Sequencing Level 5 - 6

From level 5, pupils learn to:	To level 6, pupils learn to:
Use precision and accurate syntax when framing instructions	Use efficient structuring of instructions and recognise how this increases flexibility and eases testing
Typically, pupils can:	**Typically, pupils can:**
Group instructions which need repeating as a set, and automate frequently used processes by constructing sub–procedures, e.g. within a set of instructions to warm up a greenhouse	Demonstrate precision when framing and sequencing instructions and can explain why precision is necessary, possibly by reference to earlier drafts of sequences, e.g. demonstrate precision in a flow chart or a scripted language to control pedestrian lights and traffic lights; or develop a game with a variety of objects with distinctive behaviours and a variety of events and traffic lights; or develop a game with a variety of objects with distinctive behaviours and a variety of events
	Typical activity
Activity	Pupils develop a menu-driven navigation system for a website to be used with their own e-portfolio. This is tested. Testing includes finding out where media can be removed successfully to test for integrity.
Activities that will result in a step change	Pupils explain how their instructions work and how these have been developed, by reference to different versions. They respond to user comments at testing, e.g. by adding an option for parents.
Key questions (to help make a judgement about appropriateness and understanding)	Why and how was the instruction set changed between versions? How does the structure of your instruction set help you make changes
Common misconceptions: pupils sometimes think...	There is no need to consider the structure of instruction sets before writing them. Annotating instruction sets is of little use to anyone.

Sequencing Level 5 - 6

From level 5, pupils learn to:	To level 6, pupils learn to:
Test and refine sequences in order to achieve specific outcomes	Break down a problem into manageable sections that can be represented by sub–procedures where appropriate
Typically, pupils can:	**Typically, pupils can:**
Develop, test and refine sequences of instructions to solve problems, e.g. ensure that key presses make an object in a game move in the desired way, and make changes to remedy unforeseen behaviour	Analyse problems and use ICT to create a sequence of instructions contributing to an efficient system, including: • testing the sequence using appropriate test data • evaluating the system's performance • highlighting processes and justifying decisions • recognising where an improvement has been made, e.g. create a macro to import an area of a spreadsheet into a document, transposing the spreadsheet at the same time.
	Typical activity
Activity	Pupils develop a control sequence for a traffic light system that incorporates a pedestrian crossing option and operates under different parameters depending on the time of day.
Activities that will result in a step change	Pupils map out the different tasks and steps required to solve the problem, e.g. checking the time of day, possibly overriding this, looking for pedestrian input, or traffic input outside rush hour. They test their systems at each stage and record the amendments needed, annotating their instruction sets. They evaluate their systems and explain and justify the structure they have chosen. They log the improvements and developments they have made by reference to different versions.
Key questions (to help make a judgement about appropriateness and understanding)	How have you broken down the problem into sections? What are the inputs and outputs? How does each section of the instructions work? How does structuring your solution help when you need to add extra functions to it?
Common misconceptions: pupils sometimes think...	It is not necessary to structure solutions. When instructions don't work as you want, it is easiest to start again.

Sequencing Level 5 - 6

From level 5, pupils learn to:	To level 6, pupils learn to:
Recognise that sequencing instructions is fundamental to a wide range of ICT applications	Recognise that sequencing instructions is fundamental to a wide range of ICT applications review own and others' sequences of instructions to improve efficiency
Typically, pupils can:	**Typically, pupils can:**
Identify how the sequencing of instructions has affected commercial, industrial, public service, domestic and leisure applications, e.g. identify products that use different sets of instructions according to the user's needs	Review and modify their own or others' sequences of instructions to improve efficiency, e.g. change a frame–based animation to use tweening
	Typical activity
Activity	Pupils review each other's simple online or on–screen games by looking at the instruction sets and checking these for efficiency.
Activities that will result in a step change	Pupils describe the structure of the instructions for their own games and annotate these. They then look at someone else's instructions, first annotating these to explain how the game works, identifying loops and sub–procedures, and then suggesting possible changes together with the impact of these on the game.
Key questions (to help make a judgement about appropriateness and understanding)	What impact does each instruction or set of instructions have on what you can see on the screen? What would happen if this section was changed?
Common misconceptions: pupils sometimes think...	It is not important to annotate and describe sets of instructions for others. There is little scope to work on someone else's instructions in order to improve them.