

# technocamps



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EUROPEAN UNION



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Welsh Government

**Cronfa Gymdeithasol Ewrop**  
**European Social Fund**



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BANGOR  
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Metropolitan  
University

Prifysgol  
Metropolitan  
Caerdydd

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UNIVERSITY

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Glyndŵr  
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Wrexham  
glyndŵr  
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University of  
South Wales  
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De Cymru

# Coding across the Curriculum For Wales



# Coding Across the CFW

Coding can be implemented across all the Areas of Learning and Experience, reinforcing learning in the classroom and improving digital literacy in the process.

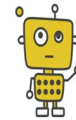
In today's world digital literacy is an essential skill for learners to develop. The technological requirements for jobs are ever increasing, and a strong start in digital skills will prepare learners and give them an advantage.



Expressive Arts



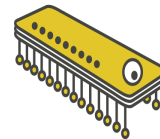
Health and Wellbeing



Humanities



Languages, Literacy and Communication



Mathematics and Numeracy



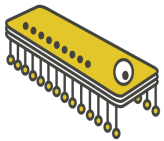
Science and Technology

# Ideas for Coding Across the Curriculum



## Health and Wellbeing

- Food Pyramid
- Pong



## Mathematics and Numeracy

- Drawing Shapes
- Estimating Pi



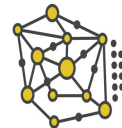
## Science and Technology

- States of Matter
- Water Cycle



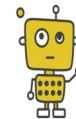
## Languages, Literacy and Communication

- Translating Quiz
- Pronouns Quiz



## Expressive Arts

- Algorithmic Art
- Matching Art Styles



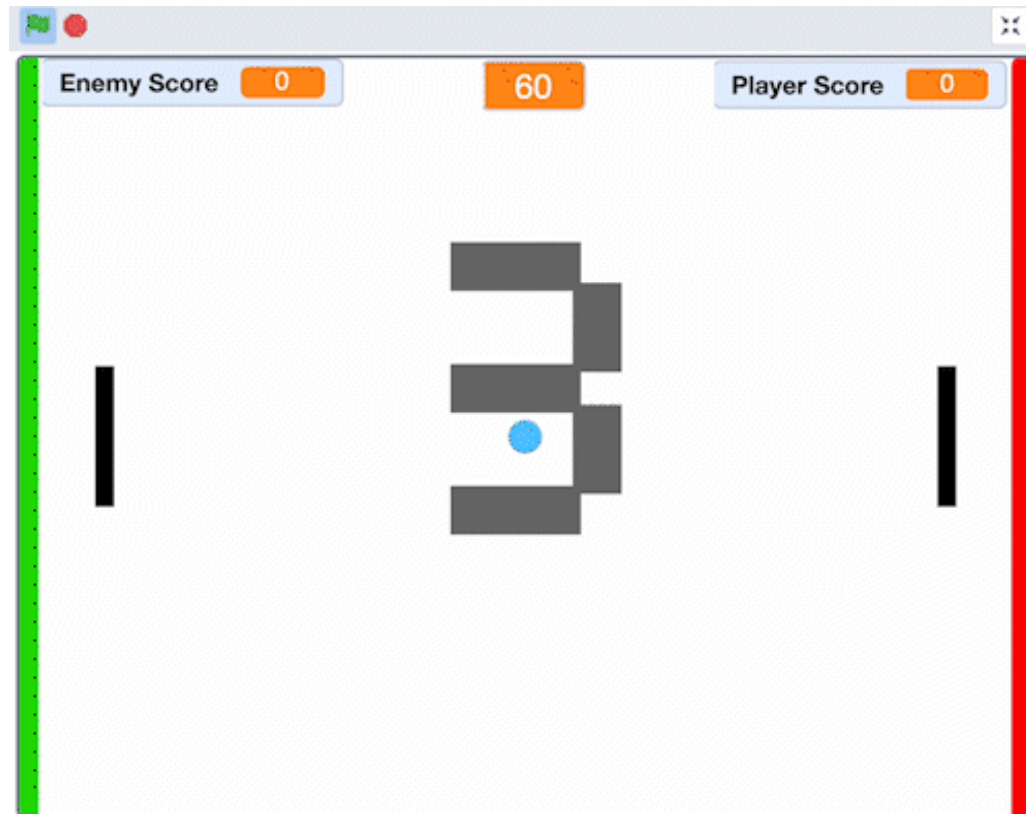
## Humanities

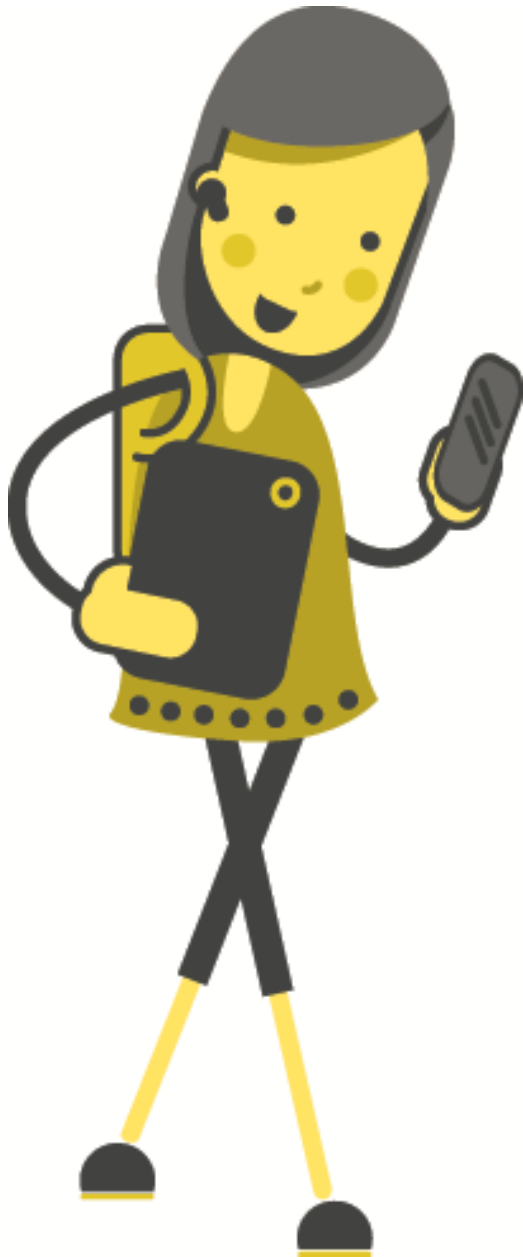
- Interactive Timeline
- Migration Simulation



# Pong - Scratch

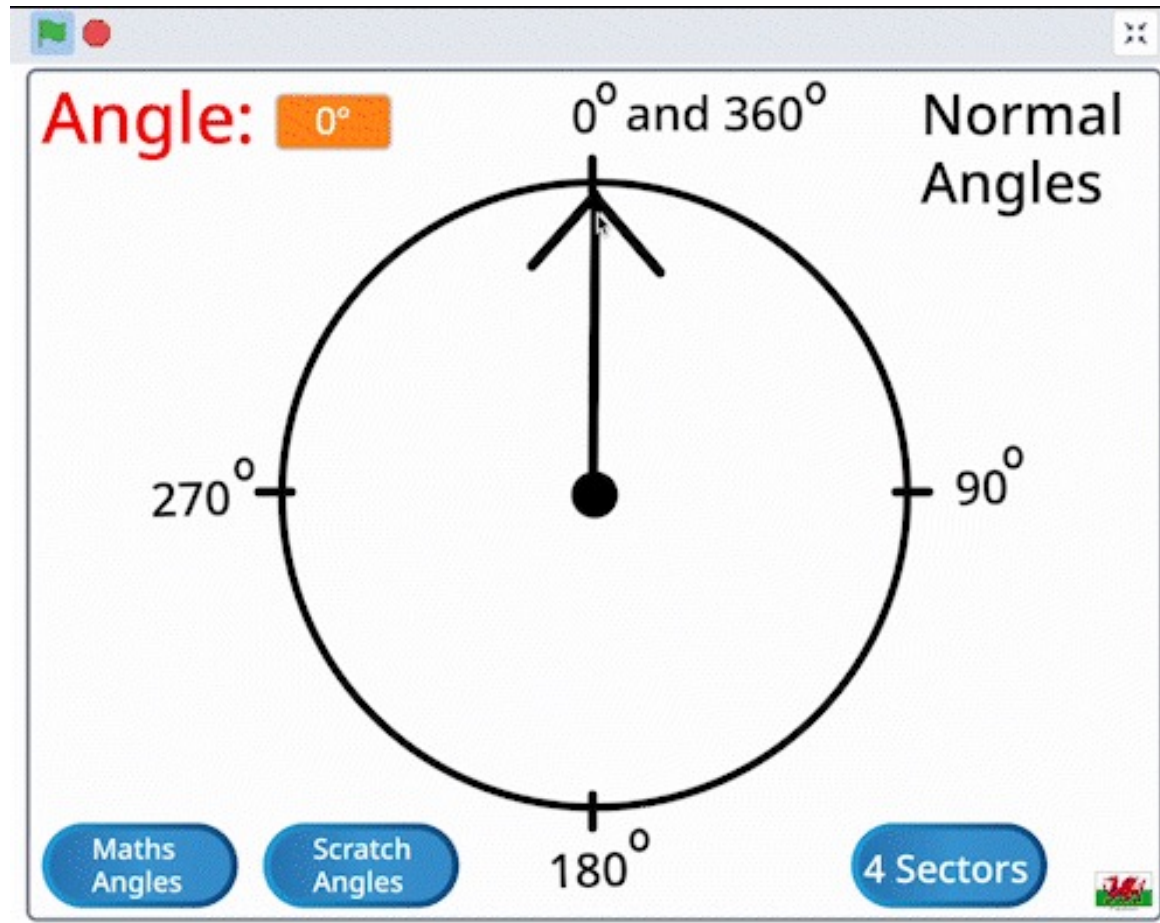
# Pong





# Compass - Scratch

# Compass

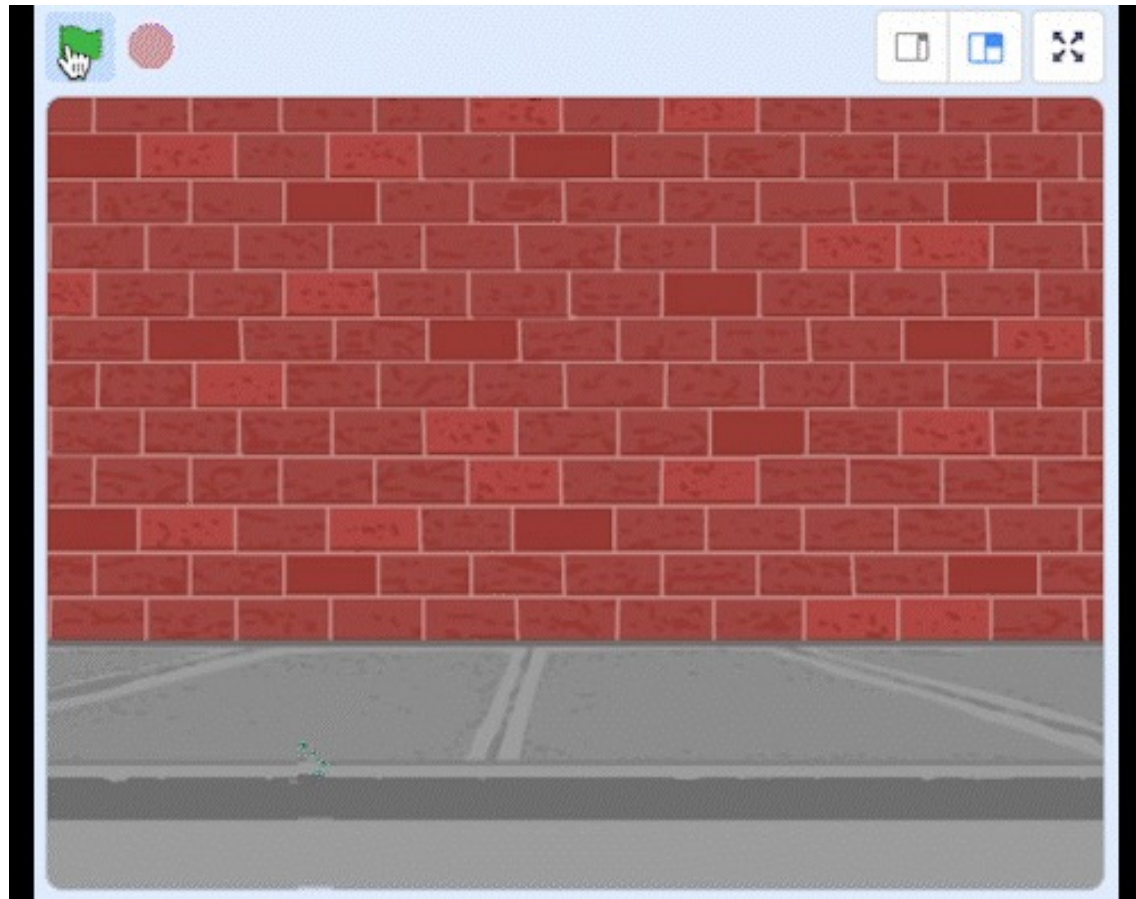


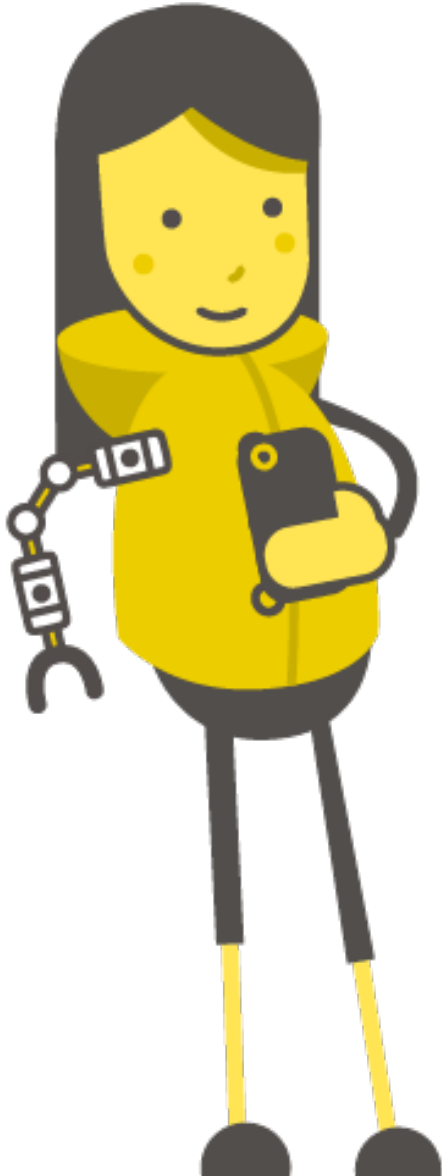




# Colour Game - Scratch

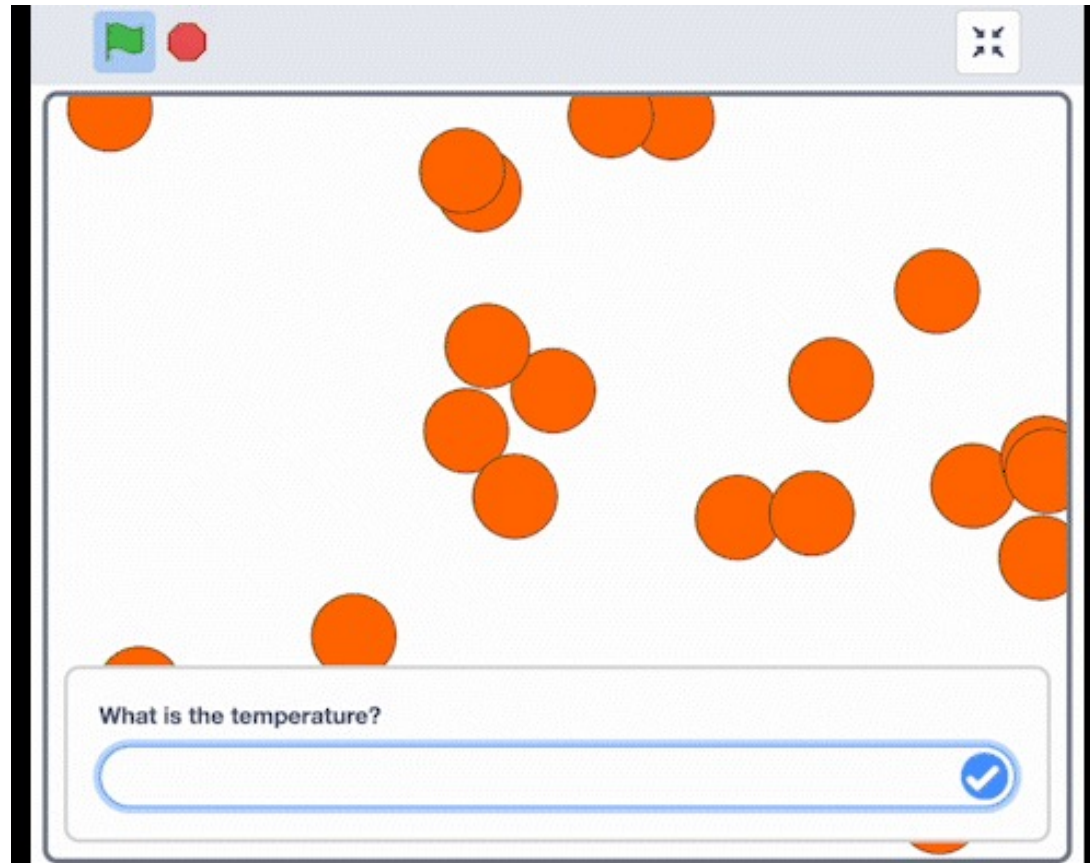
# Colour Game





# States of Matter - Scratch

# States of Matter



# Water Cycle - Scratch



# Water Cycle



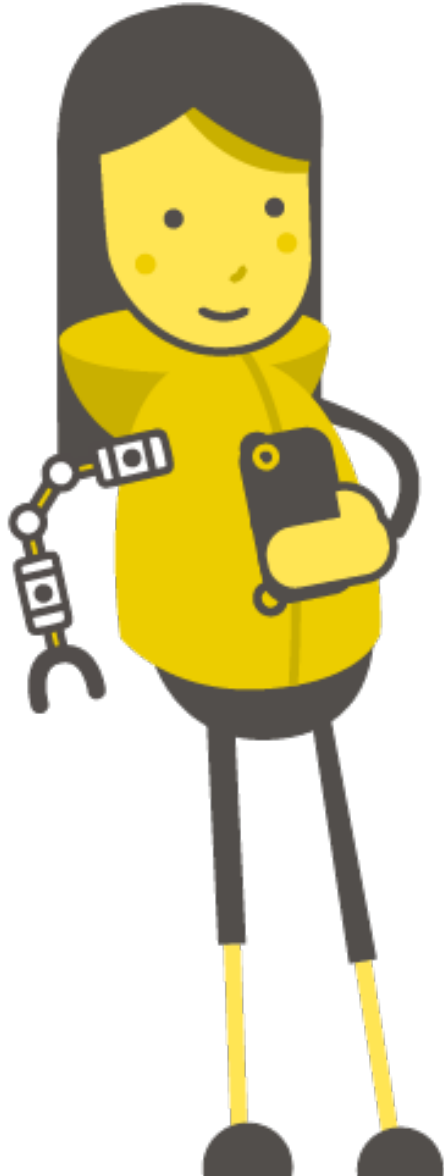


# Migration - Scratch

# Migration

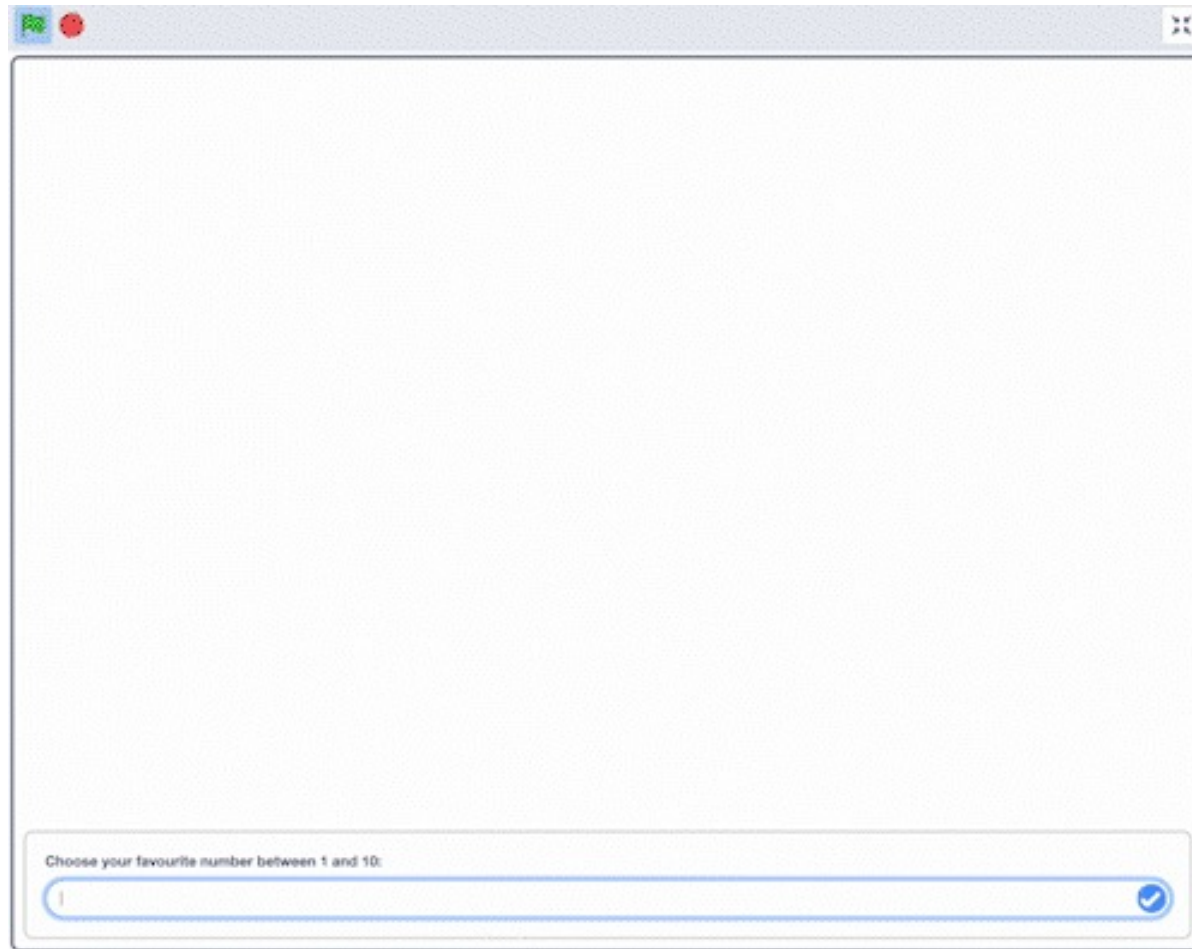






# Algorithm Art - Scratch

# Algorithm Art

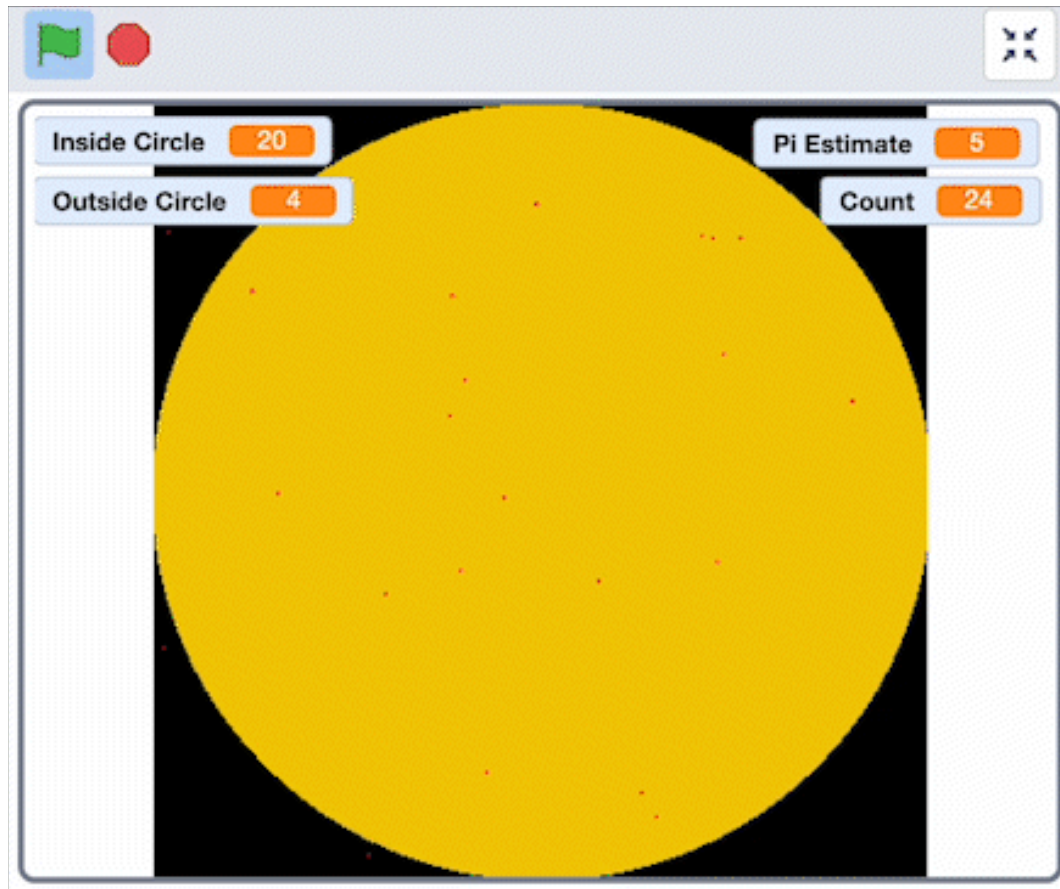


A screenshot of a web browser window. The window has a light gray title bar with standard OS window controls (minimize, maximize, close) on the right. The main content area is a large, empty white rectangle. At the bottom of the window, there is a form with a label "Choose your favourite number between 1 and 10:" and a text input field containing the number "1". A blue checkmark icon is visible on the right side of the input field, indicating that the input is valid.

# Pi Estimation - Scratch



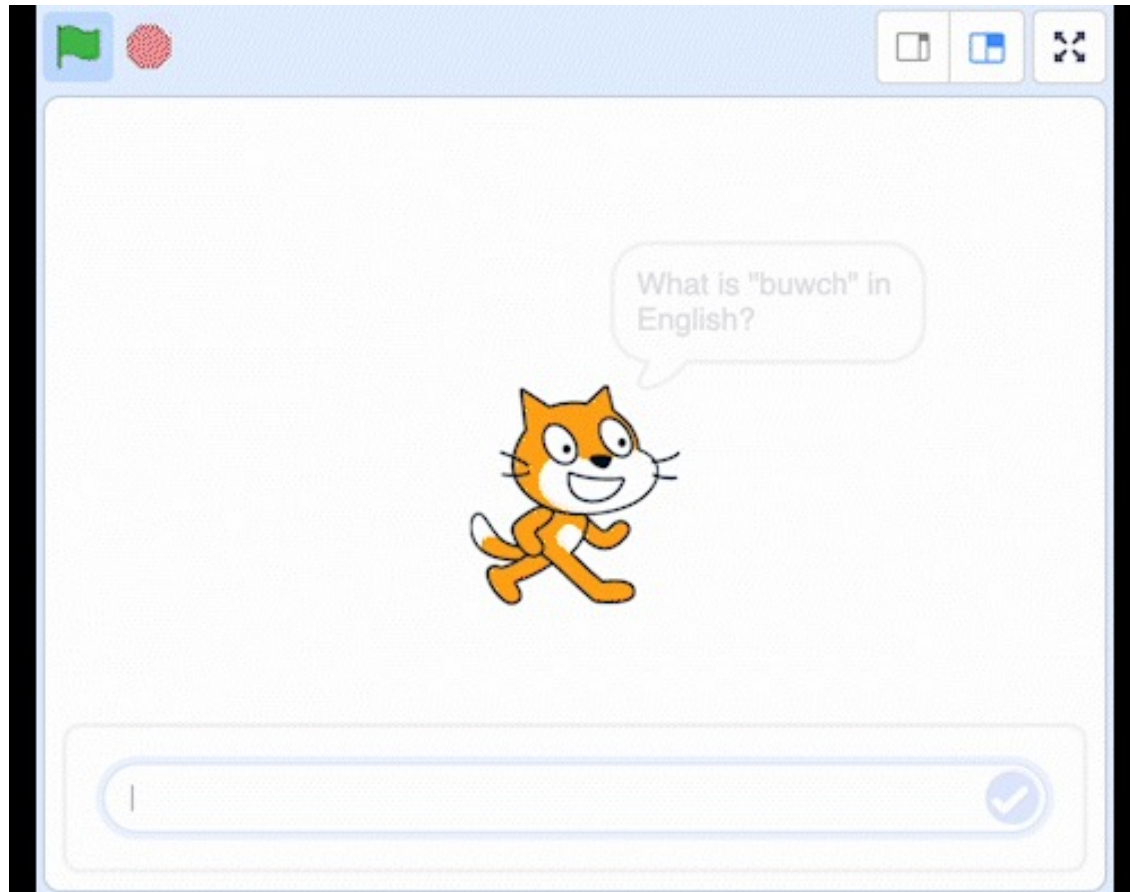
# Pi Estimation





# Translating Game - Scratch

# Translating Game



# Translating Game - Variables

Sound

Events

Control

Sensing

Operators

**Variables**

My Blocks

## Variables

Make a Variable

☐ my variable

set my variable ▼ to 0

change my variable ▼ by 1

show variable my variable ▼

hide variable my variable ▼

Make a List

Make a new variable called "word"

### New Variable

New variable name:

word

☒ For all sprites ☐ For this sprite only

Cancel OK

### New List

New list name:

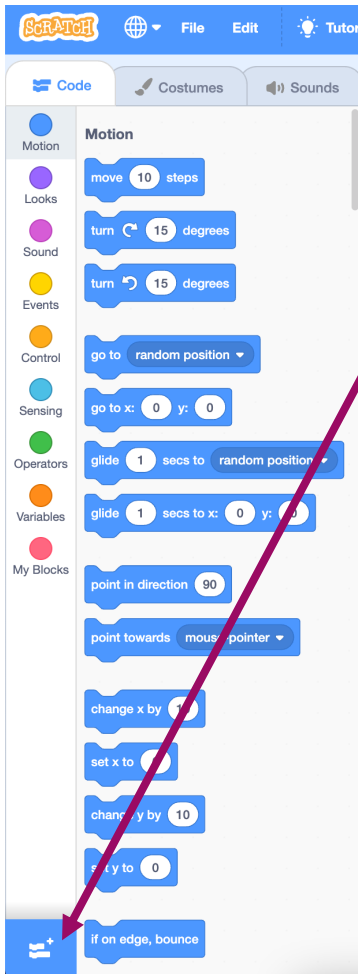
words

☒ For all sprites ☐ For this sprite only

Cancel OK

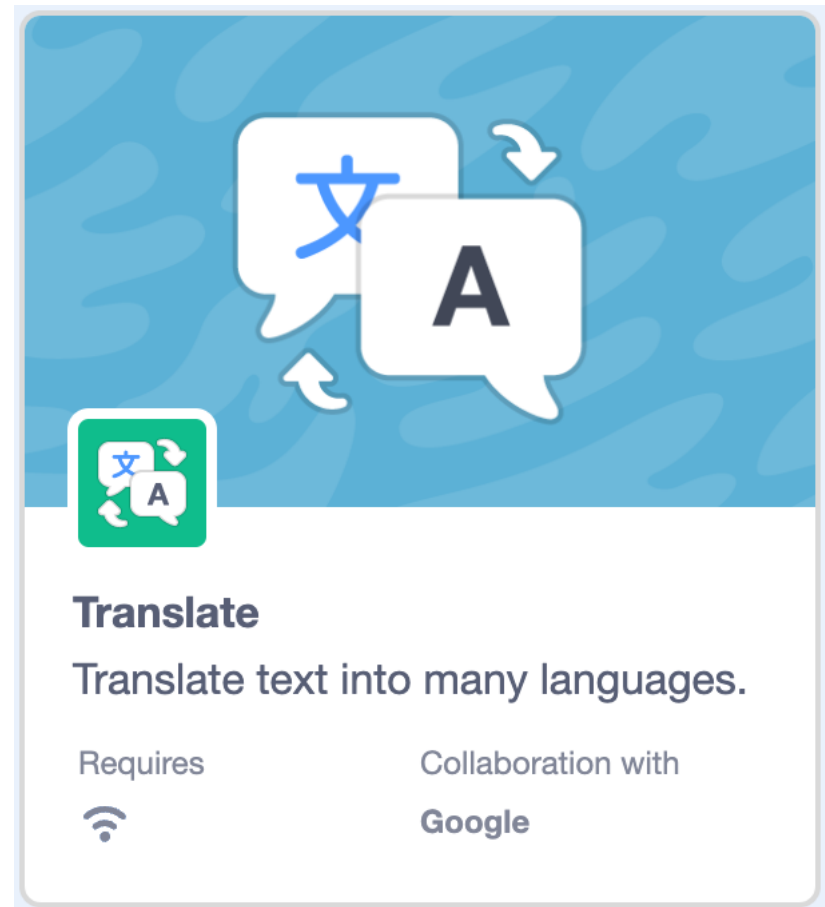
Make a new list called "words"

# Translating Game - Extensions



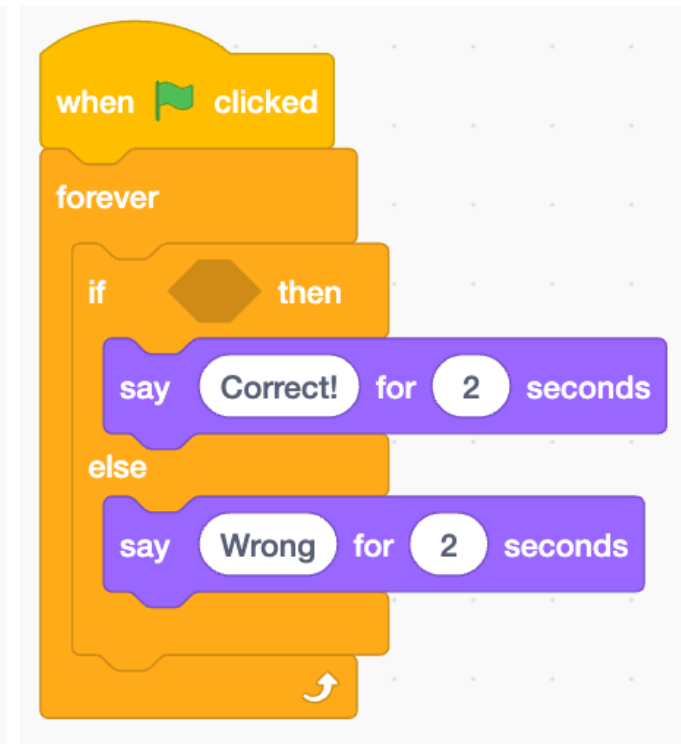
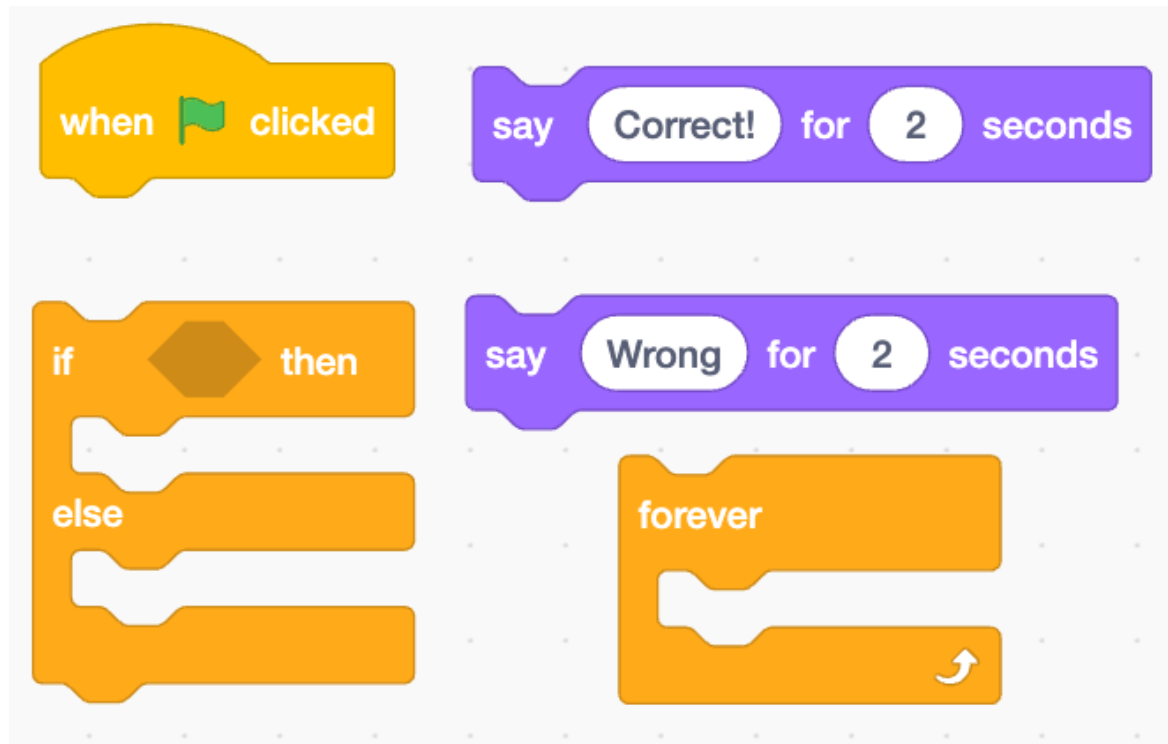
Click here to add an extension to Scratch,

scroll down to find the Translate extension which will allow you to use Google Translate within your program





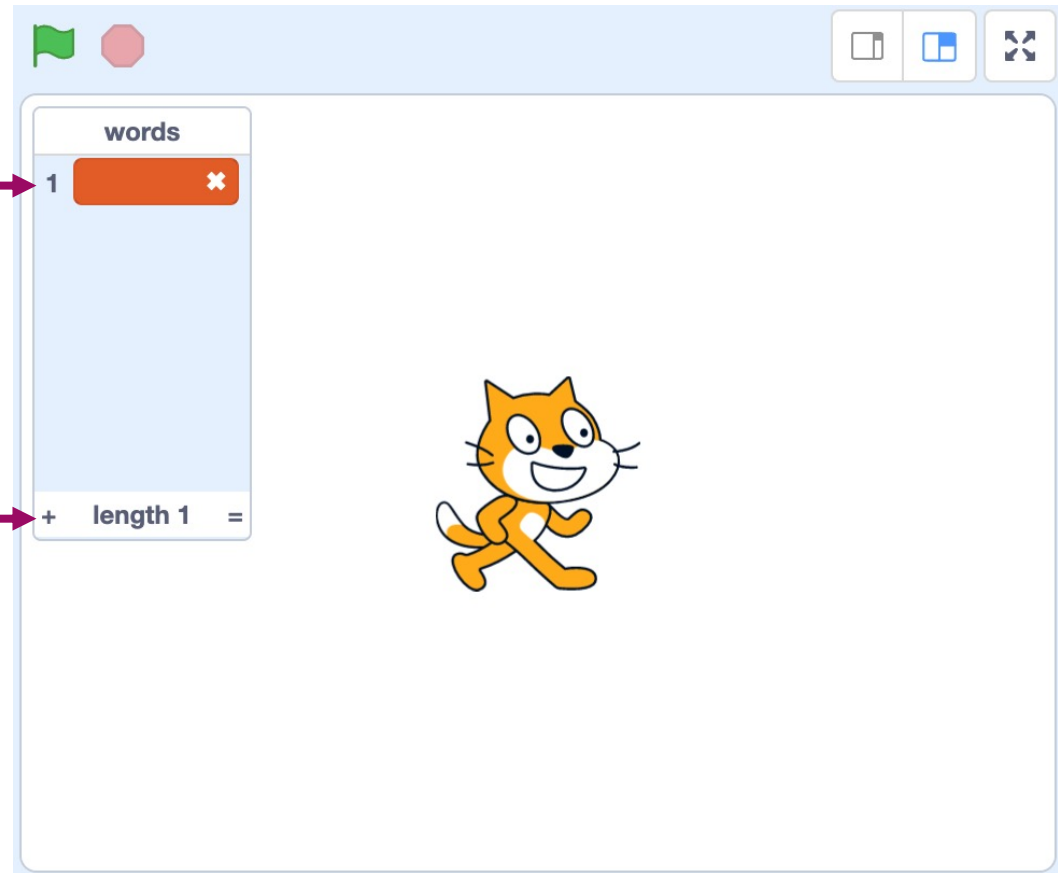
# Translating Game - If



# Translating Game - Lists

Click here to type in  
a new word

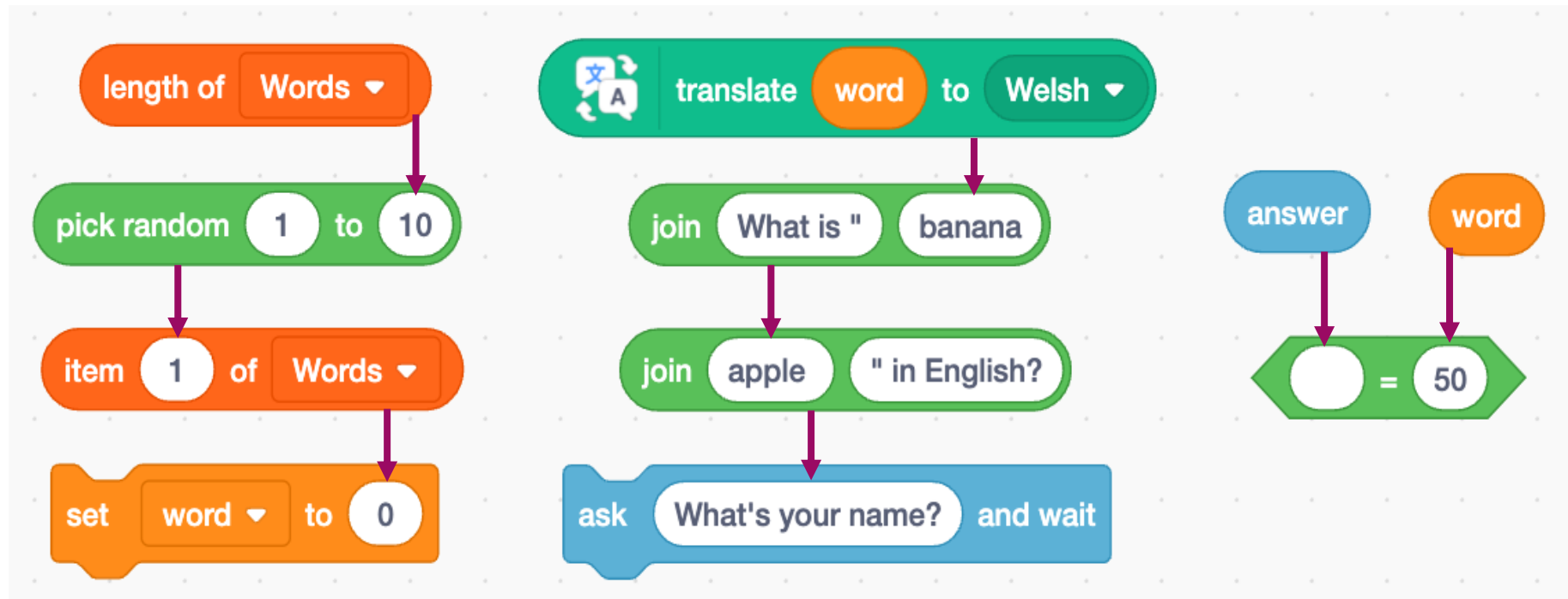
Click here to add a  
new word to your list



# Translating Game - Translating



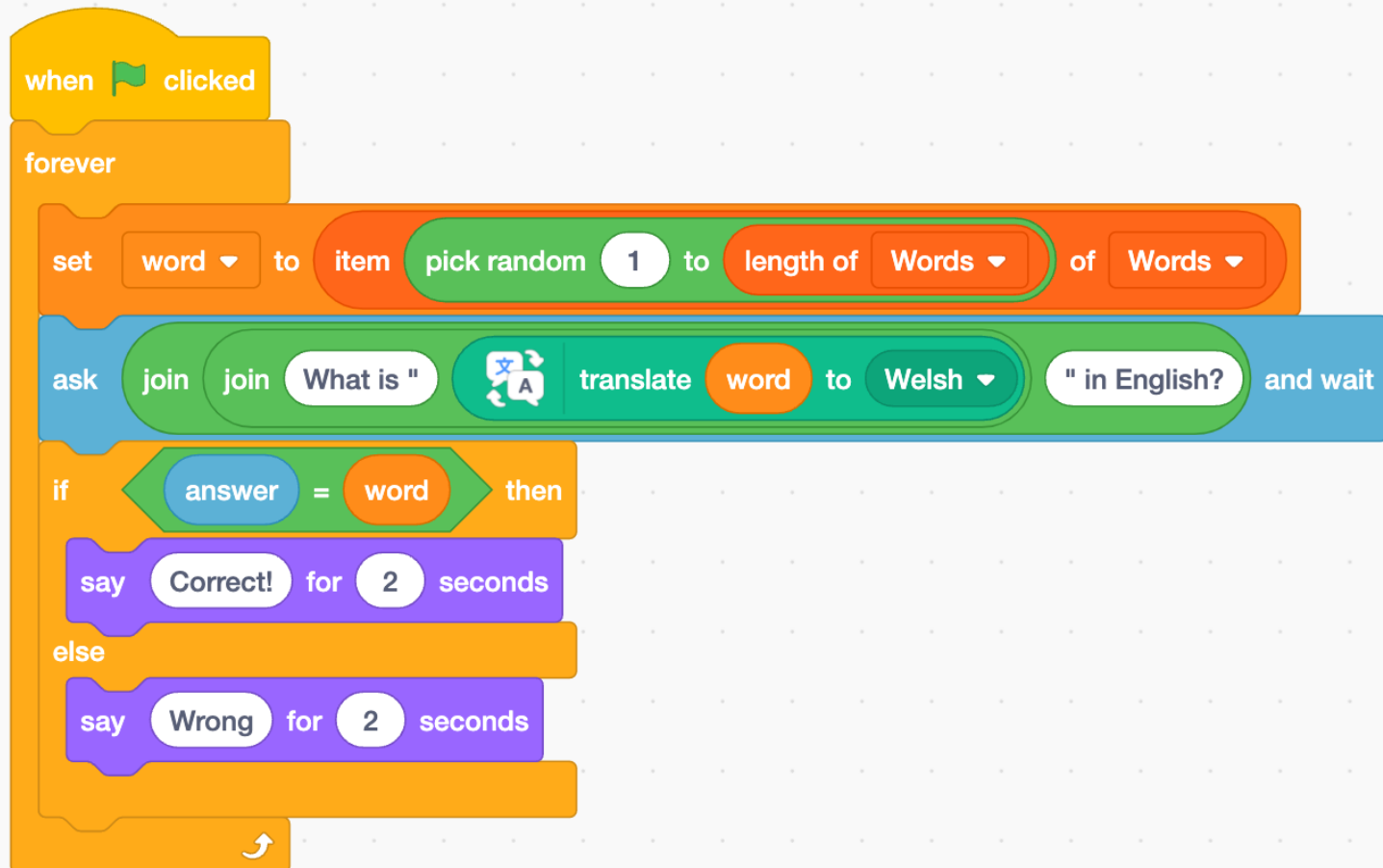
# Translating Game - Translating



# Translating Game - Translating



# Translating Game



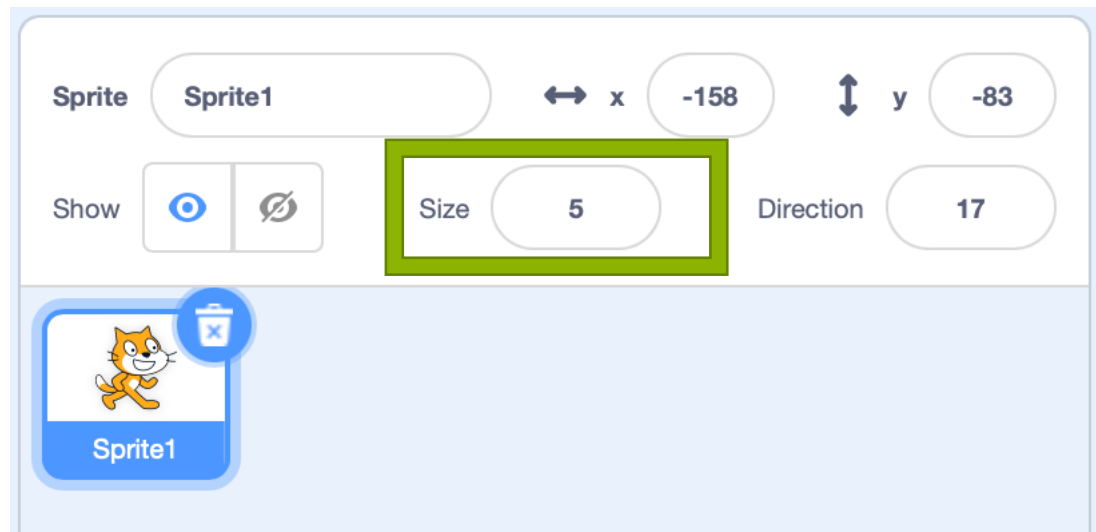


# Pen Shapes - Scratch

# Pen Shapes - Resizing the Cat

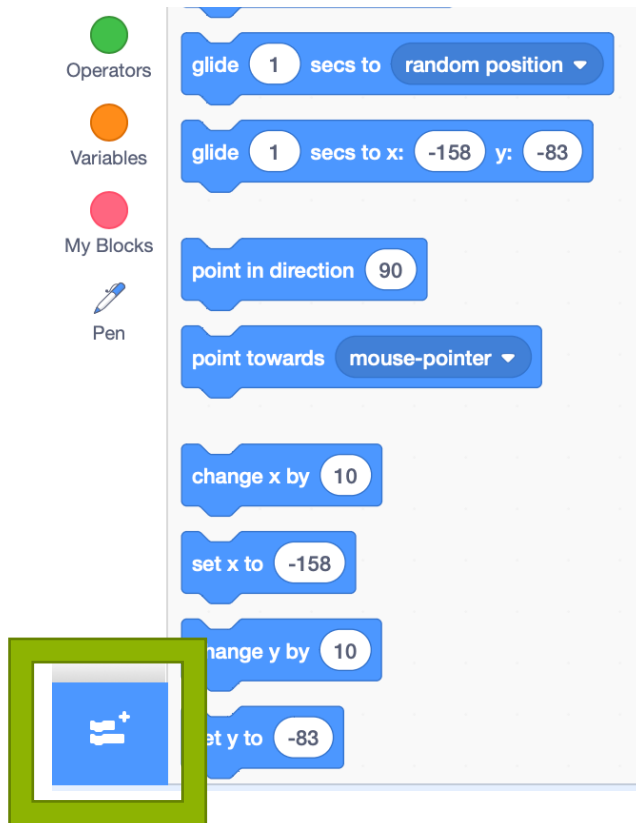
Start by setting the size of the cat sprite to 5.

This will make it easier to see the shapes being drawn.

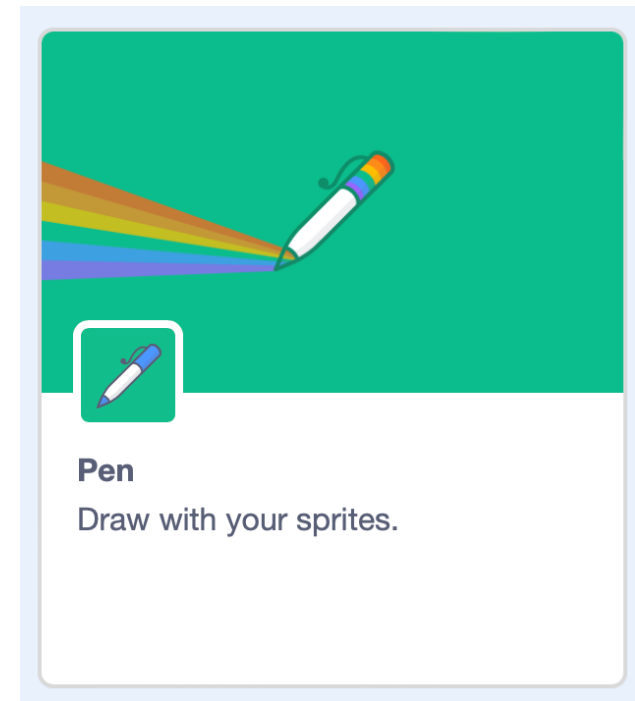




# Pen Shapes – Pen Extension

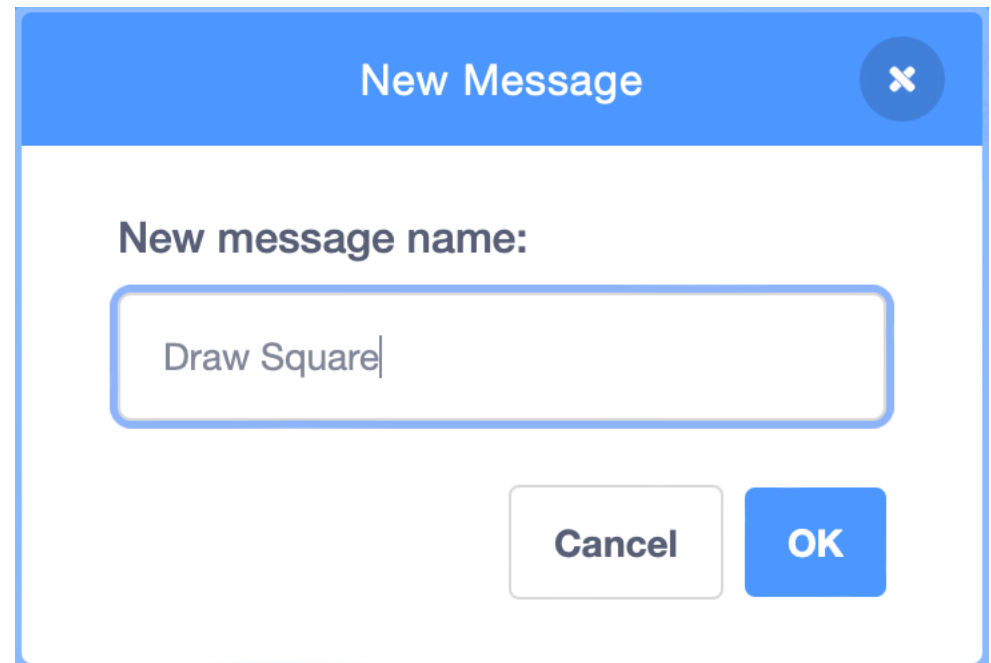
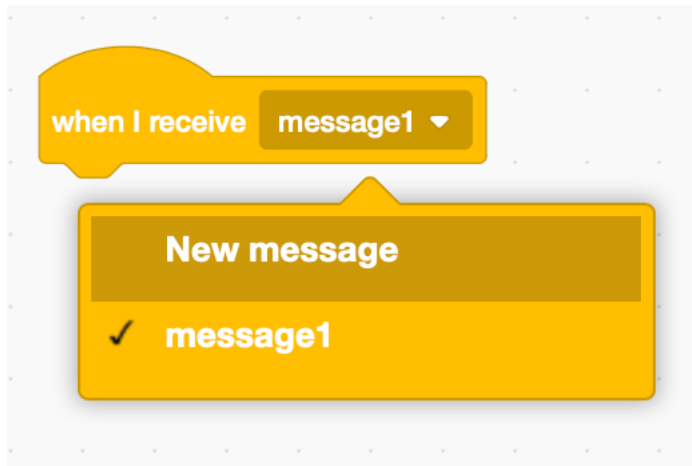


Click the Extensions button on the bottom left of the screen and find the pen extension.



# Pen Shapes – Broadcast for Square

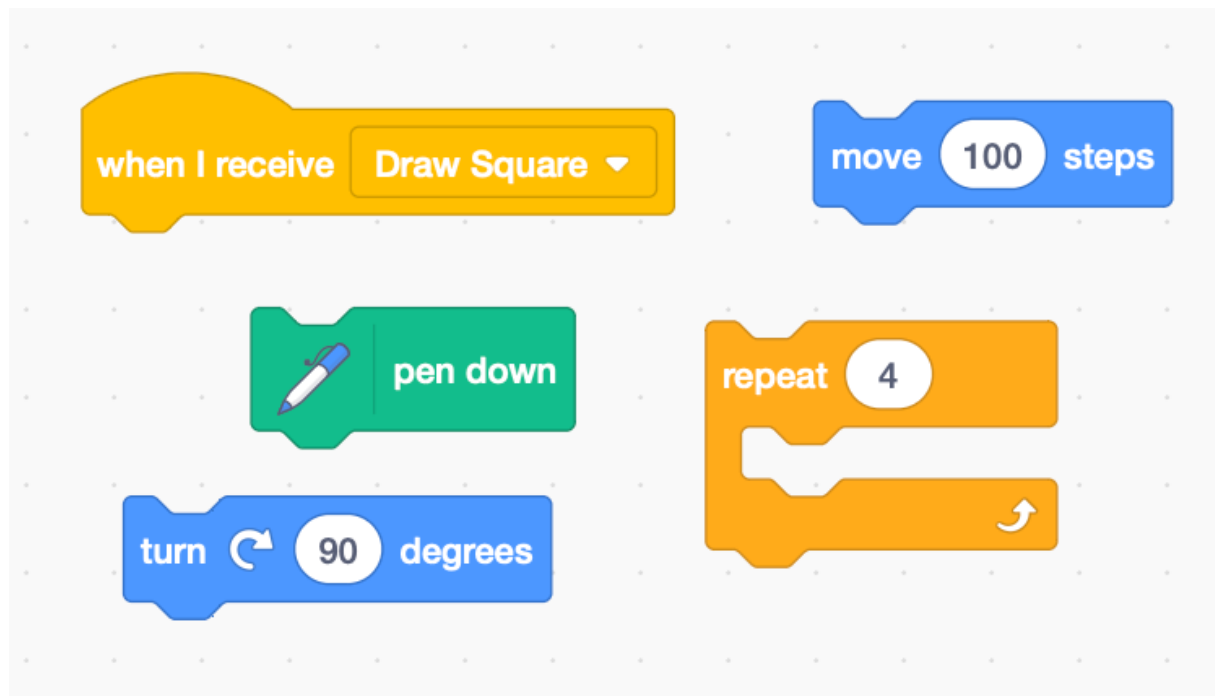
Use a When I receive block and create a new message named “Draw Square”.



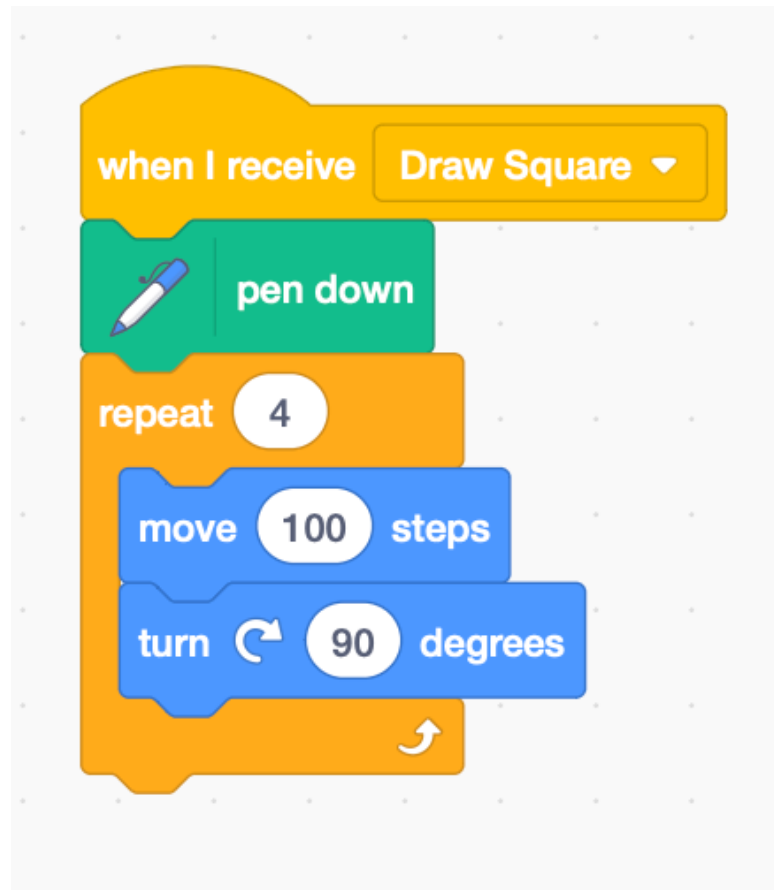
The image shows a 'New Message' dialog box. The title bar is blue with a close button (X). The main area is white. It contains the text 'New message name:' followed by a text input field containing 'Draw Square'. At the bottom right, there are two buttons: 'Cancel' and 'OK'.

# Pen Shapes – Drawing a Square

Using the following blocks, try to assemble an algorithm that will draw a square on the screen.



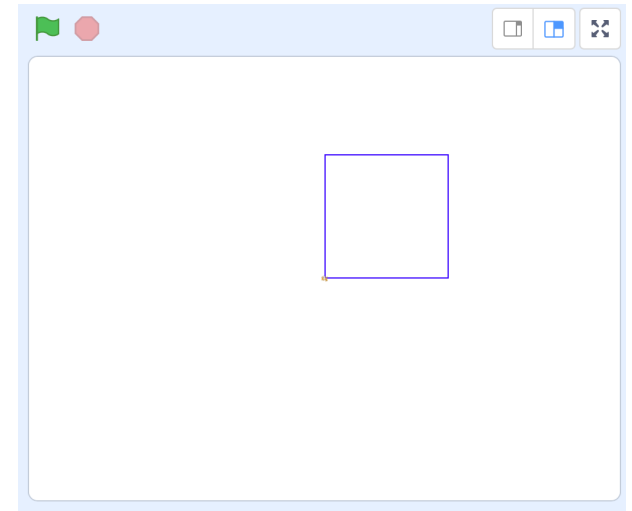
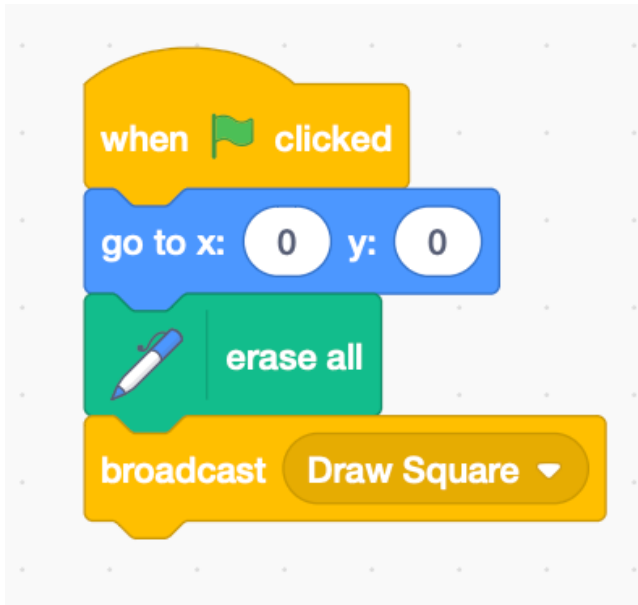
# Pen Shapes – Drawing a Square



# Pen Shapes – Testing the Algorithm

In order to use the algorithm we must use a Broadcast block with the Draw Square message.

Deleting everything on the screen ensures that shapes don't stay there every time we restart the program.

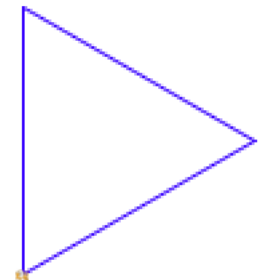


# Pen Shapes – Drawing a Triangle

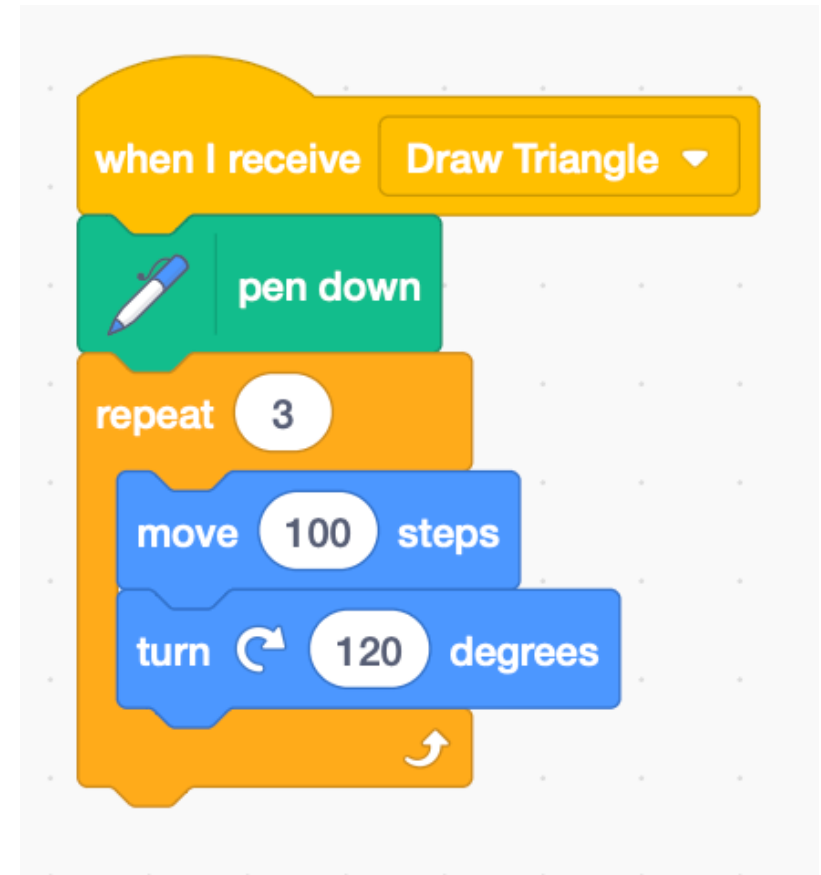
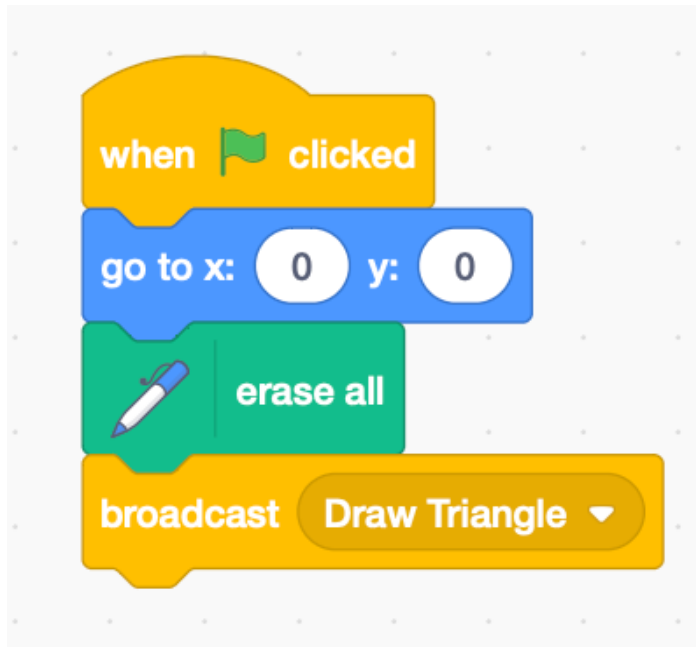
Repeat the process and adapt the algorithm to draw a triangle.

You will need a new broadcast message this time labelled for drawing a triangle.

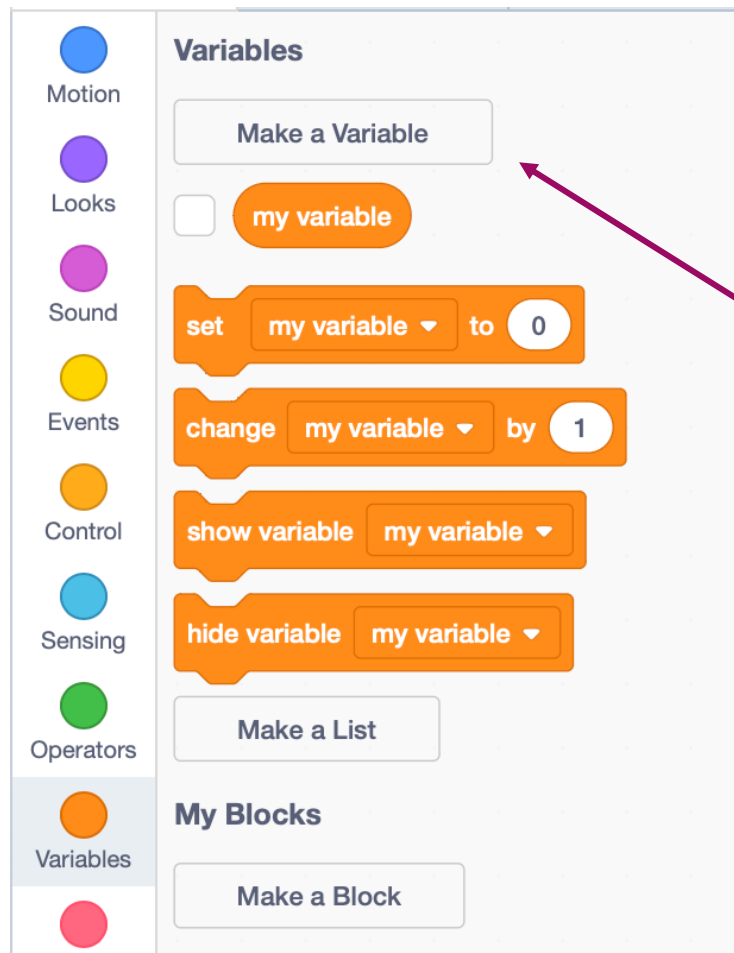
Think about which values would change and how.



# Pen Shapes – Drawing a Triangle



# Pen Shapes – Variable Patterns



Using a variable with a value that changes as we loop, we can make some unique patterns.

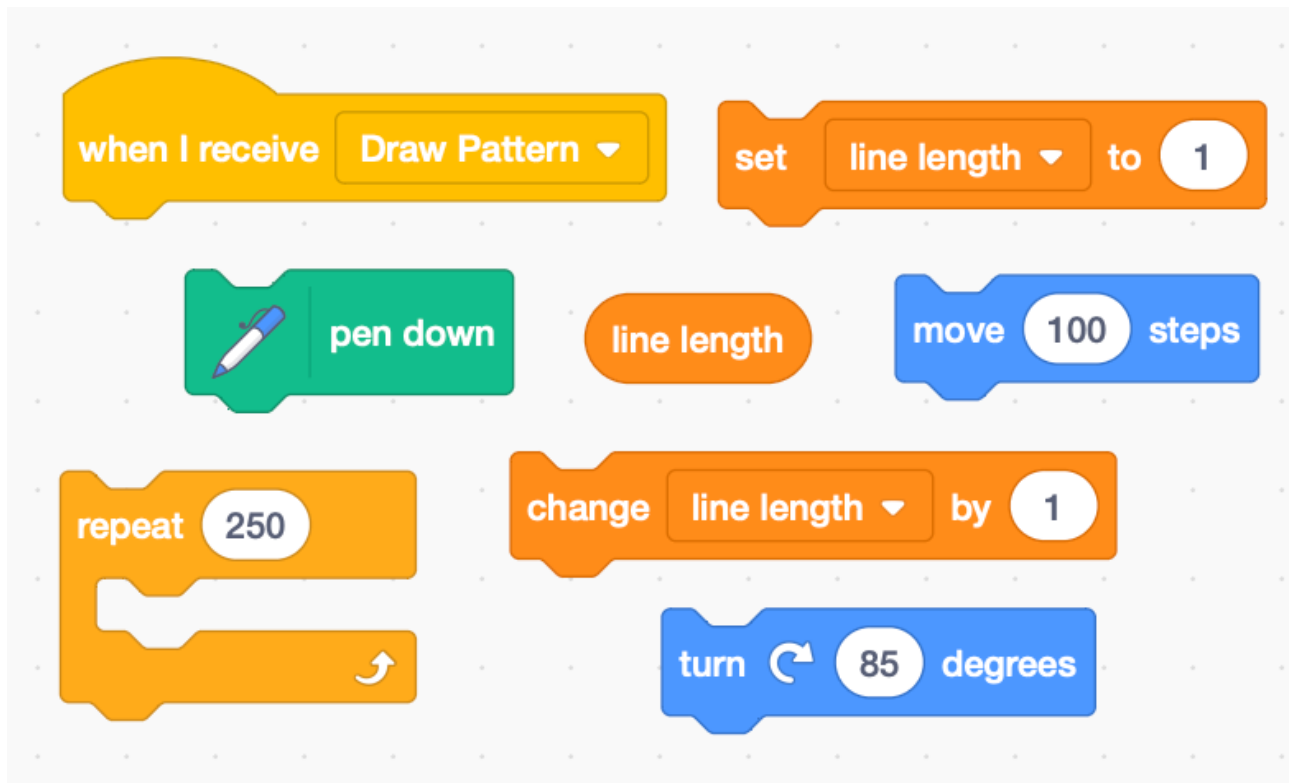
Create a variable named "line length".

The 'New Variable' dialog box is shown. It has a title bar with a close button. The main content area includes a text input field for 'New variable name:' containing 'line length'. Below this are two radio buttons: 'For all sprites' (selected) and 'For this sprite only'. At the bottom, there is a checkbox for 'Cloud variable (stored on server)' which is unchecked. The dialog ends with 'Cancel' and 'OK' buttons.

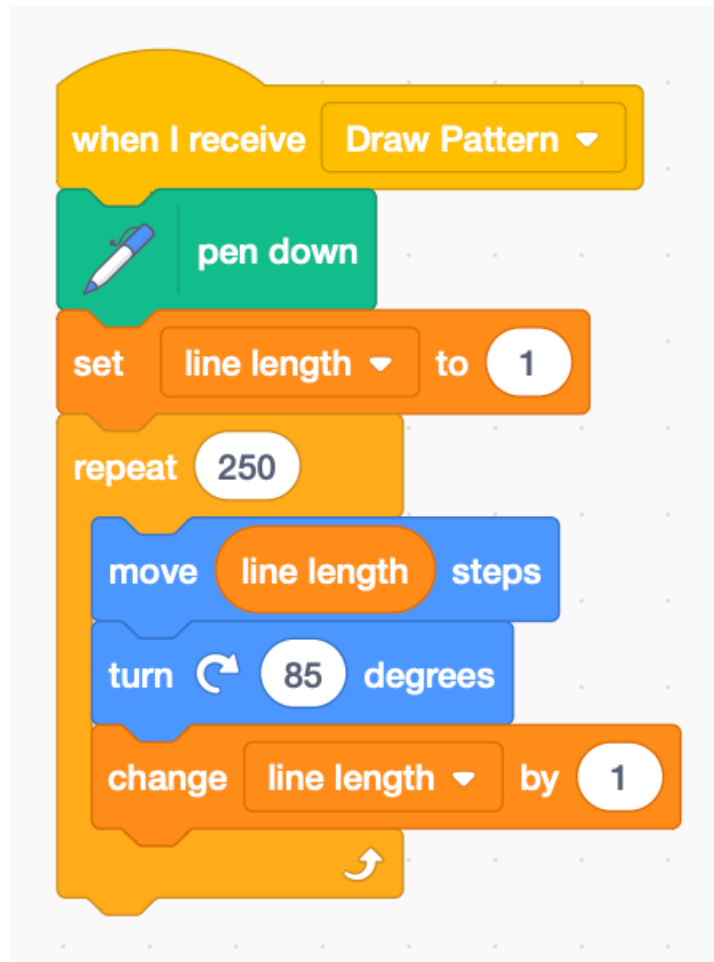


# Pen Shapes – Variable Patterns

We want the amount of steps to be the length of the line, which increases each time we repeat.



# Pen Shapes – Variable Patterns



# Pen Shapes – Variable Patterns

By editing the values inside the loop, (particularly the angle) you will see different patterns emerge.

You can also use the change colour block to add some more colour to the patterns.

