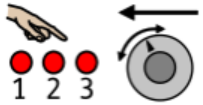
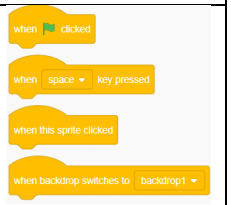
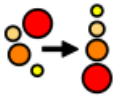
Year 4 Computing – Repetition in games

Vocabulary

Algorithm	An ordered set of precise instructions	
Infinite loop	An instruction that can repeat forever	
Modify	To change or alter	
Debug	To find and fix errors	
Count-controlled loop	A loop that repeats a set number of times	
Event block	A block that starts an action	
Sprite	A programmable character in Scratch	
Value	The number used in a loop that affects how often something happens	
Sequence	The order in which blocks are written	
Condition	A rule that must be true for something to happen	

Knowledge

Scratch:

Scratch is a program that we can use in order to code our own stories, animations and games.

We can use repeat and loop operator blocks in order to make our programs more logical and efficient to follow.
This helps to run the code continuously or for a set number of times.
This is called the **count-controlled loop.**

We can use **algorithms** to sequence movements, actions and sounds in order to program effective animations.

Scratch layout:

There are three main areas in Scratch:

The blocks palette: contains all of the different blocks – puzzle piece commands which can be used to control the animation.

Code area: This is where the blocks are placed to create a program.

Stage with **Sprite:** This is where the output of the character is presented. The **sprite** is the programmable character.

Blocks:

Event blocks: Event blocks are coloured yellow and are used to sense different events that happen e.g. the green flag being clicked.

Action blocks: Action blocks include motion blocks , sound blocks and looks blocks.
These blocks can be used to make the sprite move, make sounds and change appearance.

Repeat block: This block can be placed around command blocks that we want to repeat.
The number of times something is repeated can be typed into the white area.

Count-controlled loop: We can control the number of loops of a command with the number typed into the repeat block. The forever block makes a command continue forever.

Quizzing

Ask your partner the questions below. Can they find the correct answer on the right-hand side?

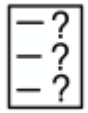
What is a sprite in Scratch?	A step-by-step set of precise instructions
What colour are the event blocks in Scratch?	It saves time and makes code shorter
Why would you use a forever loop in a game?	A block of code that repeats instructions
Why is debugging important in games?	Place sound blocks inside a forever loop
What is a condition?	A programmable character
What is an algorithm?	It makes sure the game works properly
What's the benefit of using a loop?	Yellow
What is a loop?	A rule that must be met for something to happen
How can you use loops to create background music?	To keep an action running

Quiz at home

Ask your adult to look at the KO.

Quiz them using the vocabulary and knowledge section or the quiz questions.

- Can they beat your score?
- Can they score more than 5? 10?
- Compete with your adult in the elimination quiz. Take it in turn to ask each other questions. The first person to get a question wrong is out.



BIG Questions

1. How can loops help keep track of scores in a game?
2. Why is debugging especially important when using loops?
3. What is the difference between repeating 'forever' and 'repeating 10 times'?
4. How does using a loop change the way a sprite behaves?
5. How could you explain a 'repeat until' loop to someone who has never used Scratch before?

Beat the adult

Your teacher can give **10 facts** in **1 minute** about this topic.

How many can you give to your partner?

Word scramble

Unscramble the key vocabulary from this topic below. You can create your own at the bottom

ahtgroilm	
etiniifn	
yfiodm	
duebg	
etven cbklo	
sperit	
eavlu	
eqnsceue	

Word search

P	V	A	L	U	E	M	Y	L	S	D	S
S	C	O	N	D	I	T	I	O	N	E	P
S	E	Q	U	E	N	C	E	I	Q	B	R
C	Q	I	N	F	I	N	I	T	E	U	I
O	R	A	J	J	V	Y	Z	U	K	G	T
M	V	A	L	G	O	R	I	T	H	M	E
E	V	E	N	T	B	L	O	C	K	H	P
Z	Z	O	T	Q	M	O	D	I	F	Y	A

Algorithm

Condition

Debug

Event block

Infinite

Modify

Sequence

Sprite

Value

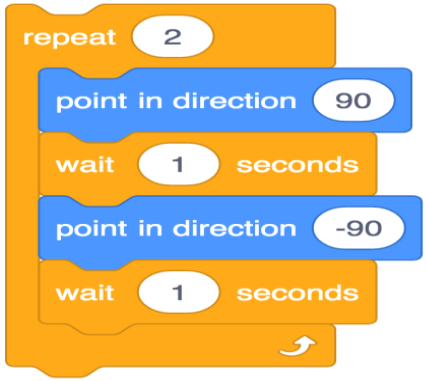
Skills

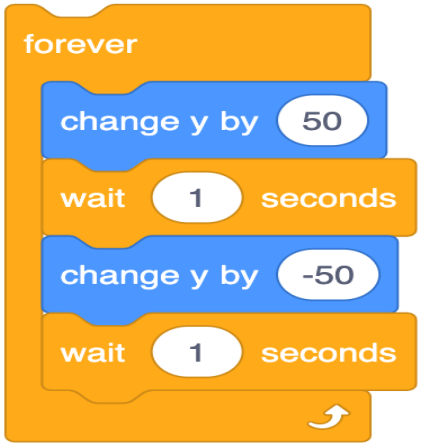
Creative tasks

Design an animal catching game using this template

Sprite name	Sprite 1:	Sprite 2:
How will the sprite move?		
Will there be any sounds?		
Type of repetition used (✔)	❑ Infinite (forever) ❑ Count-controlled	❑ Infinite (forever) ❑ Count-controlled
Write the algorithm for the sprite		
Which backdrops will you use?		How will the game end?

Skill





What is the difference between these two loops?