

## **Level description: Years 7 and 8**

By the end of Year 8 students should have had the opportunity to apply computational thinking by defining and decomposing real-world problems , creating user experiences , designing and modifying algorithms , and implementing them in a general-purpose programming language . This involves students practising problem decomposition, using approaches such as divide and conquer to more clearly understand a problem by describing its component parts. Students represent and communicate their algorithmic solutions using flowcharts and pseudocode . Students check their solutions meet the specifications by testing and debugging their algorithms before and during implementation. They develop a deeper understanding of abstraction by explaining how and why digital systems represent data as whole numbers , which are then represented in binary .

Students build on their skills from Mathematics ( Statistics ) in acquiring and interpreting data . In Digital Technologies, students continue to advance these skills and are also given opportunities to validate the data they acquire to ensure it is accurate and consistent. They collect and transform many types of data from a wide range of sources. Students model structured data in meaningful ways using spreadsheets and single-table databases , and analyse and visualise the data to extract meaning from it.

They apply design thinking by using divergent techniques, such as mind mapping, role-play and using graphic organisers, to generate design ideas for user experiences and solution designs. Students review these ideas against design criteria and created user stories throughout their implementation as general-purpose programming by assessing them against current and future needs. They extend the use of these design criteria and user stories to evaluate the future impact of existing solutions.

Students apply systems thinking by exploring the connections between hardware capabilities and tasks users want to perform. They investigate how data is transmitted via wired and wireless networks and explain the need for encryption to protect and secure data .

Students use an increasing range of the features of digital tools to improve their efficiency and the consistency of the content they create, locate and communicate. They plan and manage projects individually and collaboratively, improving their control over the quality of their content. Students investigate personal security controls, including multi-factor authentication , to protect their data if passwords are compromised, and they understand the impact of phishing and other cyber security threats on people and data .

In Digital Technologies, students should have frequent opportunities for authentic learning by making key connections with other learning areas.

## **Achievement standard: Years 7 and 8**

By the end of Year 8 students explain how people design, innovate and produce products, services and environments for preferred futures. For each of the 4 prescribed technologies contexts students explain how the features of technologies impact on design decisions, and create designed solutions based on analysis of needs or opportunities. They acquire, interpret and model with spreadsheets and represent data with integers and binary.

Students design and trace algorithms; and implement them in a general-purpose programming language. Students create and adapt design ideas, processes and solutions, and justify their decisions against developed design criteria that include sustainability. They communicate design ideas and solutions to audiences using technical terms and graphical representation techniques, including using digital tools. They select appropriate hardware for particular tasks, explain how data is transmitted and secured in networks, and identify cyber security threats. They use a range of digital tools to individually and collaboratively document and manage production processes to safely and responsibly produce designed or digital solutions for the intended purpose. Students manage their digital footprint.

By the end of Year 8 students develop and modify creative digital solutions, decompose real-world problems, and evaluate alternative solutions against user stories and design criteria. Students acquire, interpret and model data with spreadsheets and represent data with integers and binary. They design and trace algorithms and implement them in a

general-purpose programming language. Students select appropriate hardware for particular tasks, explain how data is transmitted and secured in networks, and identify cyber security threats. They select and use a range of digital tools efficiently and responsibly to create, locate and share content; and to plan, collaborate on and manage projects. Students manage their digital footprint.