Year 4 – Computing

Programming: Further coding with Scratch

09.12.25LS/ 16.12.25 MK

NC Objectives: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.
Key Vocabulary: condition, decomposition, if statement, sprite, variable.
LO: To explore how variables and if statements are used in Scratch by identifying their purpose in a game.

Lesson 1: Exploring variables and conditions

Recap and recall

Can you explore Scratch and remind yourself of its features?

- Scratch is a block programming language.
- A loop is a coding tool used to repeat an instruction in a program.
- An algorithm is a series of instructions put in an exact order.
- Decomposition means breaking a problem into manageable chunks.

Knowledge Catcher

Knowledge catcher: Further coding with Scratch

Use this image to answer the following questions:

1 What will this code do when the green flag is clicked?

it will start the program and ask what is 4x4 if you get it right it says "well done but if you get it wrong it says "try again"

2 What is a variable used for in Scratch?

To move/make it do something.

3 What does an 'if/else' block do?

if you click the right answere it dose somthing else.

Knowledge catcher: Further coding with Scratch

Use this image to answer the following questions:

1 What will this code do when the green flag is clicked?

It will say 4x4 = if you welldone & it will say for 2 seconds if you get it right you earn: 1 score. if you Get it rong you have to try again

2 What is a variable used for in Scratch?

it will make it do somthing.

3 What does an 'if/else' block do?

if you click th right dose

Knowledge catcher: Further coding with Scratch

Use this image to answer the following questions:

1 What will this code do when the green flag is clicked?

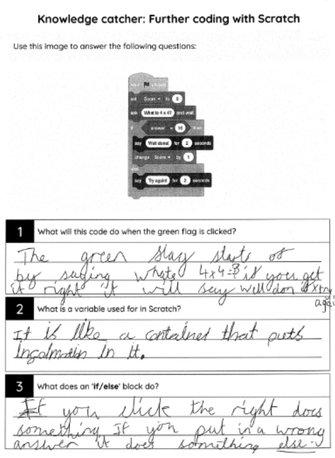
sprite will go. then sprite will ask 4 times 4 is Then if you get it right it will say well done and if you get it wrong it will say try again.

2 What is a variable used for in Scratch?

A varible is like a contianer that stores information. Such as a number or name. In the game their score was a variable.

3 What does an 'if/else' block do?

If you click the right anser it does something if you put



Knowledge catcher: Further coding with Scratch

Use this image to answer the following questions:

1 What will this code do when the green flag is clicked?

The green flag starts of by saying whats 4x4=? if you get it right it will say well don & try again

2 What is a variable used for in Scratch?

It is like a container that puts information in it.

3 What does an 'if/else' block do?

If you click the right does something If you put in a wrong answer it does somthing else.

Main Event

Date: Tuesday 9th December

Learning objective: To explore how variables and if statements are used in Scratch by identifying their purpose in a game.

Kapow

Name: Killua

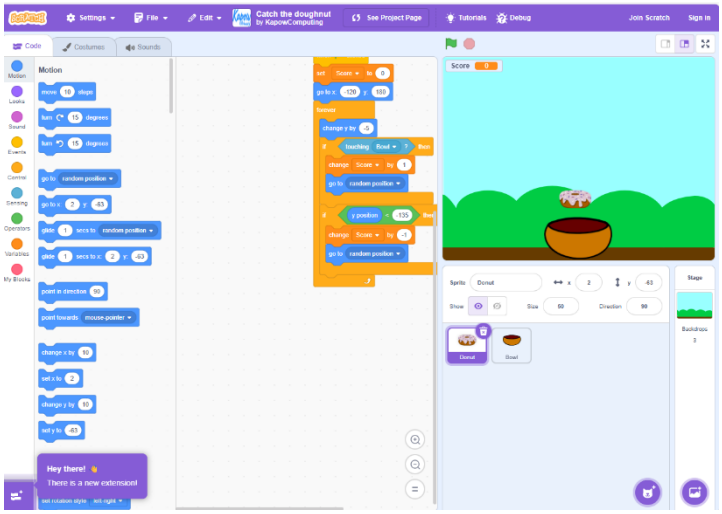
Catch the doughnut

Variables (circle the correct answer)

Variable	Where it appears	What it does
Score	at the start of the game/at the end of the game	sets the score to 0/adds 5
Score	when the doughnut touches the bowl/when the game starts	adds 1 point/takes 1 point away
Score	when the doughnut is missed/when the doughnut is caught	adds 1 point/takes 1 point away

Conditional statements (if statements) (circle the correct answer)

Variable	What it checks	What happens
If touching the bowl	if the doughnut is touching the bowl/if it has missed the bowl	the score goes up by 1/the score resets to 0
If y position <-135	if the doughnut has fallen off the screen/if it has hit the bowl	the score goes down by 1/the score goes up by 2



Date: 9/12/25

Learning objective: To explore how variables and if statements are used in Scratch by identifying their purpose in a game.

Kapow

Name: Alice + Alicia

Catch the doughnut

Variables (circle the correct answer)

Variable	Where it appears	What it does
Score	at the start of the game/at the end of the game	sets the score to 0/adds 5
Score	when the doughnut touches the bowl/when the game starts	adds 1 point/takes 1 point away
Score	when the doughnut is missed/when the doughnut is caught	adds 1 point/takes 1 point away addd 1 point

Conditional statements (if statements) (circle the correct answer)

Variable	What it checks	What happens
If touching the bowl	if the doughnut is touching the bowl/if it has missed the bowl	the score goes up by 1/the score resets to 0
If y position <-135	if the doughnut has fallen off the screen/if it has hit the bowl	the score goes down by 1/the score goes up by 2

Date: 9.12.25

Learning objective: To explore how variables and if statements are used in Scratch by identifying their purpose in a game.

Kapow

Name: Isabel and Lucas

Catch the doughnut

Variables (circle the correct answer)

Variable	Where it appears	What it does
Score	at the start of the game/at the end of the game	sets the score to 0/adds 5
Score	when the doughnut touches the bowl/when the game starts	adds 1 point/takes 1 point away
Score	when the doughnut is missed/when the doughnut is caught	adds 1 point/takes 1 point away

Conditional statements (if statements) (circle the correct answer)

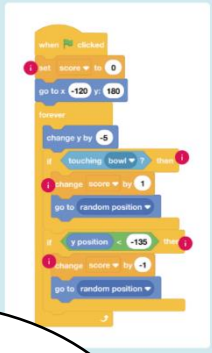
Variable	What it checks	What happens
If touching the bowl	if the doughnut is touching the bowl/if it has missed the bowl	the score goes up by 1/the score resets to 0
If y position <-135	if the doughnut has fallen off the screen/if it has hit the bowl	the score goes down by 1/the score goes up by 2

Wrapping up

Catch the doughnut code

Click to reveal the variables and conditional statements.

Kapow



What would happen if there were no score variable?

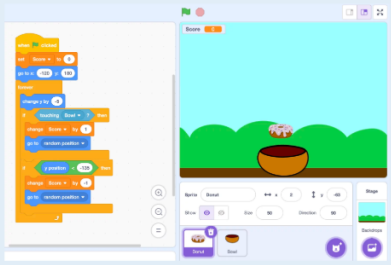
What does an if statement do in Scratch?

Can you think of another variable that could be added to this game? What would it do?

What would happen if the 'if touching Bowl' block was taken out?

NC Objectives: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
Key Vocabulary: if statement, if, then, else, sensing
LO: To use conditions and sensors to control what happens in a Scratch game.

Lesson 2: Using conditions and sensors



Mind map

Create a mind map to show everything you remember about how the game **Catch the doughnut** works and what code blocks it uses.

Use words, phrases or pictures.

A variable is like a container that stores information, like a score.

A variable can go up, down or be reset, depending on what happens in the game.

An if statement checks if something is true and then tells the computer what to do next.

Variables and if statements work together to control what happens in a game.

Main Event

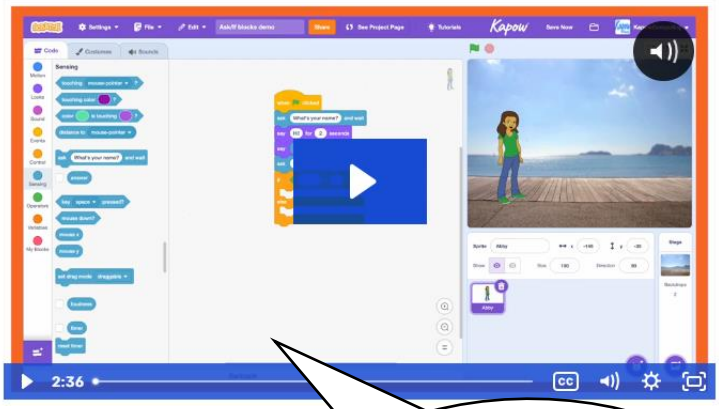
What might the code do?

Scratch does not automatically add spaces when joining two blocks of text. Add a space at the end of the word (for example, 'hello') if joining it to the variable 'answer'.

The '**if/else**' block is an if statement (also known as a conditional statement). The program reacts differently depending on whether the condition is met.

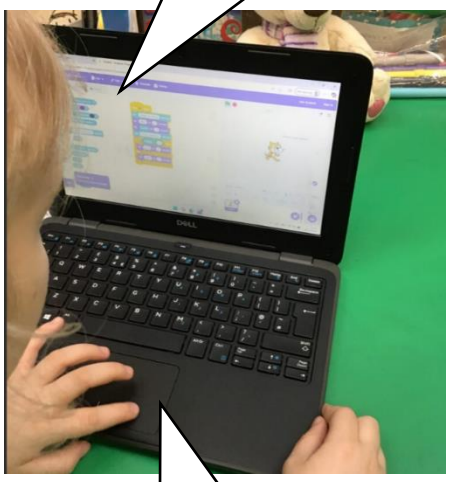
Use a green '=' operator block to compare two values. One side will have the variable '**answer**' block to represent the user's response; the other will have the correct numerical answer to the maths question.

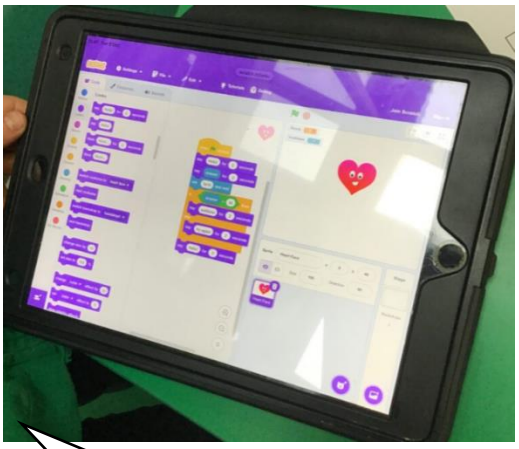
Place two '**say**' blocks inside each part of the '**if/else**' block to display different messages depending on whether the user's answer is correct or incorrect.



What is tinkering?

Can you create a new Scratch project?





Where is the ask block in Scratch?

Why is tinkering important?

Why might we need variables?

Wrapping up

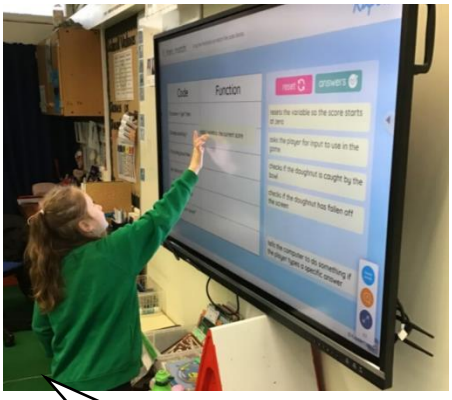
If, then, match!

Drag the functions to match the code blocks.

Code	Function
If answer = "yes" then	
Change score by 1	
If touching bowl then	
Set score to 0	
If y position < -135 then	
Ask "What is your name?" and wait	

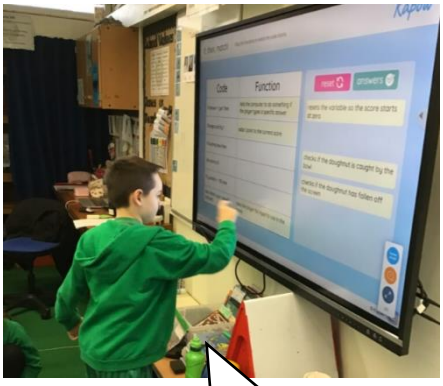
reset | answers

- resets the variable so the score starts at zero
- asks the player for input to use in the game
- checks if the doughnut is caught by the bowl
- checks if the doughnut has fallen off the screen
- adds 1 point to the current score
- tells the computer to do something if the player types a specific answer



Why does the block match that meaning?

Is it sensing, setting or changing something?



Is it a condition or an action?

NC Objectives: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
Key Vocabulary: variable
LO: To create a variable to keep score.

Lesson 3: Planning a game

Recap and recall

3, 2, 1

Write down...

Three things you learnt about if statements and sensors in the last lesson.

Two things you found interesting about if statements and sensors.

One question you still have about if statements and sensors.

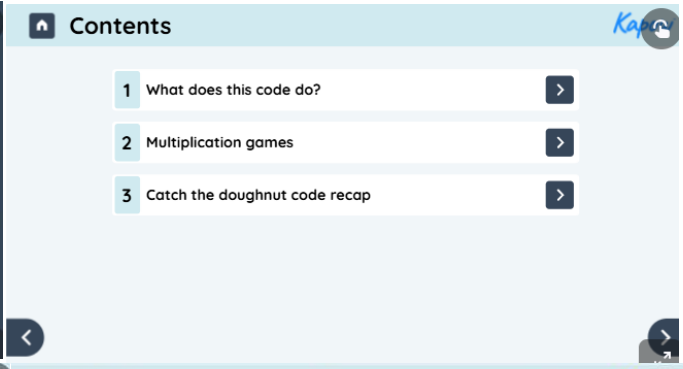
The '**if, else**' block is a conditional statement that lets the program do different things depending on the condition.

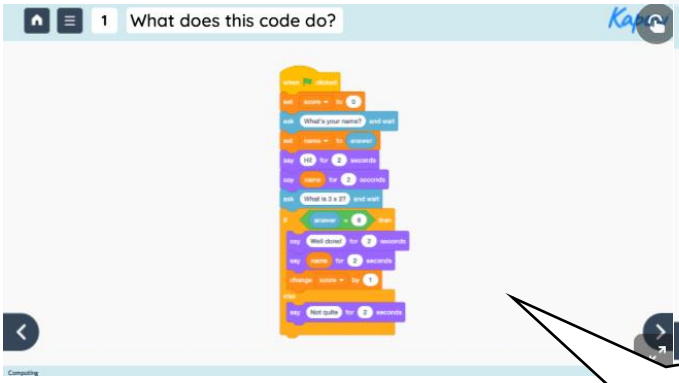
The '**answer**' block stores the user's response so the program can check if it is correct.

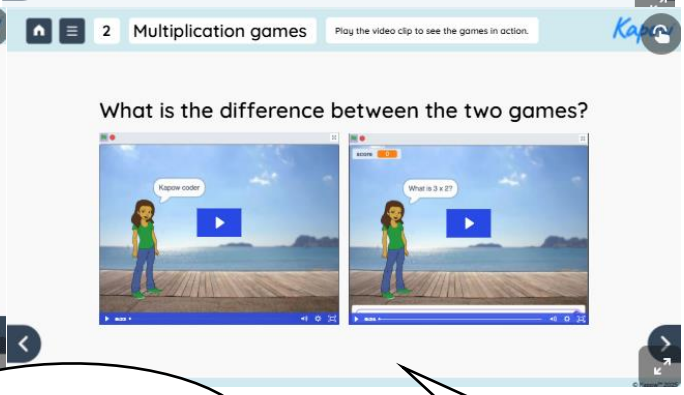
Scratch does not add a space when joining words and variables so you have to add one manually.

The sprite can speak differently depending on whether the user's answer is right or wrong.

Attention Grabber







What does the code do?

What is the difference?

Main Event

Date: 9.12.25 Name: Lexi and dayo

Learning objective: To create a variable to keep a score.

Kapow

Planning a game

Variable one	Variable two
Score	name

	Multiplication question	Answer	If answer...	Say	Else
Example	6 x 5	30	If answer 30	Wow, you're a multiplication superstar!	Not quite!
Question one	8 X 8	64	If answer 64	Well done	incorrect
Question two	3 x 4	12	If answer 12	Great job	try again ~~better luck next time~~
Question three	12X9	108	If answer 108	Fantastic work	

Date: 9.12.25 Name: Patience

Learning objective: To create a variable to keep a score.

Kapow

Planning a game

Variable one	Variable two
Score	name

	Multiplication question	Answer	If answer...	Say	Else
Example	6 x 5	30	If answer 30	Wow, you're a multiplication superstar!	Not quite!
Question one	5x5	25	If answer 25	Good!	Try again
Question two	4x5	12	If answer 12	Superstar!	ON!
Question three	9x9	81	If answer 81	WOW!	Try [illegible]

Date: 9.12.25 Name: Maria Elaina

Learning objective: To create a variable to keep a score.

Kapow

Planning a game

Variable one	Variable two

	Multiplication question	Answer	If answer...	Say	Else
Example	6 x 5	30	If answer 30	Wow, you're a multiplication superstar!	Not quite!
Question one	4 x 4 =	16	If answer	Well, you're amazing NO	
Question two	3 + 1 =	4	If answer	Wow!! what?	
Question three	100 + 100 =	200	If answer	you're a multiplication Queen	You can do it

Date: 9.12.25 Name: Oliver Abya

Learning objective: To create a variable to keep a score.

Kapow

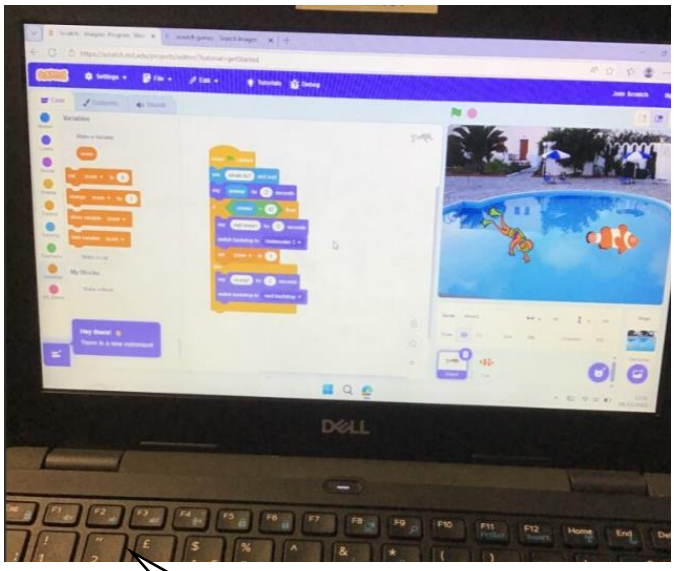
Planning a game

Variable one	Variable two
Score	Oliver Abya

	Multiplication question	Answer	If answer...	Say	Else
Example	6 x 5	30	If answer 30	Wow, you're a multiplication superstar!	Not quite!
Question one	6 x 7	42	If answer 42	Mine are black!	Try again!
Question two	31 + 1	32	If answer 32	Mine are black!	Unlucky!
Question three	10 x 10	100	If answer 100	Mine are black!	NO!

Wrapping up –

Swap seats with another pair and try each other's quizzes.



What did you like about the quiz?

What could be improved for next time?

NC Objectives:

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.

Key Vocabulary: ask block, if, then, else, join block, variable.
LO: To combine variables, if statements and sensors to program a multiplication game.

Lesson 4: Programming a game

Recap and recall

Explain the answer

'Using variables in Scratch makes a project more interesting.'

Why?

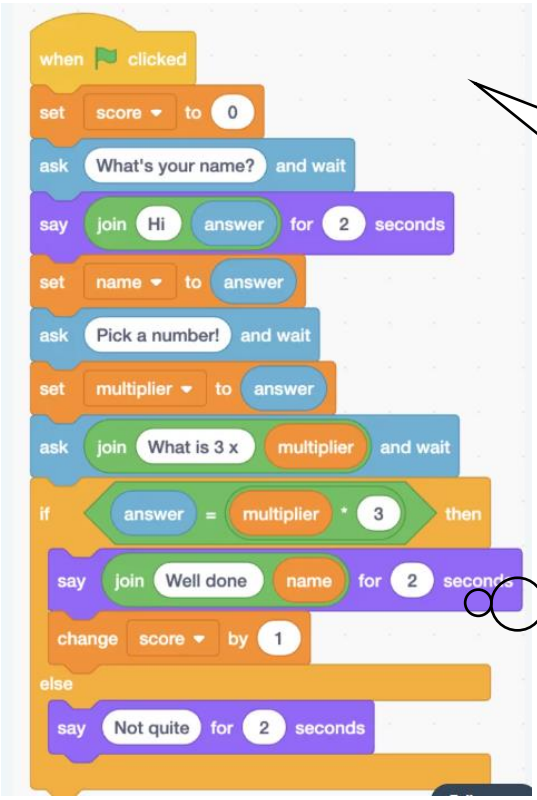
Variables allow a score to be kept in a game, making it more fun to try and win points.

A project can ask a player's name and use a variable to say it back.

Variables help a game ask questions and respond to answers, such as choosing a times table to practise.

A countdown timer or stopwatch can be added using a variable to make the game more exciting

Attention Grabber



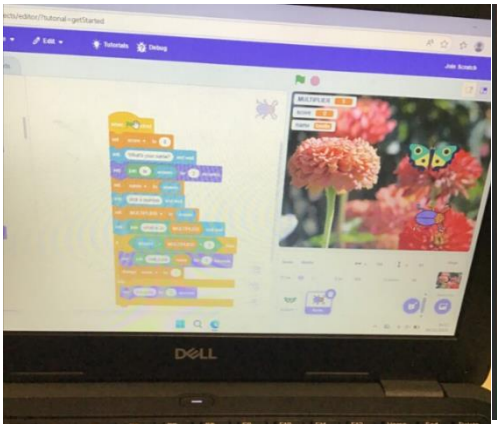
What does the code do?

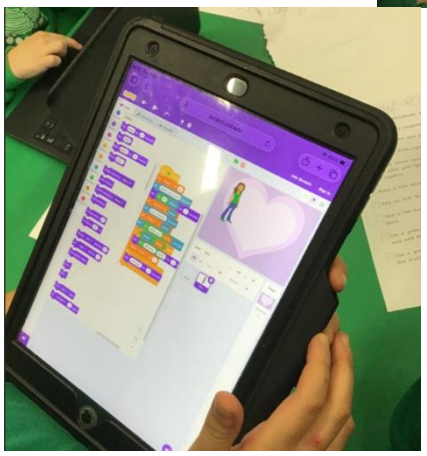
A new ask block requires the user to choose a number.

There is a new variable called multiplier.

The user's answer to picking a number is used to finish the times table question, What is 3x?

Main event





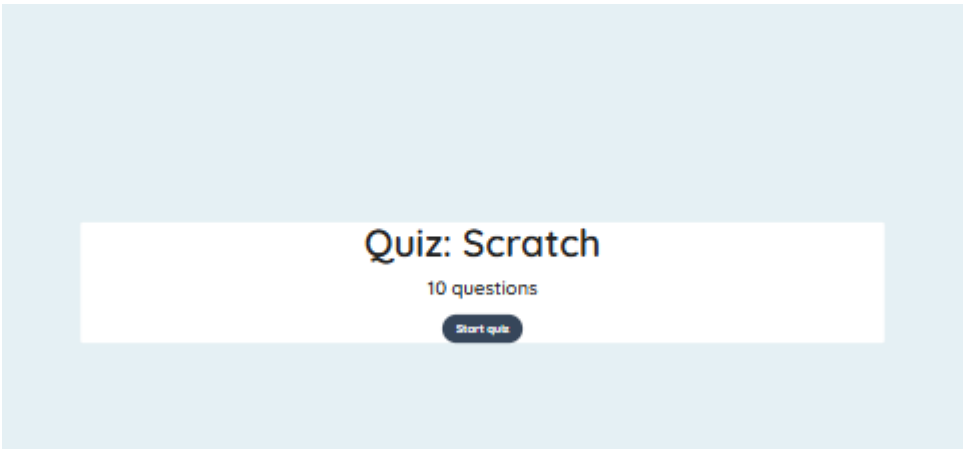
Kapow

Multiplication game checklist

Tick each step as you complete it:

- [x] Add a 'say' block and put a green 'join' block inside it.
- [x] In the 'join' block, type your message (e.g. 'Well done!').
- [x] Drag the 'name' variable into the second space. Add a space after your typed message so the text does not run together.
- [x] Make a new variable called 'multiplier'.
- [x] Add an 'ask' block and type 'Pick a number!'.
- [x] Add a 'set multiplier to answer' block after the ask block.
- [x] Use a green 'join' block to write the question. Type '3 x' and add the 'multiplier' variable.
- [ ] Use a green 'operator' block to check the answer. Put the 'multiplier' in the first space and '3' in the second.

Wrapping up



NC Objectives: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
Key Vocabulary: debug, evaluate
LO: To debug and evaluate a game by identifying and fixing errors.

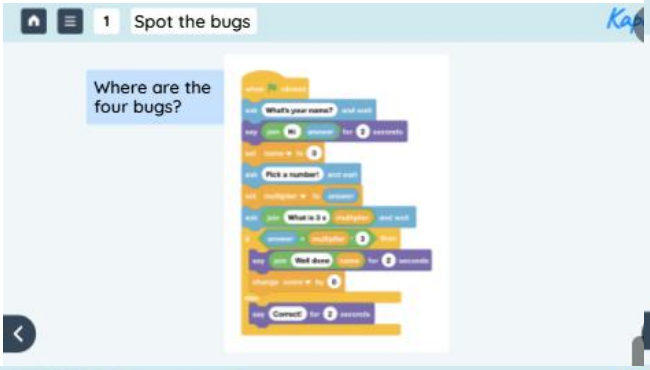
Lesson 5: Evaluating a game

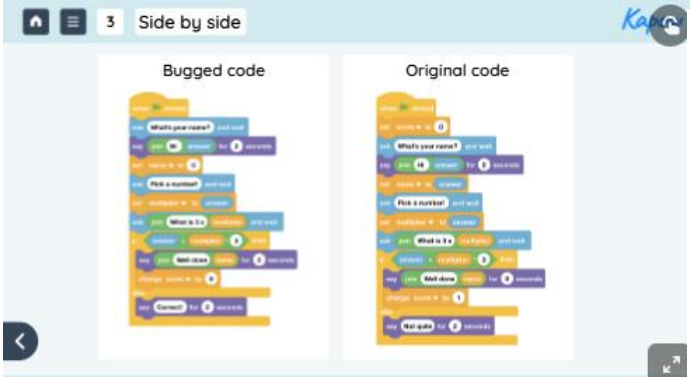
Recap and recall

Using the Knowledge organiser

1. Use the *Knowledge organiser* to write some questions about the unit.
2. Ask your partner the questions.
3. Can they answer without looking at the *Knowledge organiser*?

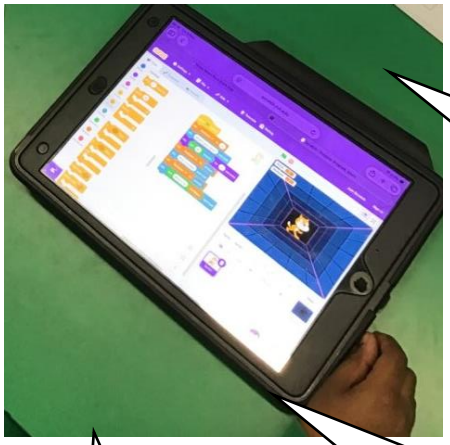
Attention grabber





Main event – Sabotage!

Swap your Scratch project with another pair, introduce a small bug, then return to their own project and try to find and fix the bug that has been added.



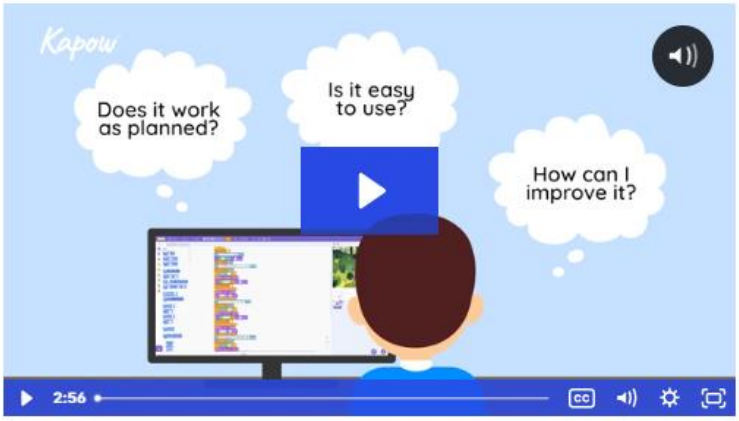
What was the bug?

What did you change to make it work properly again?

How did you figure out what needed fixing?

What is one thing you would improve in your project if you had more time?

Wrapping up



Date: 9.12.25

Name: Lexi and Leah

Learning objective: To debug and evaluate a game by identifying and fixing errors.

Kapow

Game evaluation

One thing that worked well in my game was ...

The outcome.

One thing I fixed today was...

We had to change the 3 back to the multiplier

Next time, I could improve...

the amount of characters and objects.

Date: 9 · 12 · 25

Name: Lucas Grahl

Learning objective: To debug and evaluate a game by identifying and fixing errors.

Kapow

Game evaluation

One thing that worked well in my game was ...

the operator and also how me and lucas worked together.

One thing I fixed today was...

+ altered code.

Next time, I could improve...

we could doing it by ourselves and doing it as a even better partners -

Date: 9.12.25

Name: Amelie Eliota

Learning objective: To debug and evaluate a game by identifying and fixing errors.

Kapow

Game evaluation

One thing that worked well in my game was ...

that it worked really good and it was amazing!

One thing I fixed today was...

having to fix a bug.

Next time, I could improve...

more detail.

Date: 9.12.25

Name: Allie + Allida

Learning objective: To debug and evaluate a game by identifying and fixing errors.

Kapow

Game evaluation

One thing that worked well in my game was ...

It was fun playing it and it copyed the blocks we did.

One thing I fixed today was...

the blocks.

Next time, I could improve...

to put less blocks in