ALMOND HILL JUNIOR SCHOOL MEDIUM TERM PLAN

TOPIC TITLE/SUBJECT: Programming B – Sensing movement   **YEAR GROUP: 6**   **TERM   Summer**

Vocabulary	Skills	What we already know
Algorithm Program flow Program Physical input Code Operand Sequence Modify Repetition Outputs Loop Controllable Condition device Variable Debug Value Emulator	-To create a program to run on a controllable device (apply knowledge of programming to a new environment/ test program on an emulator/ transfer program to a controllable device) -To explain that selection can control the flow of a program (identify examples of conditions in the real world/ use a variable in an if, then, else statement to select the flow of a program/ determine the flow of a program using selection) -To update a variable with a user input (use a condition to change a variable/ experiment with different physical inputs/ explain that checking a variable doesn't change its value) -To use an conditional statement to compare a variable to a value (use an operand (e.g. <>=) in an if, then statement/ explain the importance of the order of conditions in else, if statements/ modify a program to achieve a different outcome) -To design a project that uses inputs and outputs on a controllable device (decide what variables to include in a project/ design the algorithm for my project/ design the program flow for my project) -To develop a program to use inputs and outputs on a controllable device (create a program based on my design/ test my program against my design/ use a range of approaches to find and fix bugs).	This unit presumes that pupils are already confident in their understanding of sequence, repetition and selection independently within programming. If pupils are not yet ready for this, you may wish to revisit earlier programming units where these constructs are introduced.

illustration	Application/Outcomes
 1 The micro:bit *2 Go with the flow* *3 Sensing inputs* *4 Finding your way* *5 Designing a step counter* *6 Making a step counter*	Pupils will be introduced to the micro:bit as an input, process, output device that can be programmed. Pupils will familiarise themselves with the device itself and the programming environment, before creating their own programs. They will then run their programs on the device. **Note:** This unit is written assuming that you will be using a desktop or laptop computer (not a tablet) to connect micro:bits. Pupils will explore how if, then, else statements are used to direct the flow of a program. They will initially relate if, then, else statements to real-world situations, before creating programs in MakeCode. They will apply their knowledge of if, then, else statements to create a program that features selection influenced by a random number to create a micro:bit fortune teller project. Pupils will initially use the buttons to change the value of a variable using selection. They will then develop their programs to update the variable by moving their micro:bit using the accelerometer to sense motion. Finally, they will learn that a variable's value remains the same after it has been checked by the program. Pupils will apply their understanding of the importance of order in programs. They will then use operands in selection to determine the flow of a program. Pupils will then modify a program which will enable the micro:bit to be used as a navigational device. To code this, they will adapt the code they completed to make a basic compass. Pupils will be working at the design level. They will pick out features of a step counter, a piece of technology with which they are likely to be familiar. They will then relate those features to the sensors on a micro:bit. In the main activity, pupils will design the algorithm and program flow for their step counter project. Pupils will use the design that they have created in Lesson 5 to make a micro:bit-based step counter. First, they will review their plans, followed by creating their code. Pupils will test and debug their code, using the emulator and then the physical device. To successfully complete this project, Pupils will need to demonstrate their understanding of all the programming lessons they've had so far.

Other/Cross Curricular Links	Adaptation for SEND		
∉ DT - Design Make Evaluate	Adapted tasks	Adapted resources	Additional support