

Year 6 – Programming A – Variables in games



Unit introduction

This unit explores the concept of variables in programming through games in Scratch. First, pupils will learn what variables are, and relate them to real-world examples of values that can be set and changed. Pupils will then use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, pupils will experiment with variables in an existing project, then modify them, then they will create their own project. In Lesson 4, pupils will focus on design. Finally, in Lesson 6, pupils will apply their knowledge of variables and design to improve their game in Scratch.

There are two Year 6 programming units:

- Programming A – Variables in games
- Programming B – Sensing

Subject knowledge

This unit focuses on developing pupils' understanding of variables in a new programming language. It highlights where variables can be used and how they can be set and changed through the running of a program. This unit also develops pupils' understanding of design in programming, using the approach outlined below.

When programming, there are four levels that can help describe a project (known as 'levels of abstraction'). Research suggests that this structure can support pupils in understanding how to create a program and how it works:

- Task – what is needed
- Design – what it should do
- Code – how it is done
- Running the code – what it does

Spending time at the 'task' and 'design' levels before engaging in writing code can aid pupils in assessing the 'do-ability' of their programs. It also reduces the cognitive load for pupils during programming.

