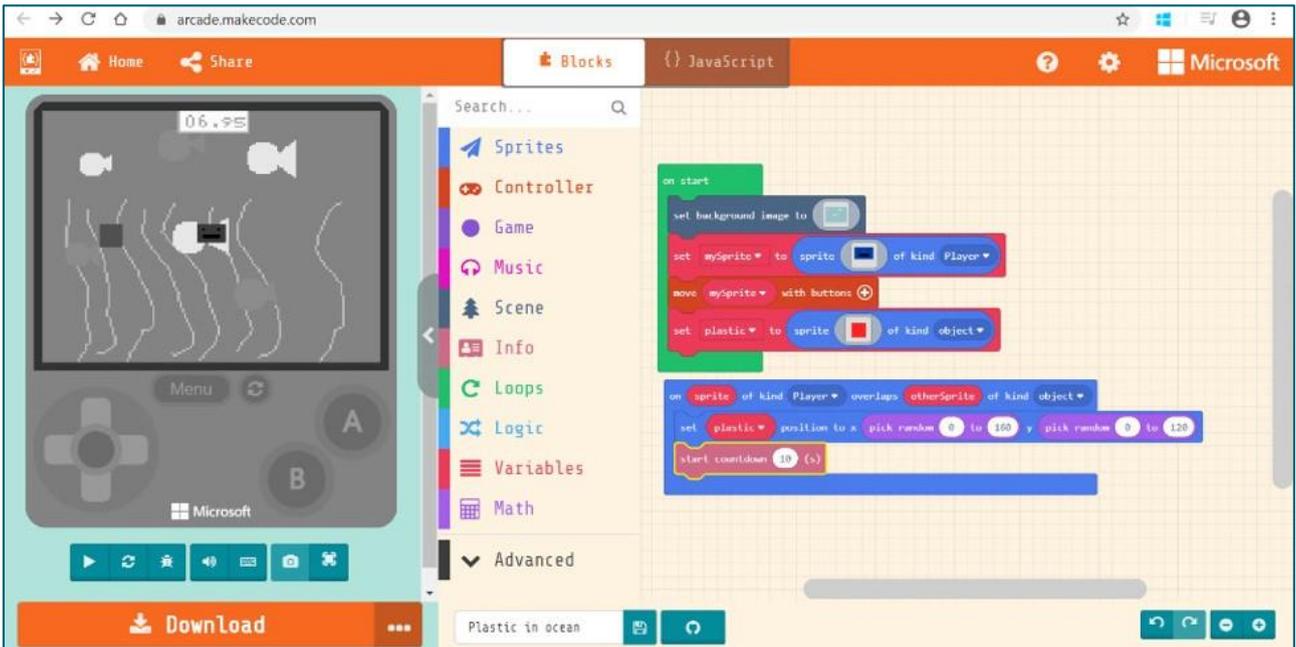
26. We want to use the full screen, but we don't want our plastic to disappear from the screen. Set the maximum for X to 160 and the maximum for Y to 120.



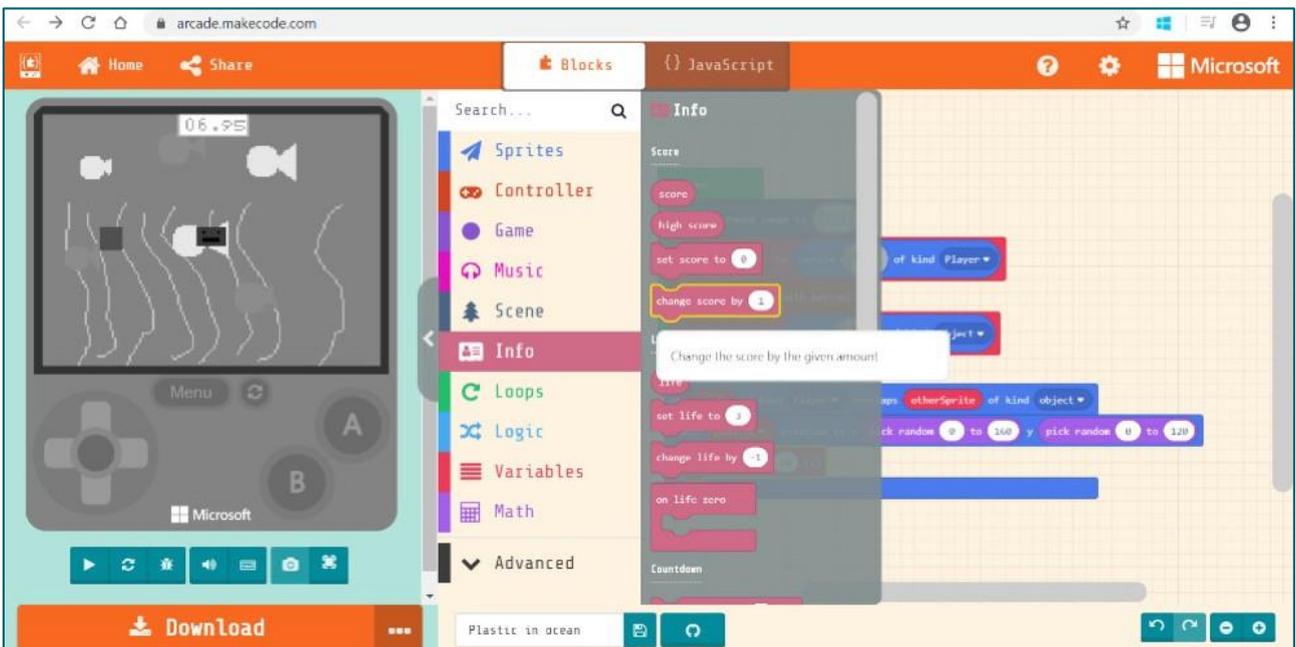
27. Let's put a countdown on the game. Go to the info menu and select the "Set countdown (10)s" block.



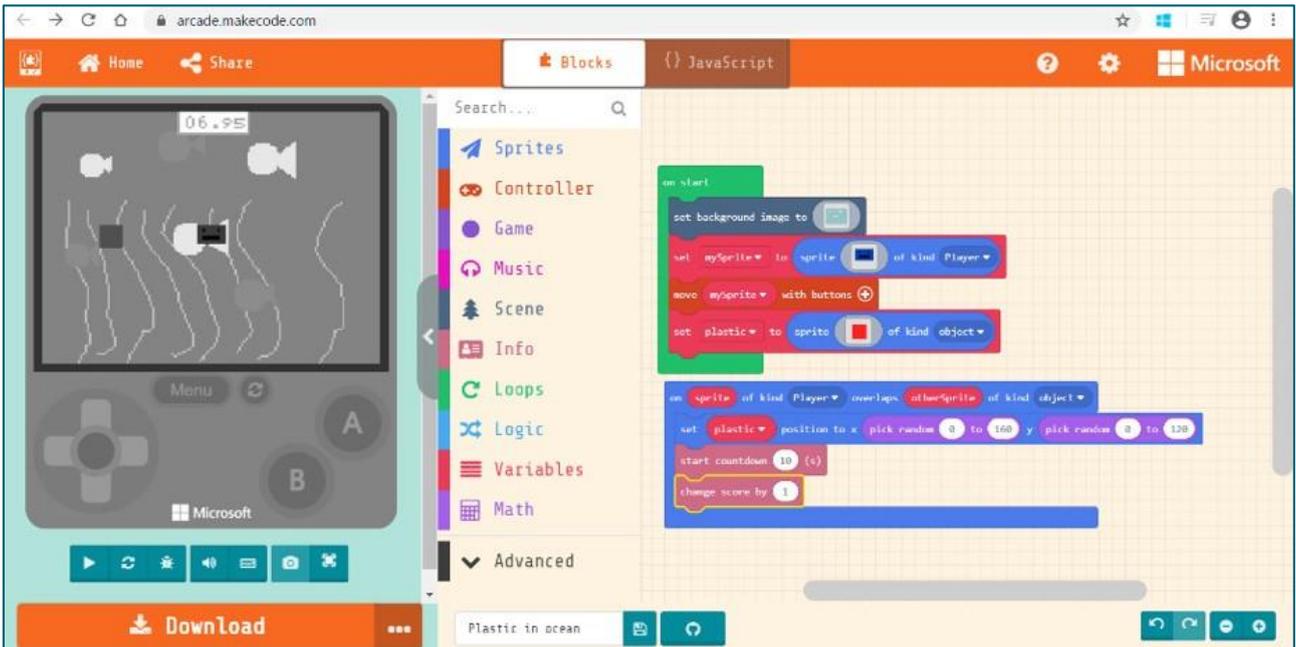
28. Place this inside the “overlap” block.



29. We want the player to gain a point every time the robot removes some plastic. Go back to the info menu and select the “change score by (1)” block.

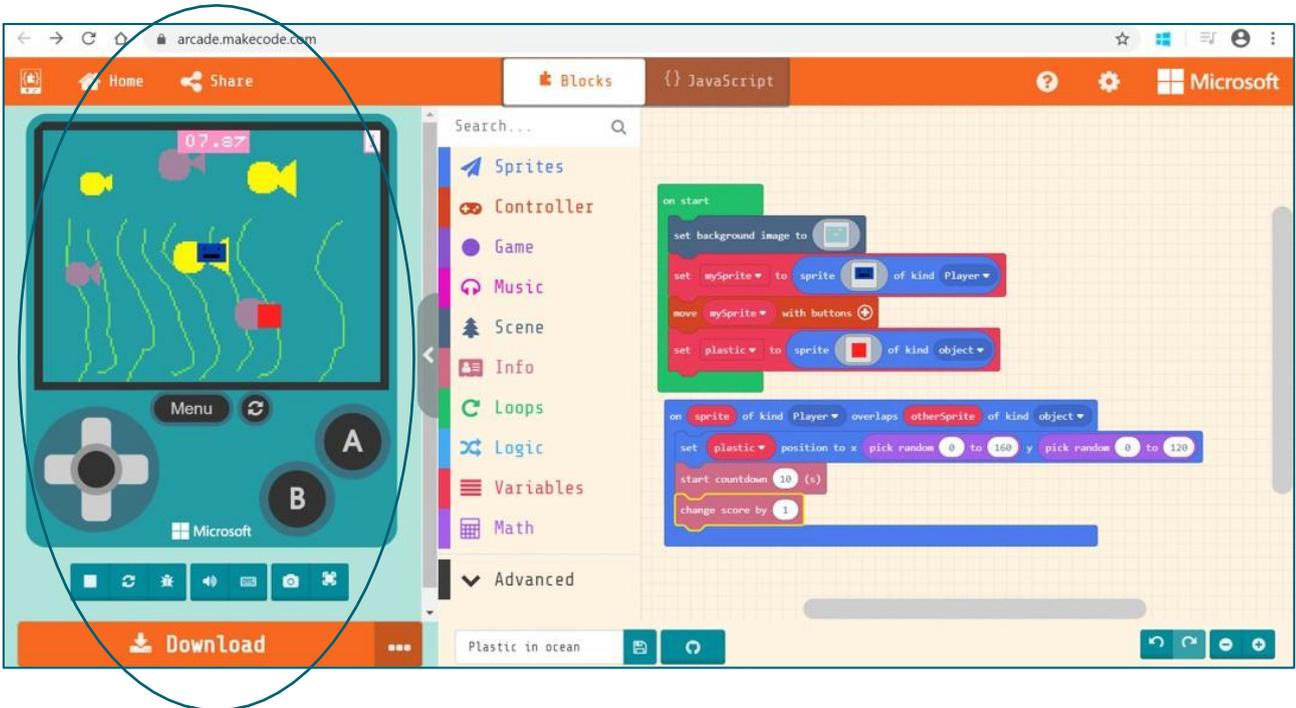


30. Place this inside the overlap block.



Your code is complete, and you are ready to play!

Use the simulator at the left-hand side to try to remove all the plastic from the ocean.



Skills

Did you enjoy this activity? Can you list 3 skills that you have used by creating this code?

- 1.
- 2.
- 3.

These are some of the jobs associated with today's activity.

[Games Developer](#) (4), [Software Developer](#) (5), [Marine Biologist](#) (6), [Oceanographer](#) (7)

Spend some time reading more about them and thinking about the skills you used in today's activity.

Follow up

If you'd like to look at more job profiles and learn more about the world of work, you can on [My World of Work?](#) (3)

Website References

1. The Plastic Vagabond <http://y2u.be/Yio40ZMxqmY>
2. Microsoft MakeCode <https://arcade.makecode.com/>
3. My World of Work <https://www.myworldofwork.co.uk/>
4. Games Developer <https://bit.ly/2XfvZBj>
5. Software Developer <https://bit.ly/3et5yO1>
6. Marine Biologist <https://bit.ly/3errgCf>
7. Oceanographer <https://bit.ly/2MblQiK>