

Computing

| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| <i>Information Technology</i> | <i>Computing Systems and Networks</i> | <ul style="list-style-type: none"> ✓ I can identify what technology is, including examples, and how it can help us. ✓ I can identify the basic parts of a computer, e.g. mouse, keyboard, screen. ✓ I can log on to the school computer / unlock the school tablet with support. ✓ I can use suitable input devices (mouse, keyboard, touchscreen). | <ul style="list-style-type: none"> ✓ I can explain what information technology (IT) is, giving examples (including computers) ✓ I can talk about different uses for IT and that some can be used in more than one way. | <ul style="list-style-type: none"> ✓ I can explain how digital devices function (inputs and outputs). ✓ I can identify input and output devices. ✓ I can give examples of how digital devices can change the way we work. ✓ I can explain how a computer network can be used to share information. <p>I can recognise that a computer network is made up of multiple devices, including a switch, server and a wireless access point.</p> | <ul style="list-style-type: none"> ✓ I know that the internet is a network of networks and it is not the same as the World Wide Web. ✓ I can describe how networks physically connect to other networks. ✓ I recognise that the World Wide Web contains many websites/web pages. ✓ I can explain how websites can be shared via the World Wide Web and how they are stored when this is done. ✓ I can describe how content can be added to the World Wide Web. ✓ I recognise that content on the World Wide Web is created by people. ✓ I can suggest who owns the content on some websites and that there are rules to protect content. <p>I recognise that not everything on the internet is true.</p> | <ul style="list-style-type: none"> ✓ I can explain that computers can be connected together to form systems. ✓ I recognise the role of computer systems in our lives, including the human elements and the benefits of a given system. ✓ I can use a search engine efficiently. ✓ I can describe how search engines use web crawlers and an index to select results. ✓ I know that search engines follow rules to rank results and give some examples of what that criteria might include. <p>I recognise some of the limitations of search engines.</p> | <ul style="list-style-type: none"> ✓ I know that every device connected to the internet has an IP address. ✓ I can describe how computers use IP addresses to access websites. ✓ I know that data is transferred over networks and across the internet in data packets. ✓ I know that files can be shared online in a way which is collaborative. ✓ I know that the internet allows different media to be shared. ✓ I recognise that working together on the internet can be public or private and the benefits of both. ✓ I recognise different ways of using technology to communicate and can choose the most appropriate method for a particular purpose. |

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| | | | | | | | | I can evaluate different methods of communication, recognising that communication on the internet may not be private. |
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Creating Media

Digital Painting

- ✓ I can select basic tools/options to change the appearance of digital content, e.g. filter on an image / font / size of paintbrush.
- ✓ I can combine media (with support) to present information, e.g. text and images.
- ✓ I can justify my choices when creating/editing media.

Digital Writing

- ✓ I can identify and find keys on a keyboard.
- I can use the toolbar in a word processor to change what text looks like.

Digital Photography

- ✓ I can capture and explain how to take a good photo using an iPad.
- ✓ I can take photos in both landscape and portrait and why I might choose to.
- ✓ I recognise how lighting affects a photo and why an image might be unclear.
- ✓ I recognise that images can be changed and make some of these changes myself.
- ✓ I can identify which photos are real and which have been changed

Digital Music

- ✓ I can use a computer to experiment with pitch (of sounds).
- I can refine musical patterns on a computer.

Stop-frame Animation

- ✓ I can explain that animation is a sequence of drawings or photographs.
- ✓ I can create an effective stop-frame animation.
- ✓ I know what onion skinning is.
- ✓ I can plan, create and evaluate a stop-frame animation.

Desktop Publishing

- ✓ I can change the font, style and colour of text in a desktop publisher (e.g. Google Docs).
- ✓ I recognise the advantages and disadvantages of using pictures with text.
- ✓ I can change the layout of the page to best suit a particular purpose.
- ✓ I can copy and paste text and images.
- ✓ I can identify the benefits of desktop publishing in the real world.

Audio Production

- ✓ I can identify input and output devices used to record and play sound.
- ✓ I know audio recordings can be edited.
- ✓ I know what soundwaves look like in an audio recording and can use them to help me edit my recordings.
- ✓ I can plan a podcast, including combining sounds to make it more engaging.
- ✓ I can follow my plan to create a podcast, including editing recordings, combining sounds and reviewing the quality.
- ✓ I can explain the difference between saving and exporting an audio file.
- ✓ I can evaluate mine and my peers' work.

Photo Editing

- ✓ I can rotate and crop and image.
- ✓ I can change the colour effects on an image and explain the impact of changing the colours in an image.
- ✓ I can explain how cloning can be used in photo editing to add or remove parts.

Video Production

- ✓ I can identify features of a good video.
- ✓ I can use a digital device to record a video, considering these features.
- ✓ I can capture videos using a range of techniques, e.g. static camera, pan and tilt and zoom.
- ✓ I can plan a video using a storyboard.
- ✓ I can store, retrieve and export my video recording on an iPad.
- ✓ I know how to improve my video through reshooting and editing.
- ✓ I can consider the impact of the choices made when creating and sharing a video.

Vector Graphics

- ✓ I know that vector drawings are made using shapes and how they differ from paper-based drawings.
- ✓ I can create a vector drawing by combining, moving, resizing and rotating shapes.
- ✓ I can use tools (e.g. zoom) to help me achieve a desired effect.
- ✓ I recognise that each added object creates a new layer in a vector drawing.

Webpage Creation

- ✓ I can evaluate an existing website, considering structure and the media used.
 - ✓ I know that websites are written in HTML.
 - ✓ I can plan the features of my own webpage.
 - ✓ I recognise the need to use copyright-free images.
 - ✓ I know what the term 'fair use' means.
 - ✓ I can add content to my own web page and preview what it looks like.
 - ✓ I can evaluate how my webpage looks on different devices.
 - ✓ I know what a navigation path is and describe why they are useful.
 - ✓ I can create multiple webpages and link them using hyperlinks.
 - ✓ I recognise the implications of linking to content owned by other people.
- ### 3D Modelling
- ✓ I recognise that you can work in 3D on a computer.
 - ✓ I know that digital 3D shapes can be modified.
 - ✓ I can resize, lift/lower and recolour 3D objects in my project.

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| | | | | | <ul style="list-style-type: none">✓ I recognise that images can be combined.✓ I can combine images for a purpose.✓ I can evaluate how changes can improve an image. <p>I can combine text and my image.</p> | <ul style="list-style-type: none">✓ I can group objects together. <p>I can evaluate the skills I used and why.</p> | <ul style="list-style-type: none">✓ I can group 3D objects in my project.✓ I can create a 3D model for a given purpose, e.g. accurate sizing and using placeholders to create holes. <p>I can plan, create and evaluate my own 3D model.</p> |
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Data and Information

- ✓ I can describe objects using labels.
 - ✓ I can find objects with similar properties.
 - ✓ I can answer questions about groups of objects.
 - ✓ I can decide how to group objects to answer a question.
- I can record and share what I have found.

- ✓ I can enter data into a computer, viewing it in different formats.
 - ✓ I can use pictograms to answer simple questions.
 - ✓ I can explain information shown in a pictogram.
- I can collect and present data on a topic

- ✓ I can create closed questions (yes/no answers)
 - ✓ I can identify attributes needed to collect data about an object.
 - ✓ I can create a simple branching database for a objects (using an online database tool) and test it to check it works.
 - ✓ I understand why it is helpful for a database to be well structured.
 - ✓ I can independently plan the structure of, create and test a branching database.
- I can suggest real-world uses for branching databases.

- ✓ I can explain that data gathered over time can answer questions.
 - ✓ I can identify data which can be gathered over time.
 - ✓ I can use a digital device to collect data automatically.
 - ✓ I can explain what data can be collected and automatically recorded using sensors.
 - ✓ I understand that 'data points' can be collected.
 - ✓ I recognise that data loggers/data logging software collect data at given points (data points).
 - ✓ I recognise how technology can help us analyse data, e.g. by finding averages.
 - ✓ I recognise that there are different ways to view data.
 - ✓ I can identify the data needed to answer questions and use a data logging software (Arduino SJ) to collect that data.
 - ✓ I can interpret data that has been collected by a data logging software to draw conclusions.
- I can explain the benefits of using a data logging software.

- ✓ I know what a database is.
 - ✓ I can compare paper and computer-based databases.
 - ✓ I know what a 'field' and a 'record' is in a database.
 - ✓ I know what a flat-file database is.
 - ✓ I understand and know how to answer questions by grouping and/or sorting data.
 - ✓ I can explain how tools such as 'AND'/'OR' can be used to refine and select specific data.
 - ✓ I know that programs can be used to compare data visually using charts/graphs.
- I can use a real-world database to answer questions.

- ✓ I can collect data and enter it into a spreadsheet.
 - ✓ I know what an item of data is.
 - ✓ I can choose and apply an appropriate format to a cell.
 - ✓ I know what formulas can be used to produce calculated data.
 - ✓ I can apply formulas to data.
 - ✓ I know that changing inputs will change outputs in my formula(s).
 - ✓ I can use a spreadsheet to answer questions.
 - ✓ I can apply a formula to calculate the data needed to answer questions.
 - ✓ I can use a program to present data in different ways (e.g. producing charts/graphs and/or tables).
- I can interpret data in a chart/graph to answer questions.

Programming

Moving a robot
 ✓ I can create a simple program e.g. to control a floor robot.
 ✓ I can predict the outcome of a simple algorithm or program.
 ✓ I can explain what an algorithm is and create one.
 ✓ I can debug an error in a simple algorithm/program e.g. for a floor robot.

Programming animations
 ✓ I can compare programming tools (e.g. floor robots and ScratchJr).
 ✓ I can create and run a program on ScratchJr.
 ✓ I can explain that each sprite has its own instructions.

Robot Algorithms
 ✓ I can use algorithms to program a sequence on a floor robot.
 ✓ I can predict the outcome of a sequence.
 ✓ I can create an algorithm to meet a goal.
 ✓ I can test and debug my program.
 ✓ I can plan algorithms for different parts of a task (decomposition).

Programming Quizzes
 ✓ I can predict the outcome of a sequence of commands.
 ✓ I can create a program on ScratchJr using a given design
 ✓ I can design and create my own program.
 I can evaluate and improve my program (including debugging).

Sequencing Sounds
 ✓ I can identify objects in a Scratch project
 ✓ I recognise that commands in Scratch are represented as blocks.
 ✓ I can create a program in Scratch by following a design.
 ✓ I can start a program in different ways.
 ✓ I know that objects will respond exactly to the code.

✓ I can explain what a sequence is.
 ✓ I can order notes into a sequence.
 ✓ I can implement my algorithm as code.

Events and Actions in Programs
 ✓ I can create a program to move a sprite in four directions
 ✓ I can use extension features in Scratch (e.g. the Pen tool)
 ✓ I can identify and fix bugs in a program.
 I can design, create and evaluate a maze-based challenge.

Repetition in Shapes
 ✓ I can create a program using the text-based language: Logo.
 ✓ I recognise the importance of accuracy when programming.
 ✓ I can test my algorithm in Logo.
 ✓ I can explain what 'repeat' means.
 ✓ I can use a count-controlled loop to produce a given outcome.

✓ I can predict the outcome of a program which contains a count-controlled loop.
 ✓ I can decompose a task into smaller steps.
 ✓ I can identify 'chunks' of actions in the real world.
 ✓ I can use a procedure in a program and understand the benefits of using one.
 ✓ I can design, create and debug a program that uses count-controlled loops to produce a given outcome.

Repetition in Games
 ✓ I can apply my knowledge of count-controlled loops in Scratch.
 ✓ I know what an infinite loop is and when to use one

Selection in Physical Computing
 ✓ I can create a simple circuit and connect it to a microcontroller.
 ✓ I can program a microcontroller to make the LED switch on.
 ✓ I can apply my knowledge of infinite loops from Year 4 to my program(s).

✓ I can use my knowledge of count-controlled loops from Year 4 to control outputs on a microcontroller.
 ✓ I know that a loop can stop when a condition is met (conditional loop).
 ✓ I can identify a condition and an action in my project.
 ✓ I can use selection (IF...THEN statements) to direct the flow of a program and identify real-world examples of when this happens.
 ✓ I can design, create and debug a physical project which includes selection.

Selection in Quizzes
 ✓ I can design a program that contains an 'IF...THEN...ELSE' selection statement.
 ✓ I design, create and debug a program which uses selection

Variables in Games
 ✓ I know that a variable is something that is changeable.
 ✓ I know that variables can hold numbers or letters.
 ✓ I know that a variable has a name and value.
 ✓ I can choose how to improve a game by using variables.
 ✓ I can design, create, debug and evaluate a project that builds on a given examples and uses at least one variable.

Sensing
 ✓ I can apply my knowledge of programming to a new environment (micro:bit).
 ✓ I can create a program to run on a controllable device.
 ✓ I can apply my knowledge of selection from Year 5 to use it in a new environment.
 ✓ I can apply my knowledge of variables when experimenting with different physical inputs.
 ✓ I can use a conditional statement to compare a variable to a value.
 I can design, develop and debug a program that uses inputs and

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| | | | | | <p>instead of a count-controlled loop.</p> <ul style="list-style-type: none">✓ I can develop a design that includes two or more loops which run at the same time.✓ I can design, develop, debug and evaluate a project that includes repetition. | <p>to create an interactive quiz.</p> <ul style="list-style-type: none">✓ I can evaluate my program and identify the next steps to improving it. | <p>outputs on a controllable device.</p> |
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