Slides are created in A4 Landscape size for easy printing
Green background indicates it is an answer slide

Retrieval Practice for loops

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Hampshire Services
HIAS SCHOOL IMPROVEMENT

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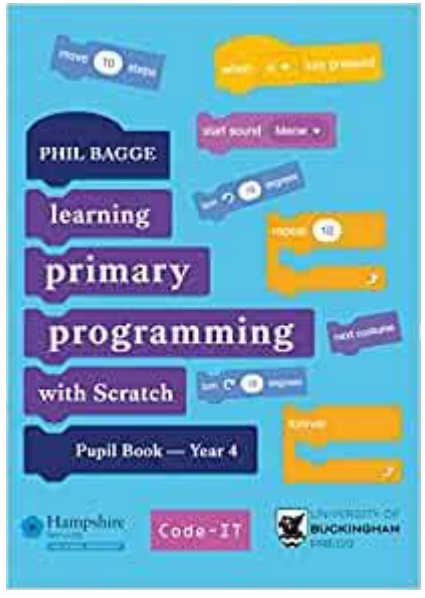
Use slides 4-17 with code-it book modules
Toy give away module
Regular 2D shapes
Dog chase

Use slides 19-26 with code-it book modules
Fishtank
Helicopter Game



https://amzn.eu/d/4WLCtTY

Loop knowledge

Declarative knowledge
Static facts or knowledge stored in your memory (what)

Procedural knowledge
How to perform a specific skill or task (how)

Conditional Knowledge
When to use declarative and procedural knowledge (when & why)

Detailed Repetition Knowledge

- A loop is a sequence of instructions that are repeated
- **Indefinite** means that the number of loops completed will not be known by the programmer.
- **Definite** means the number of loops are known.
- A **count-controlled-loop** ends after the count is finished and is a definite loop
- An **infinite** loop never ends and is an indefinite loop
- A **condition-ends-loop** is ended by a condition and is an indefinite loop

Repetition Algorithmic Knowledge

- I can write a loop as an algorithm using appropriate loop language such as do so many times, loop always, loop until or repeat x times.
- I can indent actions inside a loop to make it clear they are inside the loop

Repetition Programming Knowledge

- I can use a count-controlled-loop where I want an sequence of actions to take place for a specific amount of time or over a specific distance
- I can use an indefinite infinite loop where I don't want the loop to end once it has started
- I can use an indefinite loop that is ended by a condition when I need the user or another program mechanism to interact with the loop end
- I can nest count-controlled-loops where I want to take advantage of the cumulative effect of inner loops.

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Count-controlled loop knowledge

Detailed Repetition Knowledge

- A loop is a sequence of instructions that are repeated
- **Indefinite** means that the number of loops completed will not be known by the programmer.
- **Definite** means the number of loops are known.
- A **count-controlled-loop** ends after the count is finished and is a definite loop

Repetition Algorithmic Knowledge

- I can write a loop as an algorithm using appropriate loop language such as do so many times
- I can indent actions inside a loop to make it clear they are inside the loop

Repetition Programming Knowledge

- I can use a count-controlled-loop where I want an sequence of actions to take place for a specific amount of time or over a specific distance

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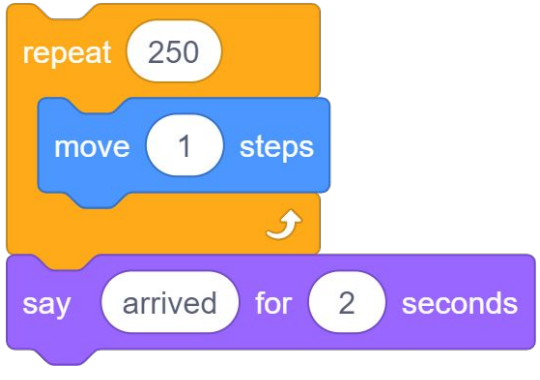
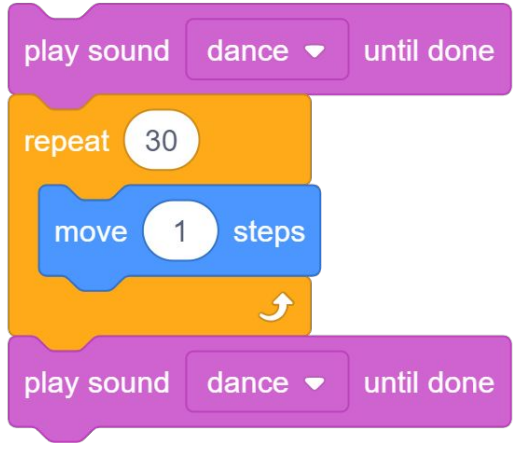
Declarative knowledge
Static facts or knowledge stored in your memory (what)

Procedural knowledge
How to perform a specific skill or task (how)

Conditional Knowledge
When to use declarative and procedural knowledge (when & why)

Underline the actions that are inside a count-controlled loop

Sing happy birthday
Loop three times
    Shout hoorah
Sit down
Eat birthday cake
	Pick up drum stick
	Loop 10 times
	    Hit drum
	Put down drum stick
		Walk forward one step
		Turn right 90 degrees
		Walk forward one step
		Turn left 90 degrees
		Walk forward one step
		Turn right 90 degrees

Stans
Loop 100 times
    Point up
    Jump
    Point down
    Jump
Sit
		

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Underline the actions that are inside a count-controlled loop

Sing happy birthday
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Loop 100 times
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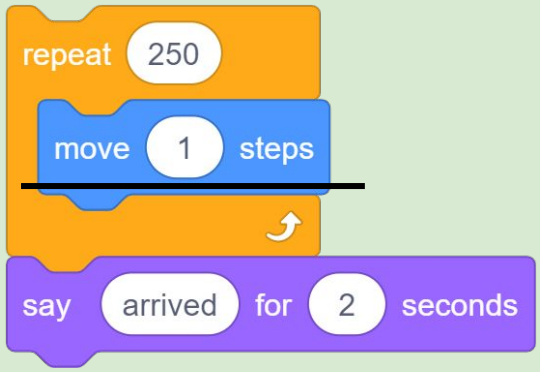
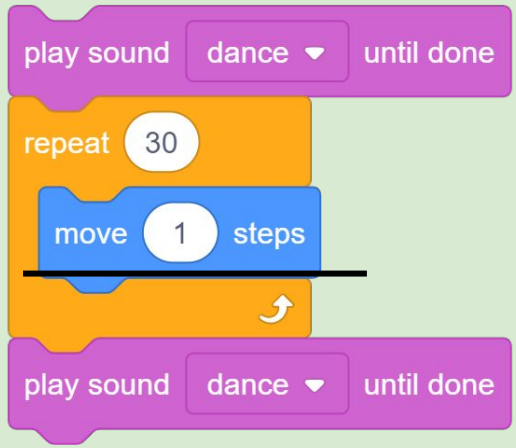
    Jump
    Point down
    Jump
Sit
		

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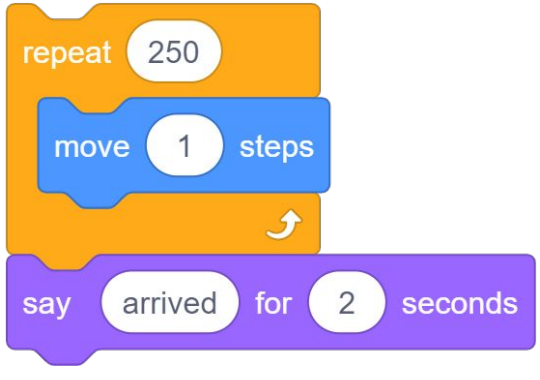
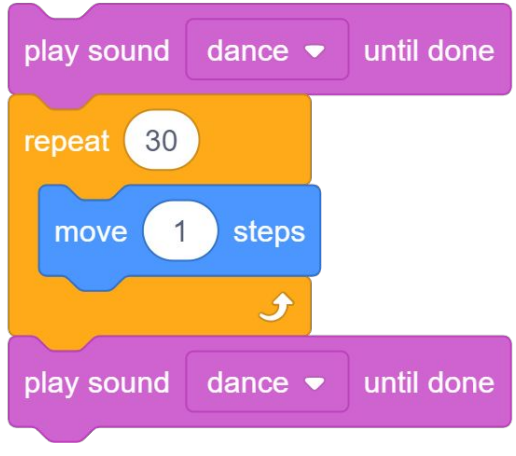
Underline the actions that are **NOT** inside a count-controlled loop

Sing happy birthday
Loop three times
  Shout hoorah
Sit down
Eat birthday cake
	Pick up drum stick
	Loop 10 times
	  Hit drum
	Put down drum stick
		Walk forward one step
		Turn right 90 degrees
		Walk forward one step
		Turn left 90 degrees
		Walk forward one step
		Turn right 90 degrees

Stans
Loop 100 times
  Point up
  Jump
  Point down
  Jump
Sit
		

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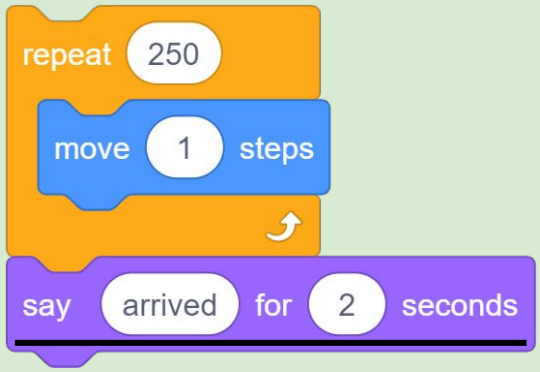
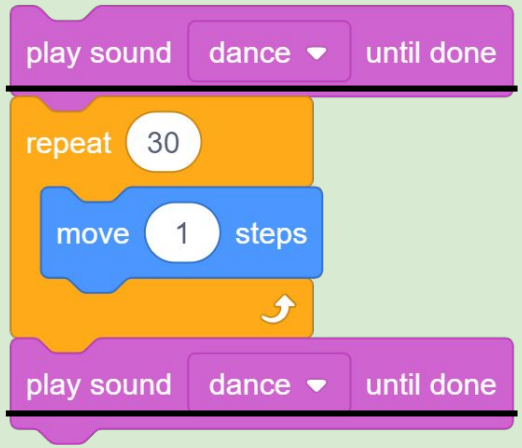
Underline the actions that are **NOT** inside a count-controlled loop

Sing happy birthday Loop three times Shout hoorah Sit down Eat birthday cake	Pick up drum stick Loop 10 times Hit drum Put down drum stick	Walk forward one step Turn right 90 degrees Walk forward one step Turn left 90 degrees Walk forward one step Turn right 90 degrees
Stand Loop 100 times Point up Jump Point down Jump Sit		

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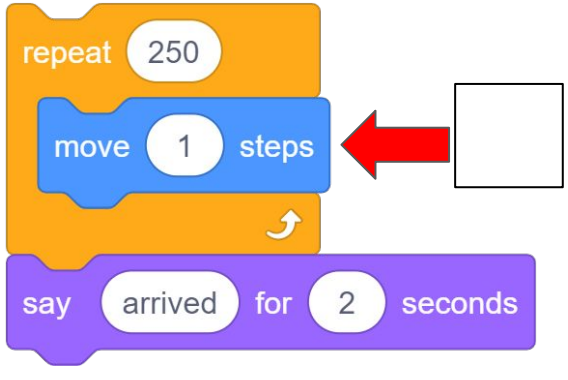
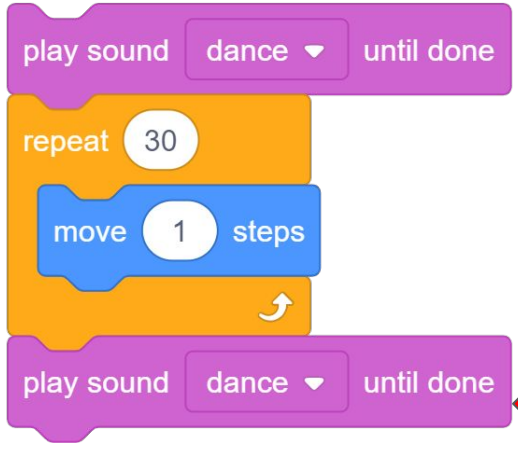
How many times will the action run?

Sing happy birthday Loop three times Shout hoorah ⟵ ☐ Sit down Eat birthday cake	Pick up drum stick Loop 10 times Hit drum ⟵ ☐ Put down drum stick	Walk forward one step Turn right 90 degrees Walk forward one step Turn left 90 degrees ⟵ ☐ Walk forward one step Turn right 90 degrees
Stans Loop 100 times Point up Jump Point down Jump ⟵ ☐ Sit	 ⟵ ☐	 ⟵ ☐

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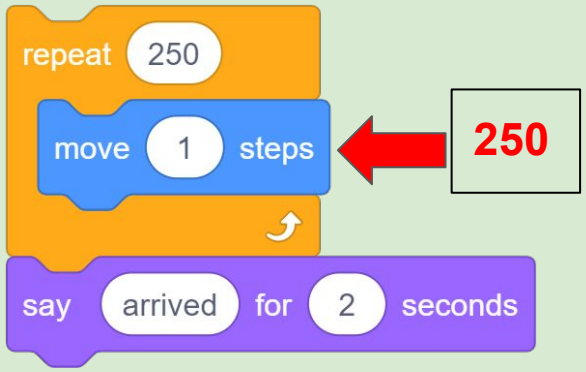
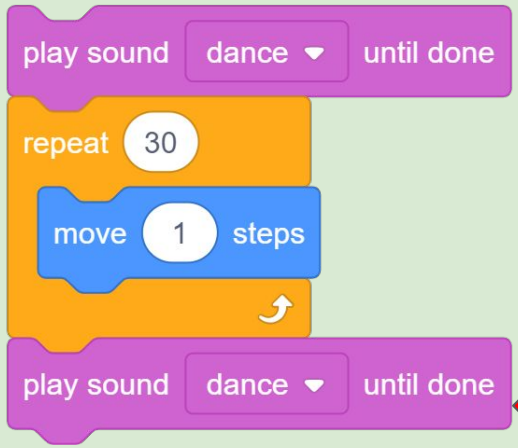
How many times will the action run?

Sing happy birthday Loop three times Shout hoorah Sit down Eat birthday cake **3**	Pick up drum stick Loop 10 times Hit drum Put down drum stick **10**	Walk forward one step Turn right 90 degrees Walk forward one step Turn left 90 degrees Walk forward one step Turn right 90 degrees **1**
Stans Loop 100 times Point up Jump Point down Jump Sit **100**	 **250**	 **1**

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Tick algorithms that use a **count**-controlled loop?

Pick up drum stick Loop 10 times Hit drum Put down drum stick	Walk forward one step Turn right 90 degrees Walk forward one step Turn left 90 degrees Walk forward one step Turn right 90 degrees
Stand Jump to the right Jump to the left Jump forward Jump backwards sit	Sing happy birthday Loop three times Shout hoorah Sit down Eat birthday cake

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Tick algorithms that use a count-controlled loop?

Pick up drum stick **Loop 10 times** **Hit drum** Put down drum stick 	Walk forward one step Turn right 90 degrees Walk forward one step Turn left 90 degrees Walk forward one step Turn right 90 degrees
Stand Jump to the right Jump to the left Jump forward Jump backwards sit	Sing happy birthday **Loop three times** **Shout hoorah** Sit down Eat birthday cake

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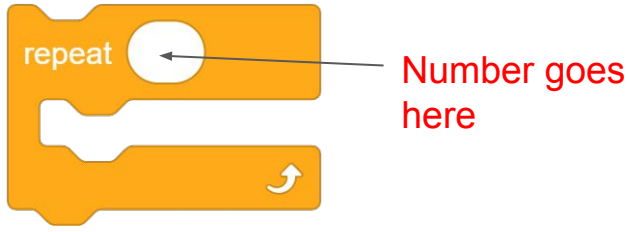
Tick the programming plans that **could** use a count-controlled loop



Programming Plan	Tick if it could use a count-controlled loop
A program to draw a regular five sided shape	
A program to make a ghost sprite flash ten times	
A program to have a conversation between two characters	
A program to make a toy car move 250 steps to the end of the screen slowly and then stop	
A program to say how good a football team is	

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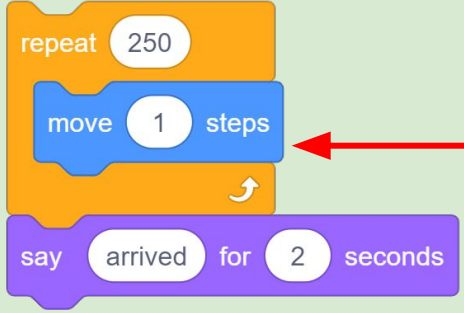
Tick the programming plans that **could** use a count-controlled loop



Programming Plan	Tick if it could use a count-controlled loop
A program to draw a **regular five sided** shape	
A program to make a ghost sprite flash **ten times**	✓
A program to have a conversation between two characters	✓
A program to make a toy car move 250 steps to the end of the screen slowly and then stop	✓
A program to say how good a football team is	

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True or False?

	True	False
A loop is a sequence of instructions that are repeated		
Indefinite means that we won't know how many times a loop will run		
Definite means we do know how many times a loop will run		
A **count-controlled loop** ends after the count is finished and is a definite loop		

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True or False?

	True	False
A loop is a sequence of instructions that are repeated	✓	
Indefinite means that we won't know how many times a loop will run	✓	
Definite means we do know how many times a loop will run	✓	
A **count-controlled loop** ends after the count is finished and is a definite loop	✓	

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True or false?

Statement	**True or False?**
A loop is one action followed by another action	
A loop is a sequence of instructions that are repeated	
Loops can be definite (know when they end) or indefinite (don’t know when they end)	
Loops are only found in programming and NOT in an algorithm	
Loops are used in algorithms AND programming	
Count-controlled loops are definite as we know how many loops they will run before they end	

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True or false?

Statement	True or False?
A loop is one action followed by another action	**False that is a sequence**
A loop is a sequence of instructions that are repeated	**True**
Loops can be definite (know when they end) or indefinite (don't know when they end)	**True**
Loops are only found in programming and NOT in an algorithm	**False loops can be used in both**
Loops are used in algorithms AND programming	**True**
Count-controlled loops are definite as we know how many loops they will run before they end	**True**

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Infinite loop knowledge

Detailed Repetition Knowledge

- A loop is a sequence of instructions that are repeated
- **Indefinite** means that the number of loops completed will not be known by the programmer.
- An **infinite** loop never ends and is an indefinite loop

Repetition Algorithmic Knowledge

- I can write a loop as an algorithm using appropriate loop language such as loop forever or loop always
- I can indent actions inside a loop to make it clear they are inside the loop

Repetition Programming Knowledge

- I can use an indefinite infinite loop where I don't want the loop to end once it has started

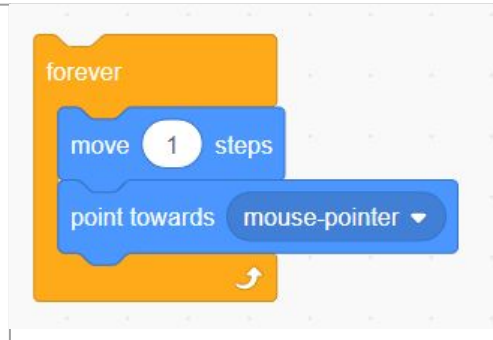
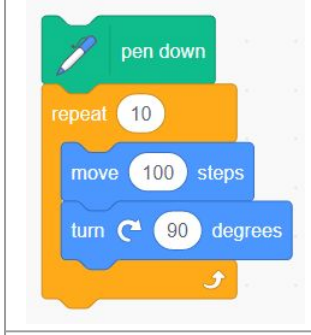
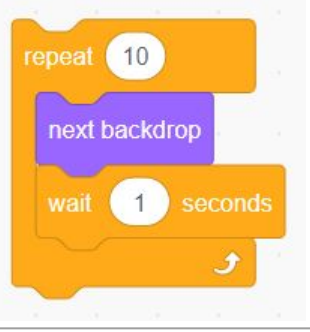
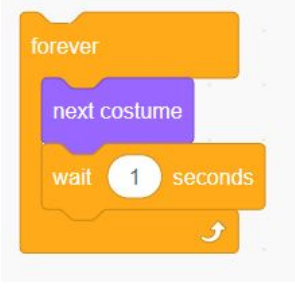
Declarative knowledge
Static facts or knowledge stored in your memory (what)

Procedural knowledge
How to perform a specific skill or task (how)

Conditional Knowledge
When to use declarative and procedural knowledge (when & why)

Indefinite (don't know how many loops it will run) or **definite** (know how many loops it will run)

Label code or algorithm **indefinite** or **definite**

Stand Loop 4 times Hop Sit	Loop always Stand sit	
		Loop Forever Wave bow
Loop 14 times Hit drum Hit triangle Play piano		

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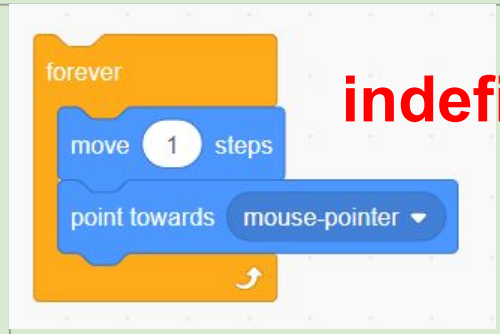
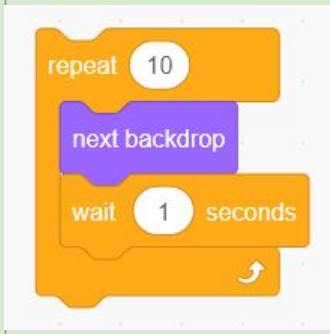
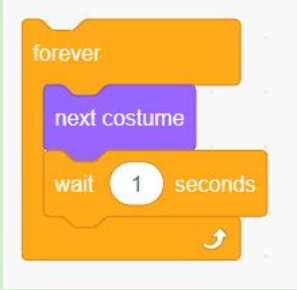
Indefinite (don't know how many loops it will do) or **definite** (know how many loops it will do)

Label code or algorithm indefinite or definite

Stand Loop 4 times Hop Sit definite	Loop always Stand sit **indefinite**	 **indefinite**
 definite	 definite	Loop Forever Wave bow **indefinite**
Loop 14 times Hit drum Hit triangle Play piano definite	 **indefinite**	 **indefinite**

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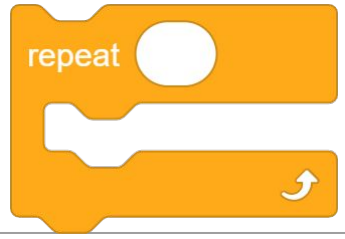
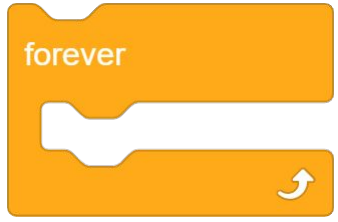
Repeat loop 

or 

forever loop?

	Repeat or forever loop
Drawing a shape with four sides and four turns	
Making a sprite move without stopping for the whole length of the game	
Making a sprite bounce up and down 10 times before stopping	
Making a sprite change costume all the time the program is running	

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Repeat loop or forever loop?

	Repeat or forever loop
Drawing a shape with four sides and four turns	Repeat loop
Making a sprite move without stopping for the whole length of the game	Forever loop
Making a sprite bounce up and down 10 times before stopping	Repeat loop
Making a sprite change costume all the time the program is running	Forever loop

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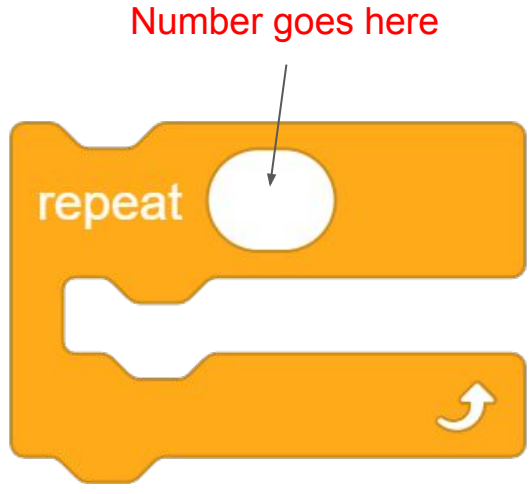
Draw lines to connect the fact to the correct loop
Some facts may connect to both loops

It can have code before it starts
It can have code after it ends
It is controlled by a number
We do not know when it will end
It can have more than one code block inside it
We know how many times it will loop



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Draw lines to connect the fact to the correct loop
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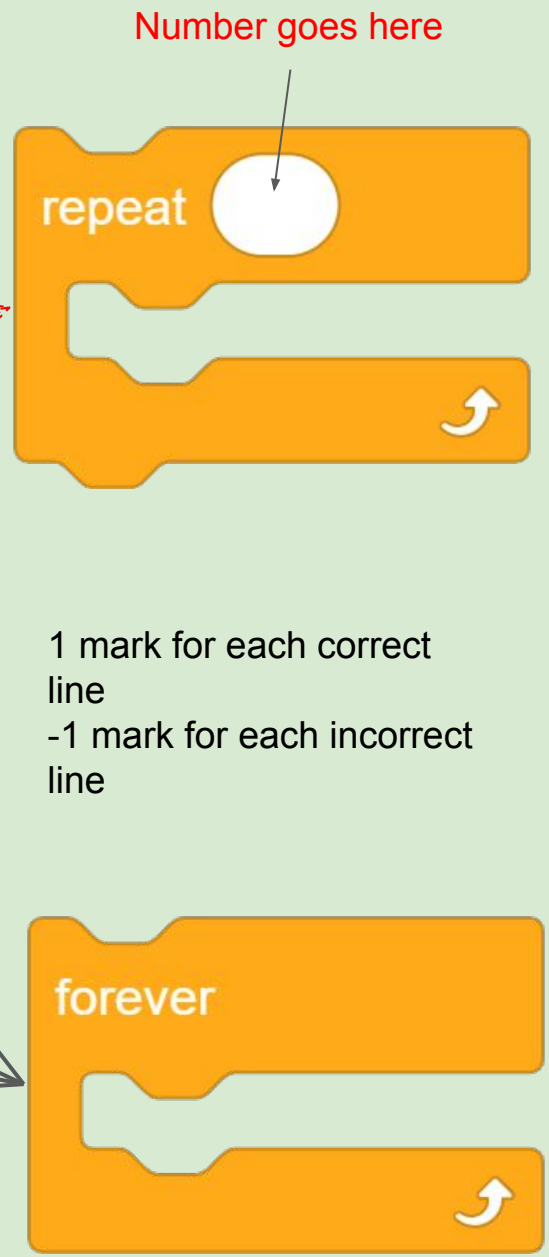

1 mark for each correct line
-1 mark for each incorrect line

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Tick the programming ideas that you could use a forever loop for

Code to play the same music over and over again	Code to make a character look like it is walking by changing the costume all the time the game is running.	Code to make a sprite wobble 8 times before stopping
Code at the beginning of the program to tell the user how to control a sprite	Code to make a character go back to the start before other code is run	Code to draw a three sided shape before stopping drawing
Code to make a sprite point in a direction after all other code has finished running	Code to make a ball bounce six times only	Code to make a moon sprite spin all the time

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Tick the programming ideas that you could use a forever loop for

Code to play the same music over and over again ✓	Code to make a character look like it is walking by changing the costume all the time the game is running. ✓	Code to make a sprite wobble 8 times before stopping
Code at the beginning of the program to tell the user how to control a sprite	Code to make a character go back to the start before other code is run	Code to draw a three sided shape before stopping drawing
Code to make a sprite point in a direction after all other code has finished running	Code to make a ball bounce six times only	Code to make a moon sprite spin all the time ✓

You will discover more uses for a forever loop in Year 5

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Loops ended by conditions knowledge

Detailed Repetition Knowledge

- A loop is a sequence of instructions that are repeated
- **Indefinite** means that the number of loops completed will not be known by the programmer.
- **Definite** means the number of loops are known.
- A **condition-ends-loop** is ended by a condition and is an indefinite loop

Repetition Algorithmic Knowledge

- I can write a loop as an algorithm using appropriate loop language such as loop until
- I can indent actions inside a loop to make it clear they are inside the loop

Repetition Programming Knowledge

- I can use an indefinite loop that is ended by a condition when I need the user or another program mechanism to interact with the loop end

This is covered in the year 5 book and nested loops are covered in the Year 6 book

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Declarative knowledge
Static facts or knowledge stored in your memory (what)

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