Search Engines

Year Five Knowledge

To know how search engines work.

To know anyone can create a website; therefore, people should take steps to check the validity of websites.

To know web crawlers are computer programs that crawl through the internet.

To know What copyright is.

Key vocabulary

algorithm
copyright
credit
fake news
inaccurate
index
keywords
online
page rank
search engine
TASK
web crawler
website
www

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ Explain what a search engine is, suggest several search engines to use and explain how to use them to find websites and information.
- ✓ Suggest that things online are not always true and recognise what to check for.
- ✓ Explain why keywords are important and what TASK stands for, using these strategies to search effectively.
- ✓ Recognise the terms 'copyright' and 'fair use' and combine text and images in a poster.
- ✓ Make parallels between book searching and internet searching, explaining the role of web crawlers and recognising that results are rated to decide rank.

Search Engines

Year Five Skills

Developing searching skills to help find relevant information on the internet.

Learning how to use search engines effectively to find information, focus on keyword searches and evaluate search returns.

Learn about different forms of communication that have developed with the use of technology.

Recognising that information on the Internet might not be true or correct and learning ways of checking validity.

Programming Music

Year Five Knowledge

To know that a soundtrack is music for a film/video and that one way of composing these is on programming software.

To know a loops can make the process of writing music simpler and more effective.

To know how to adapt their music while performing.

Key vocabulary

basic commands	bug	code
debug	decompose	loop
mind map	music	output
pitch	program language	program
repeat	rhythm	Scratch
soundtrack	tempo	timbre
tinker		

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ Iterate ideas, testing and changing throughout the lesson. Explain what the basic commands do.
- ✓ Explain how their program links to the theme. Include a loop in their work. Correct their own simple mistakes.
- ✓ Explain their scene in the story. Link musical concepts to their scene. Include a repeat and explain its function to enhance music.
- ✓ Code a piece of music that combines a variety of structures. Use loops in their programming.
- ✓ Recognise that programming music is a way to apply their skills

Programming Music

Year Five Skills

Predicting how software will work based on previous experience.

To know anyone can create a website; therefore, people should take steps to check the validity of websites.

Iterating and developing their programming as they work.

Confidently using loops in their programming.

Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected.

Writing code to create a desired effect.

Using a range of programming commands.

Using repetition within a program.

Amending code within a live scenario.

Using logical thinking to explore software more independently, making predictions based on their previous experience.

Using a software programme (Scratch) to create music.

Identify ways to improve and edit programs, videos, images etc.

Mars Rover 1

Year Five Knowledge

To know Mars Rover is a motor vehicle that collects data from space by taking photos and examining rock samples.

To know What numbers using binary code look like and be able to identify how messages can be sent in this format.

To know RAM is Random Access Memory and acts as the computer's working memory.

To know what simple operations can be used to calculate bit patterns.

Key vocabulary

8-bit binary	addition	ASCII
binary code	boolean	byte
CPU	data	data transmission
decimal numbers	discovery	distance
Hexadecimal	input	Mars Rover
the Moon	numerical data	output
planet	radio signal	RAM
scientist	sequence	signal
simulation	space	subtraction

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ Identify some types of data the Mars Rover could collect (for example, photos).
- ✓ Explain how the Mars Rover transmits the data back to Earth and the challenges involved.
- ✓ Read any number in binary, up to eight bits.
- ✓ Identify input, processing and output on the Mars Rovers.
- ✓ Read binary numbers and grasp the concept of binary addition.
- ✓ Relate binary signals (Boolean) to a simple character-based language, ASCII.

Mars Rover 1

Year Five Skills

- Learning that a separate computer can program external devices.
- Learning the vocabulary associated with data: data and transmit.
- Relating binary signals (Boolean) to the simple character-based language, ASCII.
- Understanding how data is collected in remote or dangerous places.
- Learn about different forms of communication that have developed with the use of technology.
- Recognising how the size of RAM affects the processing of data.
- Recognising that computers transfer data in binary and understanding simple binary addition.
- Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations.
- Understanding how data might be used to tell us about a location.

Micro:bit

Year Five Knowledge

To know that a Micro:bit is a programmable device.

To know that Micro:bit uses a block coding language similar to Scratch.

To understand and recognise coding structures including variables.

To know what techniques to use to create a program for a specific purpose (including decomposition).

Key vocabulary

Algorithm	Animation	App
Blocks	Bluetooth	Code block
Connection	Create	Debug
Decompose	Designing	Desktop
Device	Download	Images
Input	Instructions	Laptop
Load	Loop	Micro:bit
Outputs	Pairing	Pedometer
Polling	Predict	Program

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ Clip blocks together and predict what will happen. Make connections with previous programming interfaces they've used, e.g. Scratch.
- ✓ Create their own images to make the animation and recognise the difference between 'on start' and 'forever'.
- ✓ Recognise blocks they've used previously, identifying inputs and outputs used and make predictions about how variables work.
- ✓ Choose appropriate blocks to complete the program and attempt the challenges independently.
- ✓ Break a program down into smaller steps, suggesting appropriate blocks and match the algorithm to the program.

Micro:bit

Year Five Skills

- Decomposing a program without support.
- Predicting how software will work based on previous experience.
- Writing more complex algorithms for a purpose.
- Programming an animation.
- Iterating and developing their programming as they work.
- Confidently using loops in their programming.
- Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected.
- Writing code to create a desired effect.
- Using a range of programming commands.
- Using repetition within a program.
- Using logical thinking to explore software more independently, making predictions based on their previous experience.
- Identify ways to improve and edit programs, videos, images etc.

Stop Motion Studio

Year Five Knowledge

To know decomposition of an idea is important when creating stop-motion animations.

To know stop-motion animation is filmed one frame at a time using models and with tiny changes between each photograph.

To know Editing is an important feature of making and improving a stop-motion animation.

Key vocabulary

animation	animator	background
character	decomposition	design
digital device	edit	evaluate
flipbook	fluid movement	frames
model	moving images	onion skinning
still images	stop motion	storyboard
thaumatrope	zoetrope	

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ Create a toy with simple images and a single movement.
- ✓ Create a short stop motion with small changes between images.
- ✓ Think of a simple story idea for their animation and then decompose it into smaller parts to create a storyboard with simple characters.
- ✓ Make small changes to the models to ensure a smooth animation and delete unnecessary frames.
- ✓ Add effects such as extending parts and titles.
- ✓ Provide helpful feedback to other groups about their animations.

Stop Motion Studio

Year Five Skills

Decomposing animations into a series of images.

Decomposing a story to be able to plan a program to tell a story.

Using video editing software to animate.

Mars Rover 2

Year Five Knowledge

To understand that bit patterns represent images as pixels.

To understand that the data for digital images can be compressed.

To know the difference between ROM and RAM.

To understand various techniques that will improve the design of a 3D object (using CAD software).

Key vocabulary

3D	Algorithm	Binary image
CAD	Compression	CPU
Data	Drag and drop	Fetch, decode, execute
ID card	Input	JPEG
Memory	Online community	Operating system
Output	Pixels	RAM
Responsible	RGB	ROM
Safe		

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ Create a pixel picture, explaining that a pixel is the smallest element of a digital image and that binary is used to code and transfer this data.
- ✓ Save a JPEG as a bitmap and recognise the difference in file size as well as explaining how pixels are used to transfer image data.
- ✓ Explain the 'fetch, decode, execute' cycle in relation to real-world situations.
- ✓ Create a profile with a safe and suitable username and password and begin to use 3D design tools.
- ✓ Independently take tutorial lessons, applying what they have learnt to their design and understand the importance of using an online community responsibly.

Mars Rover 2

Year Five Skills

- Learning the difference between ROM and RAM.
- Recognising how the size of RAM affects the processing of data.
- Understanding the fetch, decode, execute cycle.
- Learning how the data for digital images can be compressed.
- Recognising that computers transfer data in binary and understanding simple binary addition.
- Understanding how bit patterns represent images as pixels.
- Using logical thinking to explore software more independently, making predictions based on their previous experience.
- Independently learning how to use 3D design software package TinkerCAD.
- Learn about different forms of communication that have developed with the use of technology.

Online Safety

Year Five Knowledge

To know possible dangers online and how to stay safe.

To know the pros and cons of online communication.

To know that information on the internet might not be true or correct and ways of checking validity.

To know what to do if they experience bullying online.

To know how to use an online community safely.

Key vocabulary

accurate	advice	app
application	app permissions	biography
bullying	communication	emojis
health	in-app purchases	information
judgement	meme	mental health
mindfulness	negative contribution	online
online communication	opinion	organisation
password	personal information	positive contribution
real world	strong password	summarise

Unit outcomes

Pupils who are **secure** will be able to:

- ✓ Understand that passwords need to be strong and that apps require some form of password.
- ✓ Recognise some types of online communication and know who to go to if they need help with any communication matters online.
- ✓ Search for simple information about a person, such as their birthday or key life moments.
- ✓ Know what bullying is and that it can occur both online and in the real world.
- ✓ Recognise when health and well-being are being affected in either a positive or negative way through online use.
- ✓ Offer some advice and tips to combat the negative effects of online use.

Online Safety

Year Five Skills

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