Computing

Knowledge Organisers

Year 3 Computing - Autumn Term 1: Google Apps

1. What is an Acceptable Use Policy?

An acceptable use policy is a set of rules we agree to in order to use the chromebooks responsibly.

2. How do you log into a chromebook?

You need a username and password to log into a chromebook.

3. What is Google Classroom?

Google Classroom is an online classroom where you can complete work set by your teacher.

How do you use Google Apps?

4. What is Google Docs?

Google Docs is an online word processor that is used to create, format and share documents.

5. What is My Drive?

My Drive is a place that stores files that you have created using Google Apps.

6. How do you use Google to search for information?

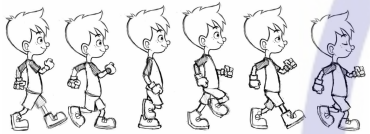
You need to use keywords in a search. Using 'kids' helps to find better results.

acceptable	apps	chromebook	classroom	docs	drive
Google	information	password	policy	search	username

Year 3 Computing - Autumn Term 2: Stop Frame Animation

1. What is animation?

An **animation** is a **sequence** of drawings or photographs.



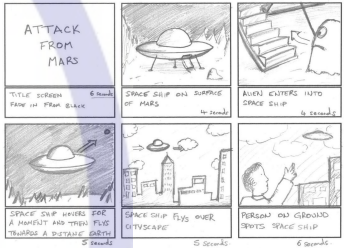
2. How does stop frame work?

Stop frame animation uses several images to create an illusion of **movement**.

What makes a good animation?

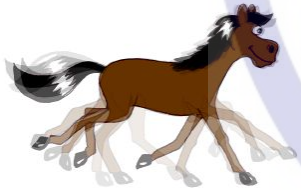
3. How are animations planned?

Animations are **storyboarded** before creating. This includes settings, characters and events.



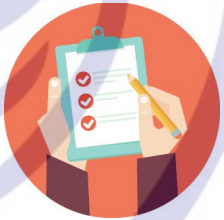
4. What does onion skinning ensure?

Onion skinning ensures **consistency** and **accuracy** in animation.



5. Why is evaluation important?

Evaluation is essential to improving the **quality** of an animation.



6. How can animations be enhanced?

Other **media** (text and music) can further **enhance** an animation.

Animation	**Stop frame**	**Storyboard**	**Consistency**	**Evaluation**	**Media**
Sequence	**Movement**	**Onion skinning**	**Accuracy**	**Quality**	**Enhance**

Year 3 Computing - Spring Term 1: Desktop Publishing

1. Why are text and images important?

Text and **images** are used to convey important information.

What are the benefits of desktop publishing?

2. How can text and layout be edited?

Text and **layout** can be **edited** to change the **appearance** of a document.

3. How can templates be used?

Content can be added to **templates** for different purposes.

4. What is copy and paste?

Copy and **paste** allows users to move information from one document to another.

5. Why are layout choices important?

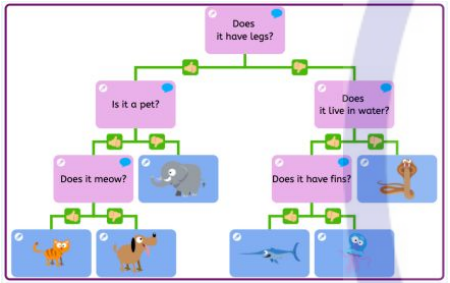
Layout choices can suit different **purposes** .

Text	Layout	Appearance	Templates	Paste	Desktop
Images	Edited	Content	Copy	Purpose	Publishing

Year 3 Computing - Spring Term 2: Branching Databases

1. How can types of questions help us to sort information?

Questions can be **opened** or **closed**. Yes/no questions allow items to be sorted into two groups.



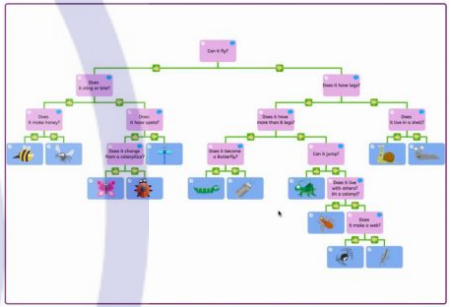
2. How can we sort objects?

Objects can be sorted by their similar **attributes**. They can be arranged in a **tree structure.**

How could you organise a group of objects?

3. What is a branching database?

A **branched database** can be used to **organised** items, based on yes/no questions.



4. What makes a well-balanced branching database?

A well structured database should be **balanced**. Carefully considering which questions are asked can ensure this.

5. Which objects can we sort into a branching database?

Any set of objects can be sorted into a **branched database**, according to their **attributes**.

6. How else can we represent data?

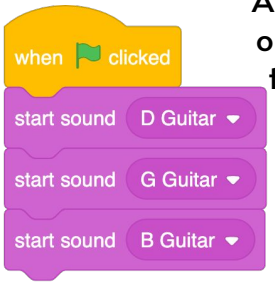
Information from a **branched database** can also be represented in other ways e.g **pictograms**.

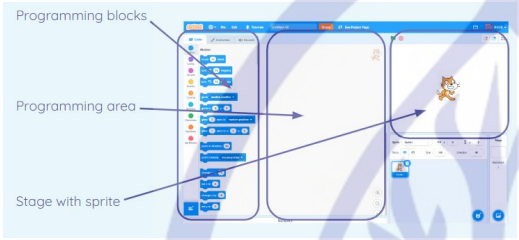
Opened	**Attributes**	**Branched**	**Balanced**	**Pictogram**	**Question**
Closed	**Structure**	**Organise**	**Attributes**	**Represent**	**Database**

Year 3 Computing – Summer Term 1: Sequencing Sounds

1. What is a block?

Each block in Scratch is a command which controls your sprite.



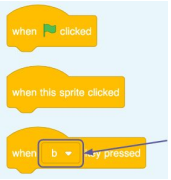


2. How do I move a sprite?

Motion blocks are use to move your sprite.

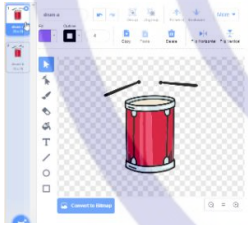
3. How do I begin a project?

Event blocks can be used to start a project.



4. What is a sequence?

A sequence is a pattern or process in which one thing follows another.



How can Scratch be used to sequence sounds?

5. How can I improve my project?

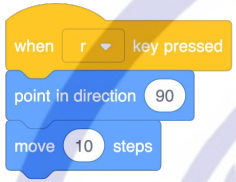
Costume and backdrops can improve a project.

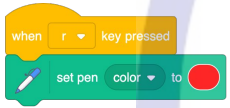
algorithm	**backdrop**	**block**	**command**	**control**	**costume**
debug	**design**	**event**	**process**	**sequence**	**sprite**

Year 3 Computing - Summer Term 2: Events and Actions

1. What do motion blocks do?

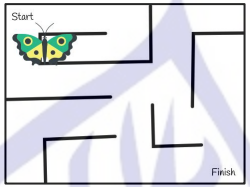
Motion blocks can **control** the movement of a sprite in different ways.





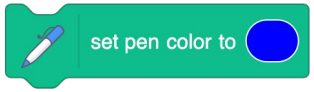
2. How does resizing help?

Resizing a sprite enables it to move easily.



3. What does a pen block do?

Pen blocks enables you to draw lines.



How can events and actions be used effectively in programming?

4. How can pen, motion and event blocks be used?

Pen, motion and **event** blocks can be used to create new **effects**.

5. How do you debug a programme?

1. Review the task — what should the project do?
2. Test the project
3. **Identify** the bug
4. **Fix** the bug
5. **Test** the bug fix — does the code now do what it should?

6. Why is evaluating important?

It is important to **evaluate** the different aspects of a project.

algorithm	**block**	**code**	**control**	**debug**	**effects**
evaluate	**event**	**fix**	**motion**	**resizing**	**test**

Year 4 Computing - Autumn Term 1: Google Slides

1. What is an Acceptable Use Policy?

An acceptable use policy is a set of rules we agree to in order to use the chromebooks responsibly.

Google Slides

How do you use Google Apps?

2. How do I create a new presentation and add a slide?

You can make a new presentation and give it a name. Use the 'New Slide' button to add more pages.

How do I make the text look different?

You can change the font, size, and colour of your words using the toolbar. You can also pick a theme to change the look of all your slides.

4. How can I add pictures and a creative title?

Use the 'Insert Image' tool to add pictures from the web. Create a fun title with the 'WordArt' tool.

5. How can I add shapes and change the background?

You can insert different shapes and change their colour. You can also change the background colour or add a picture to a slide.

6. What is the final project for this unit?

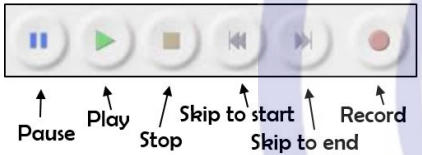
The final project is to create a presentation about, using all the skills you have learned.

acceptable	alignment	background	font	image	editing
presentation	shapes	slide	text box	theme	WordArt

Year 4 Computing - Autumn Term 2: Audio Production

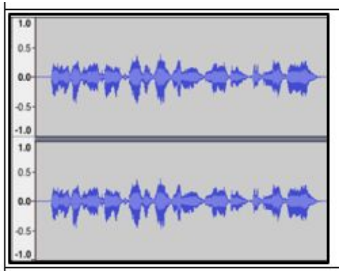
1. What does audio mean?

Audio means sound, including music, sound effects, and podcasts. The process of recording and listening to sound requires input devices (e.g. a microphone) and output devices (e.g. a speaker).



2. What audio editing tools are there?

Audacity is one example of an audio editing tool but others are available. The sound is shown as a waveform.



How do you create a podcast?

3. What is a podcast?

Podcasts are a type of spoken word file that can be downloaded by listeners. Features of podcasts include sounds and information.

4. How can you create a good quality podcast?

-Speak clearly
-Avoid fillers ('um', 'like')
-Avoid coughing/ sneezing
-Take turns to speak
-Avoid background noise

Audio	**Playback**	**Output**	**Podcast**	**Selection**	**Export**
Record	**Input**	**Sound**	**Sound File**	**Audacity**	**Microphone**

Year 4 Computing - Spring Term 1: Photo Editing

1. How do you use the crop tool to edit an image?

When we only need a part of a photograph, we can crop the image. We can also enlarge and reduce the parts that we need.

2.How do you change the composition of an image?

Sumopaint is one example of a photo editing tool, but many others are available. You can use an editing tool to change the composition of the image.

3. How do you apply a filter to an image?

Photo editing programs often have filters. These can change the colours in a photograph.

How can photos be edited?

4. How does the blemish tool improve photos?

The blemish tool allows us to improve the quality of the photo.

5. Are all the images we see real?

We should understand that not all photographs we see are real. They may have been edited.

6. How do you edit a photo?

There are lots of different ways that we can edit photographs, for example cropping, rotating, flipping, and changing colours and styles.

Crop	**Rotate**	**Retouch**	**Copy**	**Colour**	**Enlarge**
Composition	**Flip**	**Brighten**	**Paste**	**Edit**	**Reduce**

Year 4 Computing - Spring Term 2: Data Logging

1. What is data?

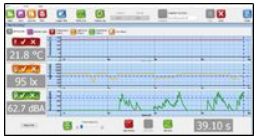
Data is raw numbers and figures. Information is what we can understand from analysing data. There are lots of different ways that we can collect, log and interpret data, including by using data loggers.

2. What is a data logger?

Data loggers and logging software can be used to automatically capture data. Data loggers have sensors built into them to detect and record data. Data loggers often contain a heat sensor to record temperature, a light sensor to record brightness and a sound sensor to record the noise.

3. Why do we gather data over time?

Data gathered over time can be used to answer questions. For example the class register can be used to answer questions about children's attendance. Before collecting data we need to carefully consider which questions we are trying to answer.



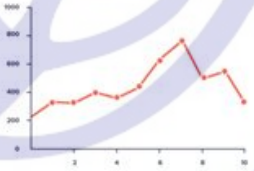
4. How do we analyse data?

When scientists collect data they usually store it so that it can be analysed at any time. Tables and graphs can be used to present the data in a useful way. It is important to be able to see trends as clearly as possible.

How can you use a data logger to record, analyse and interpret data?

5. Why do we collect data?

Data is collected to answer questions. It is important to interpret your data carefully.

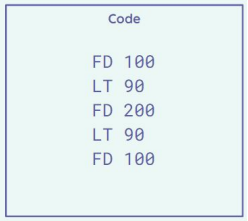


6. What do we do with collected data?

After interpreting your data you can write a report detailing what your conclusions are.

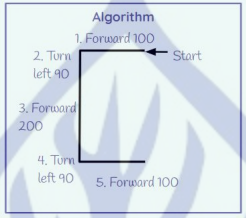
Data Logger	**Input Device**	**Analyse**	**Interval**	**Review**	**Interpret**
Sensor	**Vocabulary**	**Data Set**	**Logging**	**Conclusion**	**Data Point**

Year 4 Computing - Summer Term 1: Repetition In Shapes



1. How are computers programmed?

A computer can be **programmed** by typing **commands**.

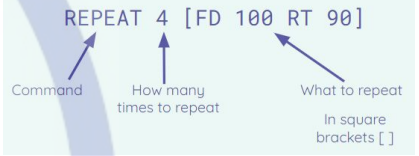


2. What is an algorithm?

An **algorithm** is an ordered set of precise instructions.

3. How do you use the repeat command?

Using the repeat command in a **count-controlled** loop creates **repetition**.




```
repeat 4 [fd 100 lt 90]
```

4. What is a loop?

When we use repetition in programming, it is called **looping**. We can program a loop to stop after a specific number of times.

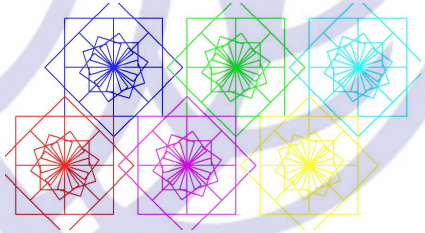
To write a procedure for a triangle:

```
TO triangle
repeat 3 [fd 100 rt 120]
END
```

How can repetition be used to create shapes in Turtle Academy?

5. How do you create a procedure?

Decomposing a task into small **steps** makes it easier to create a **procedure**.



6. What are some debugging strategies?

Tracing through the code line by line to check it

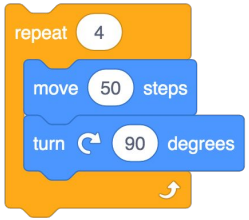
Reading the code out loud - make sense?

Decomposing the program into smaller parts to find errors

Looking at other **patterns** with a similar **code** and checking your changes

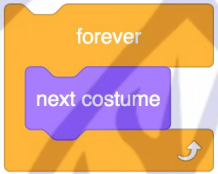
algorithm	**code**	**commands**	**count-controlled**	**debugging**	**decomposing**
looping	**patterns**	**procedure**	**programming**	**repetition**	**tracing**

Year 4 Computing - Summer Term 2: Repetition In Games



1. Why use count-controlled loops?

Count-controlled loops can be used to create **repetition** with an endp



2. What is an infinite loop?

In an **infinite loop** , **commands** are repeated over and over again.

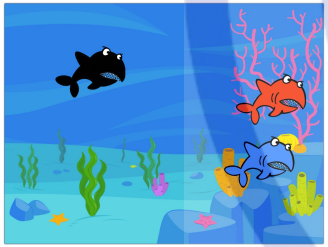
3. How can you make two loops run at the same time?

Two or more **loops** can run at the same time.

How can repetition be used to create games in Scratch?

4. How do I modify an infinite loop?

Backgrounds, sprites and other game features can improve the **appearance** of our creations.



5. Can I design a game that includes repetition?

Planning and **evaluating** can help us to improve our projects.

Game design example:

Sprite name	Sprite 1: Bat 1
How will the sprite move?	Randomly
Will there be any sounds?	Owl sound when clicked
Type of repetition used (✓)	✓ Infinite (forever) Count-controlled
Write the algorithm for the sprite	Repeatedly • Make it invisible • Move somewhere random on the screen and wait for 1 second • Make it visible and wait for 1 second
Which backdrops will you use?	Spooky forest
How will the game end?	When all the bats have been caught

6. Can I design a game that includes repetition?

If your **algorithm** does not work in the way you planned, it is important to **debug** it.

appearance	**algorithms**	**backgrounds**	**commands**	**count-controlled**	**creations**
debug	**evaluating**	**infinite**	**loops**	**planning**	**repetition**

Year 5 Computing - Autumn Term 1: Google Apps

How do you use Google Apps?

1. What is an Acceptable Use Policy?

An acceptable use policy is a set of rules we agree to in order to use the chromebooks responsibly.

2. How do you use formatting?

A document can be formatted by changing the text alignment, adding headings and titles and by adding tables.

3. How can you edit a presentation?

Presentations can be edited by hanging the slide background, using templates, and moving text and images.

4. What is Google Forms?

Google Forms is an app that enables you to create a survey or quiz which can be shared with others.

5. How do you find documents in Google Drive?

You can use the search bar, 'star' folders or change the colour of folders.

6. What is Gmail?

Gmail is an email service that allows users to send, receive and organise emails online.

apps	docs	drive	email	folders	formatting
forms	Gmail	password	policy	shortcuts	templates

Year 5 Computing - Autumn Term 2: Vector Drawing

1. What is a vector drawing?

A vector drawing is made from lines and shapes and is created on a computer.

2. How can you create a vector drawing?

Vector drawings can be created by moving, resizing, rotating, and changing the colours of a selection of objects.

3. How can you add detail to a vector drawing?

You can increase the complexity of their vector drawings and use the zoom tool to add detail to their work.

4. How are layers used in Vector drawings?

Each object in a vector drawing is built on a new layer and that these layers can be moved forwards and backwards to create effective vector drawings.

How do you create an effective vector drawing on a computer?

5. What can make the vector drawing process quicker and easier?

Grouping objects makes them easier to work with.

Vector drawing	objects	zoom	duplicate	Resizing handles	rotating
layers	grouping	ungrouping	Lines	shapes	alignment grids

Year 5 Computing - Spring Term 1: Video Production

1. What is video?

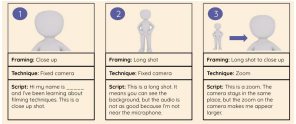
Video is the recording, reproducing, or broadcasting of moving visual images.

2.How can I use different camera angles?

Digital videos have specific features and recording devices, including camera angles and microphones.

3. How does a storyboard help when planning a video?

Filming techniques can be used for different purposes.



How can a video be captured and edited?

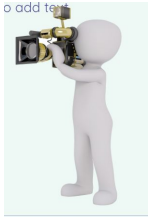
4. How can I plan a video that includes a script and a range of filming techniques?

Scenes on videos can be outlined. Video content can be created and saved.

5 How videos be edited?

Recordings can be stored, retrieved and exported to a computer. Videos can be improved by re-shooting and editing.

6. What could I do to improve my video?



close up	Long shot	editing	reshooting	camera angles	scene
broadcasting	mid range	pan and tilt	static	zoom	storyboard

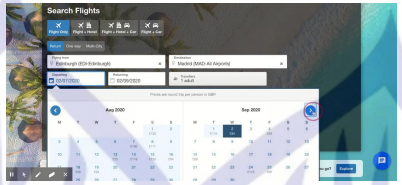
Year 5 Computing - Spring Term 2: Flat-File Databases

1. What is a database?

A database is a collection of data stored in a computer that can be easily used and added to.

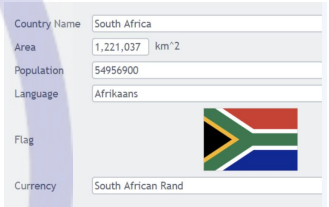
2. What is a record and what is a field?

A record is a collection of information organised in a table, each records contains fields - heading of each column of the table.



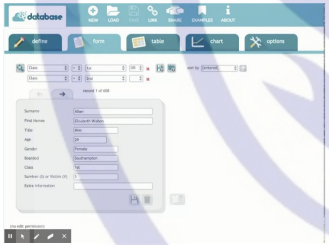
3. How do you use databases to answer questions about data?

Grouping and then sorting data allows us to answer questions.



4. How do you search a database to answer a question?

You can use advanced techniques to search for more than one field and using AND and OR to refine data selection to answer a specific question.



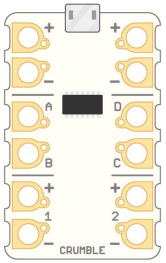
How can flat-file databases organise data into records?

5. How can I make my data more visual?

Charts and graphs can be used to compare data visually.

database	**data**	**field**	**chart**	**record**	**table**
Advanced search	**AND**	**OR**	**grouping**	**sorting**	**information**

Year 5 Computing - Summer Term I: Selection In Physical Computing



1.How do you control a simple circuit connected to a computer?

A **microcontroller** is a small **device** that can be programmed to control **components** that are connected to it.

2. What are count controlled loops used for?

A form of **repetition** is a **count-controlled** loop.You can use them when you know how many times you want the **commands** repeated.

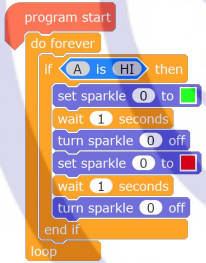
3. How can conditions be used to start and stop a set of actions?

A condition is a statement that can be either **true** or **false**. Programmers can use conditions to trigger **actions**.

How can selection be used in physical programming?

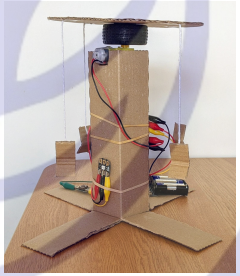
4.How can the flow of actions be controlled?

When using selection in programs, you must instruct the device to check constantly if the **condition** has been met. To do this, you use repetition in the form of an **infinite loop.**



5. How can selection be used in real world projects?

Selection in physical programming can be used to control moving **models.**



6.How do you design and test a project that uses an algorithm?

It is important to test and **debug** a program so that it works as intended.

actions	**commands**	**condition**	**count-controlled**	**debug**	**device**
false	**infinite**	**loop**	**microcontroller**	**repetition**	**true**

Year 5 Computing - Summer Term 2: Selection In Quizzes

1. Creating Conditions: The *'If-then'* command block helps us to create conditions. It is one of the darker orange control blocks. Other blocks are placed inside the 'If-then' blocks to create conditions.

2. Different Outcomes: The *'If-then-else'* command block helps us to write programs that have selections with two outcomes. The *'forever'* block means that the command will happen continually.

3. Questions can be included by using the *'ask'* command blocks. If specific answers are needed (e.g. yes or no), these can be typed in when using the 'answer' sensing block within the '*Operators*' block.

How can selection be used in programming on Scratch?

4. Designing an algorithm (set of instructions for performing a task) will help you to program the sequence that you require.

5. Programmers do not put their computer programs straight to work. They trial them first to find any errors.

6. If your algorithm does not work correctly the first time, it is important to debug it.

algorithm	**command**	**control**	**debug**	**errors**	**false**
forever	**instructions**	**operators**	**program**	**selection**	**true**

Year 6 Computing - Autumn Term 1: Google Apps

How do you use Google Apps?

1. What is an Acceptable Use Policy?

An acceptable use policy is a set of rules we agree to in order to use the chromebooks responsibly.

2. How can a Google Doc be organised?

A document can be organised by adding headers and footers, page numbers, different page orientations and a contents page.

3. How can you create an effective presentation?

Adding links, videos and transitions can make a presentation more interactive and engaging.

4. How can you create an effective quiz / Google Form?

Adding points to quiz questions as well as a variety of question types and feedback can create an effective quiz.

5. How do you use advanced searches in Google Drive?

You can use search using the file type or the owner of the file within Google Drive.

6. What is Gemini?

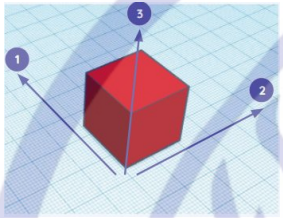
Gemini is an AI-powered assistant to support ideas. AI is considered a form of plagiarism.

AI	apps	contents	feedback	file types	footer
forms	Gemini	header	layout	plagiarism	transitions

Year 6 Computing - Autumn Term 2: 3D Modelling

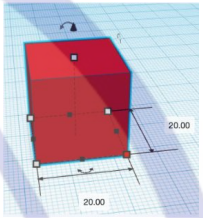
1. How do you create and manipulate 3D digital objects?

Computers can be used to **model real-life** items.



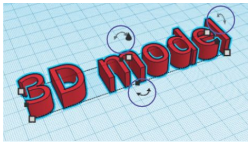
2.How do you compare working digitally with 2D and 3D graphics?

Graphical objects can be **modified** by **resizing,** changing the colour and **lifting/lowering.**



3. Can you recognise that objects can be combined in a 3D model?

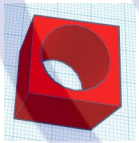
Rotating, duplicating and **grouping** are other ways to modify objects.



How can 3D modelling be used to make objects?

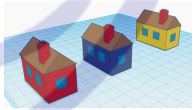
4. How can physical objects be broken down into a collection of 3D shapes?

Grouping digital 3D shapes and **placeholders** can be used to create holes in **objects.**



5. How do you design a digital model by combining 3D objects?

Planning is an important stage of 3D modelling.



6. How do you develop and improve a digital 3D model?

Evaluating a **3D model** can lead to improvements to **design** and **functionality.**

3D	**design**	**duplicating**	**evaluating**	**functionality**	**graphical**
grouping	**lifting**	**lowering**	**modify**	**placeholder**	**rotating**

Year 6 Computing - Spring Term 1: Webpage Creation

1. What makes a good website?

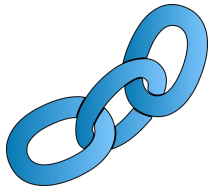
Websites are written in **HTML** (HyperText Markup Language)

2. How could you lay out your webpage?

Websites are always created for a **purpose**. People have lots of different reasons for creating websites. If you make a website you need to think about who it is for (the **audience**) and why you are making it (the **purpose**).

3. Copyright or copyWRONG?

Copyright law protects the **control** you have over the things that you create. It also **protects** the work of others.



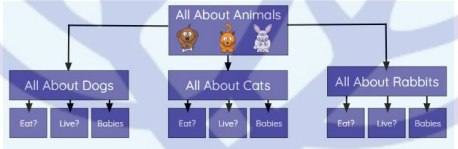
What makes a good web page?

4. How does it look?

It is important to **preview** your webpage to see what it looks like on different **devices.**

5. Why are navigation pa ths important?

Navigation paths allow users to keep **track** of where they have been on the website or how it is **structured.**



6. What are the implications of linking content owned by other people?

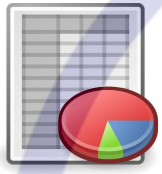
When you link to someone else's website online this is called an **external link.**

audience	**control**	**copyright**	**devices**	**external**	**HTML**
navigation	**path**	**protect**	**purpose**	**structured**	**webpage / site**

Year 6 Computing – Spring Term 2: Introduction To Spreadsheets

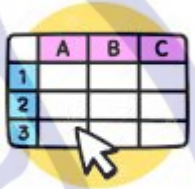
1. What is a spreadsheet?

A **spreadsheet** is a computer program that can capture, display and manipulate **data** arranged in **rows and columns**.



2. Why is formatting important?

Each of the boxes that make up a spreadsheet is called a cell. E.g. A1, B4. **Formatting data** makes it easier to organise and work with.



3. What is a formula?

Formulas can be used to produce calculated **data** within a spreadsheet.

How can spreadsheets be used to organise data?

4. How can formulas be applied to data?

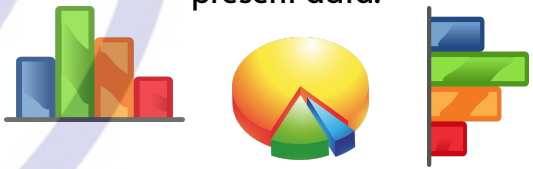
Formulas can be used for a range of calculations and **duplicated** to apply them to multiple cells.

5. What can spreadsheets be used for?

Spreadsheets can be used to help organise and calculate costings for events.

6. What is a suitable way to present data?

There are different software tools available within **spreadsheet** applications to present data.

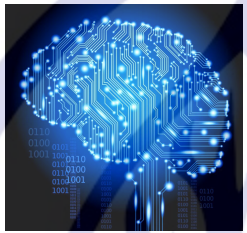


average	**cells**	**columns**	**data**	**duplicate**	**formatting**
formulas	**modify**	**rows**	**spreadsheet**	**sum**	**subtotal**

Year 6 Computing - Summer Term 1: Variables In Games

1. What is a variable?

A **variable** is something that is **changeable** .



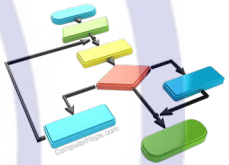
2. Why is a variable used in a program?

A **program variable** is a **placeholder** in memory for a single variable.

3. How do you improve a game using variables?

Placing the **variable** in different places in the program will have different outcomes.

How are variables used to create a game in Scratch?

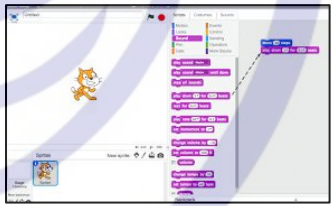


4. How do you design a project that builds on a given example?

Sprites, backgrounds and algorithms are required to design and enhance the visual appearance of a game.

5. Can you use a design to create a project?

Naming **variables** and **testing** is important to **improve** and **enhance** projects.

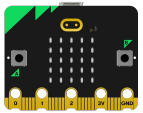


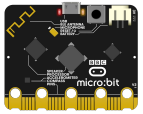
6. How do you evaluate a project?

Evaluating is key to developing designs.

Algorithm	**abstraction**	**background**	**code**	**enhance**	**experiment**
flow	**outcome**	**repetition**	**sequence**	**Sprite**	**Variable**

Year 6 Computing - Summer Term 2: Sensing Movement



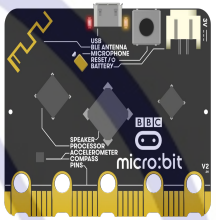


1. How do you program to run on a controllable device?

A **micro:bit** is a tiny computer. You can write programs for the micro:bit on your computer and then **transfer** them to the micro:bit to be run.

2. Can you control the flow of a program?

Using a **variable** in an *if, then, else statement* helps to select the **flow** of a program.



3. Can you update a variable with a user input?

The *is gesture* input block can be used to **detect** movement from the **accelerometer.**

How can a step counter be created by programming a micro:bit?

4. Can you use a conditional statement to compare a variable to a value?

Using **selection** (if, then, else), makes the micro:bit into a **compass.**

5. Can you design a project that uses inputs and outputs on a controllable device?

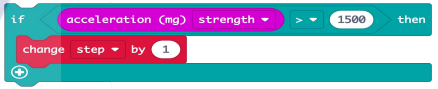
Ways to debug your code:

Isolate code — take a small section of **code** out, and test only that section.

Substitute code — swap a section of **code** and test again.

6. Can you develop a program to use inputs and outputs on a controllable device?

The on **shake** block can be replaced with a block that allows you to adjust the **sensitivity** of the shake **detection**.



code	**compass**	**debug**	**detect**	**detection**	**flow**
isolate	**selection**	**sensitivity**	**shake**	**substitute**	**transfer**