Computing Knowledge Pathway

Key Stage 3

Summer 2 Programming Sensing

4. What is a conditional statement?

2. What is selection in a program?

5. How can I program a device which uses inputs and outputs?

3. How does an input affect the variable?

1. How does a program work on a controllable device?

Summer 1 Creating media 3D Modelling

4. How can I create a 3D model?

2. How can 3D models be modified using technology?

5. How effective is my 3D model?

3. How can objects be combined in a 3D model?

1. How can we create with three dimensions on a computer?

Spring 1 Programming Variables in games

2. Why are 'variables' important in programming? Variables in programming

4. What is the role of a game designer? Becoming a games designer

1. What is a 'variable'? Introducing variables

3. How does a 'variable' improve my game? Improving a game

5. How can I design my own gaming code? Design to code

Spring 2 Data Spreadsheets

2. How can I add data to a spreadsheet?

4. How can I apply my own formula in excel?

1. What is a spreadsheet?

3. What is a formula?

5. How can I effectively present data on excel?

Autumn 2 Creating media Web page creation

4. Why does a webpage need a navigation path? Follow the breadcrumbs

2. How to layout a webpage? Becoming a web designer

3. How can we evaluate our webpage? How does it look?

1. What makes a good website?

Autumn 1 Computer systems Communication and collaboration

4. What is the most effective way to communicate? Communicating responsibly

2. How is data transferred across the internet? Data packets

3. How do we communicate using technology? How we communicate

1. How do computers communicate? Internet addresses

Year 6

Summer 1 Creating media Vector drawing

1. What are vector drawings? The drawing tools

4. How do vector images have layers? Layers and objects

2. How can we create vector drawings? Creating images

3. What tools can be used with a vector drawing? Making effective drawings

5. How can grouping objects help us build more complex vector drawings?" Manipulating objects

Summer 2 Programming Selection in quizzes

2. What are conditional statements in selection? Selecting outcomes

1. How is selection used in programs? Exploring conditions

3. What does selection do to a program? Asking questions

5. Where is selection in my interactive quiz? Testing a quiz

4. How use sele progra Plannin

Spring 2 Data Flat file databases

4. How can we use data tools to find exactly the information we need? Using search tools

2. What is the difference between paper and computer-based databases? Computer databases

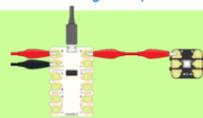5. How can computers help us create and refine charts? Comparing data visually

3. How can grouping and sorting data help us answer questions accurately? Using a database

1. How can we use a form to explore information in a database? Creating a paper-based database

Spring 1 Programming Selection in physical computing

2. How can we use count-controlled loops to program multiple outputs? Combining output components

4. What is selection in programming? Starting with selection

5. How can we design a physical system that makes something happen when a condition is met? Drawing designs

1. What is a crumble controller? Connecting Crumbles

3. What happens when a condition has been met? Controlling with conditions

Autumn 2 Creating media Video editing

4. How can planning our scenes help us create a great video? Planning a video

2. How do camera angles make better videos? Filming techniques

5. How can reshooting and editing help improve our videos? Importing and editing video

3. What are the different techniques for filming a video? Using a storyboard

1. What is video?

Autumn 1 Computer systems Systems and searching

4. How search results are ranked

2. What is a search engine? Searching the web

5. How are searches influenced?

3. How do search engines find the best results? Selecting search results

1. What is a computer system? Systems

Year 5

Computing Knowledge Pathway

Upper Key Stage 2

1. What does a count-controlled loop look like in different programs? *Using loops to create shapes*	2. What is an infinite loop? *Different loops*	3. Can multiple loops work at the same time? *Animate your name*	4. How can we change an infinite loop to make our program do something new? *Modifying a game*	5. How can we design our own project using repetition to make it work well? *Designing a game*

1. How can we edit digital images? *Changing digital images*	2. How do colour effects alter an image? *Recolouring*	3. What are cloning tools? *Cloning*	4. How can we combine parts of different images? *Combining*	5. How can we combine images to create something new? *Creating*

Summer 2 Programming Repetition in games

Summer 1 Creating media Photo editing

1. Why does accuracy matter when we write computer code? *Programming a screen turtle*	2. How can we design and test a program using text-based coding? *Programming letters*	3. What is repetition? *Patterns and repeats*	4. What is a count-controlled loop? *Using loops to create shapes*	5. How can we use loops in our code to follow a design and fix any bugs? *Creating a program*

1. What is a data logger? *Data collection*	2. What data can we collect over time? *Logging*	3. How can we interpret data on a computer? *Analysing data*	4. How do we know what data is suitable to collect? *Data for answers*	5. What conclusion can we draw from our data? *Answering my question*

Spring 1 Programming Repetition in shapes

Spring 2 Data Data logging

1. How can we record sound on a computer? *Recording sound*	2. How can we edit audio? *Editing audio*	3. How can we plan, create, and improve a podcast? *Planning a podcast*	4. How can we use our audio editing skills to create a podcast? *Creating a podcast*	5. How can I improve my podcast? *Behind the scenes*

4. Who owns the web?

2. What is the internet made of?

Autumn 2 Creating media Audio editing

Autumn 1 Computing systems The internet

Year 4

5. How can we tell if information on the internet is reliable? *Can I believe what I read?*

3. How can we share and explore websites on the WWW? *Sharing information*

1. How does the internet connect networks and share information safely? *Connecting networks*

2. How can we use the pen extension on Scratch? *Drawing lines*

4. How can we debug a program? *Debugging movement*

Summer 2 Programming Events and actions

1. How can we program sprites to move in four directions? *Maze movement*

3. How can we add new features to our program? *Adding features*

5. How can we design and test our own maze game in Scratch? *Making a project*

4. How can we choose the best layout to match its purpose? *Lay it out*

2. What is a template? *Great template!*

4. How can we effectively structure a branching database? *Structuring a branching database*

2. How can we sort objects by their features to build a branching diagram? *Making groups*

Summer 1 Creating media Desktop publishing

Spring 2 Grouping data Branching database

5. Why is desktop publishing useful? *Why desktop publishing?*

3. How can we add text and pictures to a template? *Becoming a designer*

1. What is desktop publishing? *Can you edit it?*

5. How can I create my own effective branching database? *Planning a branching database*

3. How can we use yes/no questions to build a branching database? *Creating a branching database*

1. How can we ask yes/no questions to group data? *Yes or no questions*

2. Why is sequencing important in a program? *Sequences*

4. How can we build a sequence to control our sprites? *Looking good*

Spring 1 Programming Sequence in music

1. How can we use Scratch to explore programming? *Introduction to Scratch*

3. How can we use sound and sequences to make music? *Ordering commands*

5. How can we design and code a digital instrument? *Making an instrument*

4. How can I create a stop-frame animation? *Picture perfect*

2. What is animation? *Frame by frame*

4. How are computers connected?

2. What parts make up a digital device?

Autumn 2 Creating media Stop-frame animation

Autumn 1 Computer systems Connecting computers

Year 3

5. How can I edit a stop-frame animation? *Lights, camera, action!*

3. How can I plan an animation? *What's the story?*

1. How can we program sprites to move in four directions? *Maze movement*

1. How can pictures move? *Can a picture move?*

3. What does our school network look like?

3. How am I connected?

1. How does a digital device work?

Computing Knowledge Pathway

Summer 2 Programming — An introduction to quizzes

4. How can we modify a design? *Changing a design*
How can I create my own program? *Designing and creating a program*

2. What is an outcome? *Outcomes*

3. How can we follow a plan to make a program? *Using a design*

1. Why is it important to sequence commands? *ScratchJr recap*

Summer 1 Creating media — Digital music

3. How can we change the tempo on a computer? *Notes and tempo*

4. How can we create digital music with a purpose? *Creating digital music*

2. How can we create rhythm on a computer? *Rhythms and patterns*

1. How does music make us feel? *How music makes us feel*

Spring 2 Grouping data — Pictograms

3. How can we use pictograms to represent information? *Creating pictograms*

1. How can we use tally charts to count and compare things? *Counting and comparing*

4. What is an attribute? *Comparing people*

2. What is a pictogram? *Enter the data*

Autumn 1 Computer Systems — IT Around us

1. What is information technology? *Computing systems and networks – IT around us*

3. What are the benefits of information technology? *The benefits of IT*

2. Where do we see information technology in school and beyond? *IT in the world*

4. What can we do to use IT safely? *Using IT safely*

Autumn 2 Creating media — Digital photography

1. How can we use a digital device to take a photo? *Taking Photographs*

3. How can we make our photos look even better by editing them? *Effects*

2. What makes a good photograph? *What makes a good photograph?*

4. How do we know if a photograph is real? *Is it real?*

Spring 1 Programming — Algorithms

2. What do we think will happen when we run our program, and why? *Making predictions*

4. How can I create an algorithm for my design? *Algorithm design*

1. Why is it important instructions are sequenced? *Giving instructions*

3. How can we use both code and pictures to make a project? *Mats and routes*

Summer 2 Programming B — Introduction to animation

5. How can we make a program on Scratch Jr? *Following my design*

3. What happens when we change a number in our program? *Make a change*

4. How can we plan our program? *Project design*

2. What happens when we join commands together to make a program? *Joining blocks*

Summer 1 Creating media — Digital writing

1. How do we know which command to use to make something happen? *Comparing tools*

3. What are the ways we can change text on a computer? *Exploring the toolbar*

1. How can we use a computer to help us write? *Exploring the keyboard*

4. What's the same and what's different about writing on a computer and writing on paper? *Pencil or keyboard*

2. How can we add text on a computer? *Adding and removing text*

Spring 1 Programming A — Moving a robot

1. How does a Bee-Bot follow a command? *Buttons*

3. How can we use forward, backward, left and right commands to make a movement sequence? *Getting there*

2. How can we use Bee-Bot commands create movement sequences? *Four directions*

4. How can we plan a set of instructions to make something happen? *Routes*

Spring 1 Data — Grouping data

1. How can we label and sort different objects around us? *Label and match*

3. How can compare groups of objects? *Comparing groups*

2. How can we group objects that are alike? *Describe an object*

4. What can we find out by looking at groups of objects? *Answering questions*

Autumn 2 Creating media — Digital painting

Comparing computer art and painting

4. How are paintings on paper different to on a computer?

3. What tools can I use to create a digital painting? *Why did I choose that?*

Using shapes and lines
2. What do the shape and line tools do?

1. *How can we paint using computers?*

Autumn 1 Computer systems — Technology around us

Using a computer keyboard
4. How does using the keyboard help us share our ideas on the screen?

Using Computer Technology
2. What are the parts of a computer?

3. How can we use the mouse to help us control what happens on the screen? *Developing mouse skills*

1. Where can we find technology in our classroom? *Technology in our classroom*

Spring 2 Spring Into Life

Grouping Data – J2E
How can we sort objects in different ways?
What is a chart?
How can we use pictures to show our data?
How can we present simple data on a digital device?

Summer 1 African Safari

Summer 2 We Are Scientists

Programming B – exploring how things move
What function do different buttons have?
How can I make my robot move?

Barefoot – Super space
What are instructions?
How can we give effective instructions?
How do robots use instructions?
What is an algorithm?

Barefoot – People who help us
Where can we find patterns?
How can we create our own patterns?
How can we debug patterns?

Spring 1 People Who Help Us

Creating Media – digital photography
How does technology make things move?
What is animation?
How can I animate my picture?

Autumn 2 Once Upon a Time

Barefoot – Busy Bodies
How can I sort items in different ways?
How can I sequence objects?
Why is it important to sequence?

Autumn 1 All About Me

Computing Knowledge Pathway

E-Safety/digital literacy

Summer 2: Online Relationships

PROJ EVO

- How can sharing something online affect people in a good or bad way?
- What are some ways you can be kind and respectful to others when you're online?
- Why might something shared privately online still cause problems for other people?
- Why is it wrong to take or share inappropriate pictures of someone, even if they say it's okay—and what could happen to the person who shares them?

Summer 2

E-Safety/digital literacy

Summer 1: Self-Image and Identity

PROJ EVO

- Why is it important to think carefully about how people from different backgrounds (like gender, race, religion, or disability) are shown online, and what should you do if something seems unfair or wrong?
- What kinds of things online might make someone feel sad, worried, uncomfortable, or scared?
- Why is it important to keep asking for help until you get the support you need?

Summer 1

E-Safety/digital literacy

Spring 2: Copyright and Ownership

PRO EV

- How can you use search tools to find online content that other people are allowed to reuse?
- When you use information from the internet, how can you show where it came from and give credit to the original source?

E-Safety/digital literacy

Spring 1: Privacy and Security

PRO. EVO

Spring 1

- What are some smart ways to create and manage strong passwords?
- What should you do if your password gets shared, lost, or stolen?
- Why is it important to keep your apps and software up to date, and how can you do it?
- What are 'terms and conditions' on websites and apps, and why should you know about them?
- How do some websites or messages try to trick people into giving away money or personal information?

Spring 2

E-Safety/digital literacy

Autumn 2: Health, Well-being and Lifestyle

EVO

- What are some rules or systems that help decide who can see certain content online based on age?
- How can using technology sometimes make people feel stressed or pressured?
- What tricks do websites and apps use to keep people using them for longer?
- What are some smart ways to reduce the effects of too much screen time on your health?

E-Safety/digital literacy

Autumn 1: Managing Online Information

PROJ EVO

- How do search engines decide which websites to show first?
- What are some smart ways to search online so you find the most useful information?
- How can you tell if something you read online is someone's opinion and not a fact?
- What do the words 'influence', 'manipulation', and 'persuasion' mean, and how might they show up online?
- What is persuasive design, and how do websites or apps use it to try to change what people do or choose?
- What's the difference between misinformation and disinformation online?
- What should you do if you see something online that's rude, upsetting, or inappropriate?

Autumn 2

Autumn 1

Year 6

E-Safety/digital literacy

Summer 2: Online Bullying

EV

- How is bullying online different from bullying in real life?
- Why might a joke online feel hurtful to someone, even if the person who said it didn't mean to be unkind?
- If someone is being bullied online, who can they talk to and where can they get help?
- What can you do to stop someone from sending you mean or hurtful messages online?

Summer 2

E-Safety/digital literacy

Summer 1: Online Reputation

E

- Can you find information about a person online and explain what you discovered in your own words?
- How might people use what they see about someone online to make guesses about them, and why might those guesses be wrong?

Summer 1

E-Safety/digital literacy

Spring 2: Online Relationships

EV

- Can you give examples of different ways people use technology to talk to each other?
- Why is it important to be careful when talking to people online, and what could happen if someone isn't kind or safe?
- If you or a friend feel worried or unsafe online, who could you talk to and how can you get help?
- How can people work together in online communities, and what are some good ways to be kind and helpful when using the internet?

Spring 2

E-Safety/digital literacy

Spring 1: Self-Image and Identity

Spring 1

- How can someone's online identity be copied, changed, or made to look different?
- How can I make smart and safe choices about my online identity?

E-Safety/digital literacy

Autumn 2: Copyright and Ownership

E

- When is it okay to use someone else's work from the internet, and why?
- What kinds of online content are allowed to be reused, and how can we find them?

Autumn 2

E-Safety/digital literacy

Autumn 1: Privacy and Security

E

Autumn 1

- What makes a password strong, and how can I create one?
- How can free apps or websites collect and share my private information?
- What are app permissions, and can you give examples of what they might ask for?

Year 5

Computing Knowledge Pathway

Upper Key Stage 2

E-Safety/digital literacy

Summer 2: **Health, Well-being and Lifestyle**

- How can using technology sometimes distract us from other things we need or want to do?
- When might someone need to spend less time using technology, and why?

Summer 2

E-Safety/digital literacy

Summer 1: **Managing Online Information**

- How can I tell if the information I find online is true or accurate?
- How can I search for information using different types of technology?
- What tricks do websites use to make people want to buy things online?
- How can technology be made to act like a person or animal?
- What does 'fake news' mean, and how can we spot it?

Summer 1

E-Safety/digital literacy

Spring 2: **Online Bullying**

- How can we tell if someone is feeling upset, hurt, or angry online?
- What are some ways people can be bullied online, and how can we spot them?
- Why should we think carefully before posting something online that might affect someone else's feelings or beliefs?

Spring 2

Spring 1

E-Safety/digital literacy

Spring 1: **Online Reputation**

- How can we find out information about other people by searching online?
- How might information about someone online be made, copied, or shared by other people?

E-Safety/digital literacy

Autumn 2: **Online Relationships**

- What are some ways we can stay safe and have fun when using online social spaces?
- How can we show respect to others online, and how can we tell if someone is behaving in a healthy or unhealthy way?
- Why might something shared online seem unimportant to one person but be important to someone else's feelings or beliefs?

Autumn 2

E-Safety/digital literacy

Autumn 1: **Self-Image and Identity**

- How can my online identity be different from who I am in real life?
- What are some kind and positive ways to talk to people online, and how does that affect how they see me?
- Can people pretend to be someone else online—even my friends—and why might they do that?

Autumn 1

Year 4

E-Safety/digital literacy

Summer 2: **Copyright and Ownership**

- Why is it unfair to copy someone else's work from the internet without asking, and what problems could that cause?

Summer 2

E-Safety/digital literacy

Summer 1: **Privacy and Security**

- How can we make strong passwords and keep them secret?
- Why should we only share information online with people we trust?
- How can devices like phones or tablets collect and share our information?

Summer 1

E-Safety/digital literacy

Spring 2: **Health, Well-being and Lifestyle**

- Why can spending too much time on computers or tablets sometimes be bad for us?
- What are some good and not-so-good things we can do with technology?
- Why do some online games, videos, or apps have age limits, and why is it important to follow them?
- Who can I talk to if someone tries to make me do or watch something online that I'm not sure about?

Spring 2

E-Safety/digital literacy

Spring 1: **Managing Online Information**

- How can we use key words to find the right information online?
- What is autocomplete, and how can we choose the best suggestion when searching?
- How can people use the internet to buy and sell things?
- What's the difference between a belief, an opinion, and a fact?
- Why might some opinions online not be true or fair to everyone?

Spring 1

E-Safety/digital literacy

Autumn 2: **Online Bullying**

- How should we behave towards other people online, and why is it important to be kind?
- What does bullying look like online, and who can help if someone is being treated unkindly?

Autumn 2

E-Safety/digital literacy

Autumn 1: **Online Reputation**

- How can we search for information about other people online?
- What kinds of things might people want to share or keep private about themselves online?
- Who can I ask if I'm not sure about putting something online?

Autumn 1

Year 3

Lower Key Stage 2

Summer 2

E-Safety/digital literacy
Summer 2: **Online Relationships**
PROJ EVO

- How might people talk to others online that they don't know in real life, and why could that be risky?
- Who should I ask before I share things about myself or someone else online?
- What are some ways I can say 'yes' or 'no' online, and who can help me if I'm not sure?
- Who can help me if something is shared online without asking me first?
- How might someone feel if I share something about them online without asking?
- Why should I always ask a trusted adult before clicking 'yes', 'agree', or 'accept' online?

Summer 1

E-Safety/digital literacy
Summer 1: **Self-Image and Identity**
PROJECT EVOLVE

- Can people look or act differently online than they do in real life?
- What kinds of things online might make someone feel sad, worried, or scared—and how can they get help?

Spring 2

E-Safety/digital literacy
Spring 2: **Copyright and Ownership**

- Does everything on the internet belong to us?
- Why is it important to respect other people's work online?

Year 2

E-Safety/digital literacy
Autumn 1: **Managing Online Information**

- How can we use simple words to help us find things on the internet?
- How does voice search work and who is really answering us?
- How can we tell if something online is pretend or true?

Autumn 1

E-Safety/digital literacy
Autumn 2: **Health, Well-being and Lifestyle**

- What are some good rules for using computers and tablets at school and at home?
- How do rules for using technology help everyone stay safe and happy online?

Autumn 2

Spring 1

E-Safety/digital literacy
Spring 1: **Privacy and Security**

- How do passwords help keep our things safe on digital devices?
- What does 'private' mean, and why is it important to keep some things private?
- What rules can we follow to keep our personal information safe?
- What kinds of devices at home can connect to the internet, and what do they do?

E-Safety/digital literacy
Summer 2: **Online Bullying**
PROJECT EVOLVE

- How should we behave online in ways that do not upset others?

Summer 2

E-Safety/digital literacy
Summer 1: **Online Reputation**
PROJECT EVOLVE

- Can things we share online stay there and be copied by others?
- What information should I not put online without asking a trusted adult first?

Summer 1

E-Safety/digital literacy
Spring 2: **Online Relationships**
PROJECT EVOLVE

- When should I ask permission to do something online?
- Why it is important to be considerate and kind to people online?
- Why might something that makes one person laugh or feel sad on the internet not make someone else feel the same way?

Spring 2

Spring 1

E-Safety/digital literacy
Spring 1: **Self-Image and Identity**
PROJECT EVOLVE

- How can people online make others feel?
- Who can I talk to if something makes me feel sad, worried, uncomfortable, or frightened?
- Which trusted adults can I speak to and how can they help?

E-Safety/digital literacy
Autumn 2: **Copyright and Ownership**
PROJECT EVOLVE

- Who owns work created by technology?
- How can I name work so I know it belongs to me?
- What happens when I save my work, who does it belong to?

Autumn 2

E-Safety/digital literacy
Autumn 1: **Privacy and Security**
PROJECT EVOLVE

- How are passwords used to protect information, accounts, and devices?
- What information is personal?
- Why is it important to ask a trusted adult before sharing any personal information online, belonging to myself or others?

Autumn 1

Year 1

E-Safety/digital literacy
Summer 2: **Health, Well-being and Lifestyle**

How can we be safe when using technology at home and school?
What should we do if we do not feel safe or if something upsets us?
What does it mean to be healthy on devices?

Summer 2

E-Safety/digital literacy
Spring 2: **Online Bullying**

How can some people be unkind online?
What should I do to make sure I think of how others feel when online?

Spring 2

E-Safety/digital literacy
Summer 1: **Managing Online Information**

How can we use the internet to find out information online?
What devices do I have at school or home that can access the internet?

Summer 1

E-Safety/digital literacy
Spring 1: **Online Reputation**

What does 'information' mean?
What does 'online' mean?
What information is fine to put online for others to see?

Spring 1

E-Safety/digital literacy
Autumn 2: **Online Relationships**

How can people communicate on the internet?
How might I communicate with people I know?

Autumn 2

E-Safety/digital literacy
Autumn 1: **Self-Image and Identity**

How can I say 'no' - 'please step' - 'I'll tell' - 'I'll ask' to somebody who makes me feel sad, uncomfortable, embarrassed or upset?

Autumn 1

EYFS: Reception & Nursery