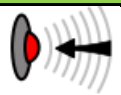
Year 6 Computing – Sensing movement

Vocabulary

Sensor	A device that can detect changes in the environment	
Micro:bit	A small programmable device that can sense inputs	
Input	Information a computer receives from sensors or the user	
Output	Information or actions that a device produces in response to input	
Algorithm	A set of step-by-step instructions that tells the device what to do	
Accelerometer	A sensor inside the micro:bit that detects movement, tilt and orientation	
Loop	A selection of a program that repeats instructions	
Event	Something that happens which the program can respond to	
Debug	Finding and fixing mistakes in a program	
Variable	A value that can be set and changed throughout the program	

Knowledge

What is a micro:bit?

The **micro:bit** is a small, programmable device that can sense the world around it. It has sensors like an **accelerometer** to detect movement, tilt, and orientation, and buttons that can be pressed to give input.

Inputs and events

Input is information the micro:bit receives, such as a tilt, shake, or button press. These are called **events** because they make the program respond in a certain way. For example, shaking the micro:bit can make it show a happy face on the LED display.

Variables and outputs

A **variable** stores information that can change, like the number of shakes or a score. **Output** is what the micro:bit does in response to input, such as turning on LEDs, playing a sound, or displaying a pattern. Using variables and outputs together makes programs interactive.

Conditional statements and loops

Programs can use if/then statements to respond only when a certain event happens, such as:

- "If tilted left, then show an arrow pointing left."
  A **loop** repeats instructions, often checking the accelerometer or buttons continuously, so the micro:bit can respond immediately to events

Debugging

Sometimes programs don't work as expected. **Debugging** is the process of finding and fixing mistakes so that the micro:bit reacts correctly to movement and events.

Quizzing

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

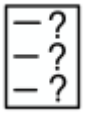
what is the small programmable device used in this unit?	Debugging
what sensor detects movement and tilt?	It repeats instructions continuously
what is information received by the micro:bit called?	Accelerometer
What is the rule called that tells the micro:bit to act only if a certain event happens?	Stores information that can change
What is the process of finding and fixing mistakes in the program?	An event is detected by the accelerometer
What does a variable do in a micro:bit program?	If/ then
Which part of the micro:bit shows patterns, shapes or numbers?	Micro:bit
What happens in a loop in a micro:bit program?	Input
what happens when the micro:bit is shaken?	LED display

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. Why do devices use sensors instead of relying on human input?
2. How does a program decide what to do when a sensor detects movement?
3. How can loops make sensor-based programs more effective?
4. In what real-life situations do we use sensors to detect movement?

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

rsosne	
itnpu	
ottpuu	
giltarmho	
moacteleerrec	
olpo	
vntee	
ugbed	

Creative Tasks

1. Use a blank copy of the KO to fill in the missing information.

2. Program characters to dance when movement is detected. Add music and colourful backgrounds for a party!

3. Program the online Micro:bit to show a random number (1–6) when you shake it.

Challenge

1. A _____ is a device that can detect changes in the environment.

2. Information a device receives from a sensor is called _____

3. A section of a program that repeats instructions is called a _____

Loop

Sensor

Output

Enquiry				
System Design				

Design your own algorithm to program on to the micro:bit
Think about what you want the sensor to detect and how it will be displayed.

Task

Variables

Name:

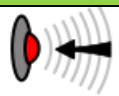
What will be displayed?

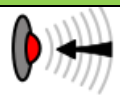
Circle which you will use.

Text Numbers
Images

Describe them below.

Knowledge	Knowledge
What is a micro:bit? The [ ] is a small, programmable device that can sense the world around it. It has sensors like an [ ] to detect movement, tilt, and orientation, and buttons that can be pressed to give [ ]. **Inputs and events** [ ] is information the micro:bit receives, such as a tilt, shake, or button press. These are called [ ] because they make the program respond in a certain way. For example, shaking the micro:bit can make it show a happy face on the [ ] **Variables and outputs** A [ ] stores information that can change, like the number of shakes or a score. [ ] is what the micro:bit does in response to input, such as turning on LEDs, playing a sound, or displaying a pattern. Using variables and outputs together makes programs [ ] **Conditional statements and loops** Programs can use [ ] to respond only when a certain event happens, such as: • "If tilted left, then show an arrow pointing left." A **loop** repeats instructions, often checking the accelerometer or buttons continuously, so the micro:bit can respond immediately to events **Debugging** Sometimes programs don't work as expected. [ ] is the process of finding and [ ] mistakes so that the micro:bit reacts [ ] to movement and events.	**What is a micro:bit?** **Inputs and events:** **Variables and outputs:** **Conditional statements and loops:** **Debugging:**

Write the definition for each of the following words		
Vocabulary		
Sensor		
Micro:bit		
Input		
Output		
Algorithm		
Accelerometer		
Loop		
Event		
Debug		
Variable		

Write the vocabulary word for each definition		
Vocabulary		
	A device that can detect changes in the environment	
	A small programmable device that can sense inputs	
	Information a computer receives from sensors or the user	
	Information or actions that a device produces in response to input	
	A set of step-by-step instructions that tells the device what to do	
	A sensor inside the micro:bit that detects movement, tilt and orientation	
	A selection of a program that repeats instructions	
	Something that happens which the program can respond to	
	Finding and fixing mistakes in a program	
	A value that can be set and changed throughout the program	