

Key vocabulary	
Python	A high level programming language.
Programming	The process of writing computer programs.
Code	The instructions that a program uses.
Sequence	Parts of the code that run in order and the pathway of the program reads and runs very line in order.
Selection	Selects a pathways through the code based on whether a condition is true
Iteration	Code is repeated (looped), either while something is true or for a number of times
Algorithm	A set of rules/instructions to be followed by a computer system
Variable	A value that will change whilst the program is executed. (eg. temperature, speed)
Comparative Operator	When comparing data, an operator is used to solve the equality such as <>, != or ==
Syntax	The punctuation/way that code has to be written so that the computer can understand it. Each programming language has its own syntax.
Data Type	This indicates how the data will be stored. The most common data types are integer, string, and float/real.
String	A collection of letters, numbers or characters. (eg, Hello, WR10 1XA)
Integer	A whole number. (eg. 1, 189)
Float/Real	A decimal number, not a whole number. (eg. 3.14, -26.9)
Boolean	1 of 2 values. (eg. True, False, Yes, No)

Comparative Operators	
==	Equal to
!=	Not equal to
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to

Year 8 Python

The scheme intends to familiarise pupils with the Python programming environment and syntax, and equip pupils with the skills and knowledge to write simple programs. They use previous knowledge based on Kodu and scratch programming.



```

Print Displays content on screen
>>> print("Hello World")
Hello World

Variables Place to store data in a program
>>> text = "Hello"
>>> name = "Mia"
>>> print(text, name)
Hello Mia

>>> print(text, "your name is", name)
Hello your name is Mia

```



Python -> English	
<code>print('hello!')</code>	Prints a value on screen (in this case, hello!)
<code>input('')</code>	Inputs a value into the computer.
<code>x=input('')</code>	Inputs a value and stores it into the variable x.
<code>x=int(input(''))</code>	Inputs a value into x, whilst also making it into an integer.
<code>print(str(x))</code>	Prints the variable x, but converts it into a string first.
<code>if name == "Fred":</code>	Decides whether the variable 'name' has a value which is equal to 'Fred'.
<code>else:</code>	The other option if the conditions for an if statement are not met (eg. name = 'Bob' when it should be Fred)
<code>elif name == "Tim"</code>	elif (short for else if) is for when the first if condition is not met, but you want to specify another option.
<code>#</code>	# is used to make comments in code – any line which starts with a # will be ignored when the program runs.

What will you make.

In this project you will learn how to write a Python program telling people all about you.

What you will make

```

Hi, I can code in Python!

My favourite animals are sheep

o-##-
| | #

I live in Glasgow

#
#
#

What year were you born? 2006
In the year 2025 you'll be 19 years old!

```

This project introduces for loops through a fun turtle race game. Loops are used to draw the race track and to make the turtles move a random number of steps each turn. If you have a group of people to play the game, each person pick a turtle and the one that gets the furthest is the winner.

What you will learn

By making your turtle race game, you will learn how to:

- Write for loops in Python
- Use random numbers in Python
- Draw lines in different colours with Python Turtle

Year 8 Binary

Bit	The smallest amount of data (stands for <i>binary digit</i>) (0 or 1).
Byte (B)	8 bits
Kilobyte (KB)	1024 bytes
Megabyte (MB)	1024 kilobytes
Gigabyte (GB)	1024 megabytes
Terabyte (TB)	1024 gigabytes
Petabyte (PB)	1024 terabytes

```
0011110001110010111110001111
0001111100111111101111110000
11110111011111111100011111
0111011000001001100111011111
1000001110111110111011111011
1000100100111100010001100001
1100110010111001111111111111
1111000010000101011111110001
1100001001111001000011000000
```

0	0	0	1	1	1	1	0	0	0
0	0	0	1	0	0	1	0	0	0
0	0	0	1	0	0	1	0	0	0
1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1
0	1	0	0	0	0	0	0	1	0
1	1	1	0	0	0	0	1	1	1
1	0	1	0	0	0	0	1	0	1
1	0	1	0	0	0	0	1	0	1
1	0	1	0	0	0	0	1	0	1

We use the alphabet to write letters or words to communicate. Computers use binary code.

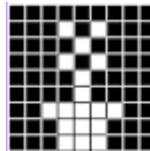


Image 1

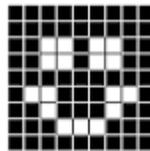


Image 2

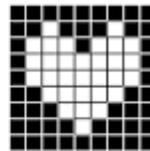


Image 3

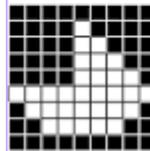


Image 4

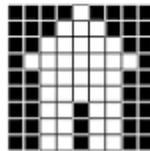


Image 5

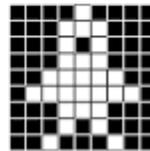


Image 6

What is binary?

Binary numbers or binary code are used by computers and digital devices to talk to each other. It is used to give commands to the computer or a way to enter data (information).

A	01000001	N	01001110
B	01000010	O	01001111
C	01000011	P	01010000
D	01000100	Q	01010001
E	01000101	R	01010010
F	01000110	S	01010011
G	01000111	T	01010100
H	01001000	U	01010101
I	01001001	V	01010110
J	01001010	W	01010111
K	01001011	X	01011000
L	01001100	Y	01011001
M	01001101	Z	01011010

Converting from binary to denary

128	64	32	16	8	4	2	1
0	1	0	1	1	0	0	1

- Write the binary table.
- Put the 0s and 1s into the table.
- If a number has a 0 under it, don't add the number on.
- If a number has a 1 under it, add that number onto the total.

In this example, we have 1s under 64, 16, 8, and 1, so:

$$64 + 16 + 8 + 1 = 89$$

Therefore, 01011001 in binary is 89 in denary!

There are only 10 types of people in the world: Those who understand binary and those who don't

Converting from denary to binary

- Write the binary table.
- Start from the left hand side of the table.
 - If the number is **larger** than the number in the table, put a 0 under it and move onto the next number
 - If the number is **smaller** than the number in the table, put a 1 under it and take that number away from your number
- Repeat step 2 until all of the columns have a 1 or a 0 under them.

In this example, we start from 32 as the other numbers are too large. We put a 1 under 32, leaving 10 remaining. Adding 8 and 2 together makes 10, so this must be our answer:

128	64	32	16	8	4	2	1
0	0	1	0	1	0	1	0

What do you learn?

In this unit the children extend their drawing skills to create 3D models based on using the software SketchUp. Children will learn how to create simple and complex 3D models. They will be able to add detail and manipulate 3D models using a variety of tools.

Getting Started with SketchUp



Choose the 'Urban Planning Meters' template.

Units: Meters
This template is for urban planning, geo-modeling, and surveying.

Click 'Start using SketchUp' to begin.

Start using SketchUp

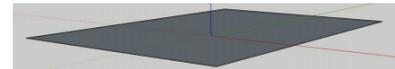
Drawing simple 3D shapes

When drawing shapes click to start the shape and click to end the shape (don't drag).

Select the Rectangle tool in the shape menu.

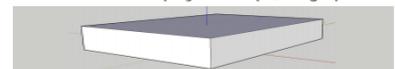


Click, move mouse and click to draw a rectangle.



Select the Push/Pull tool.

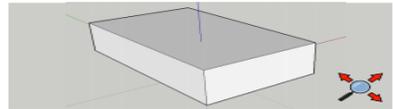
Place the tool on top of the shape, drag upwards.



Try the Push/Pull tool on the vertical faces, using the Orbit, Pan and Zoom tools to change the view of the cuboid.

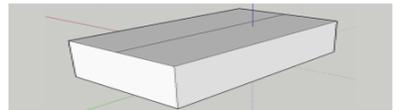


Notice how the Zoom Extends tool shows the whole drawing.

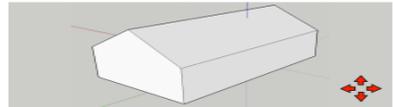


Turning it into a House

Draw a line from the midpoint on top of the cuboid.



Use the Move tool to lift the line, creating a roof.

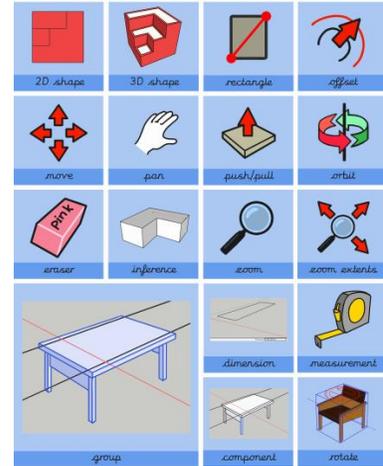


Use the Orbit tool to rotate to check the roof from end on.

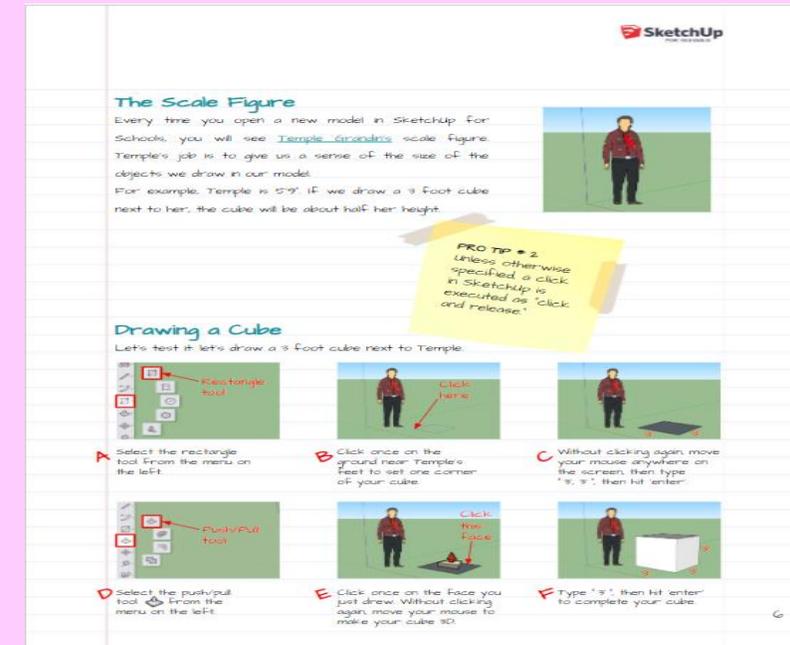
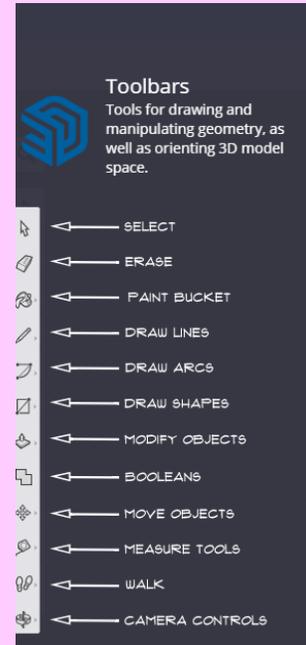


Year 8 Google sketch up

3D Modelling: SketchUp



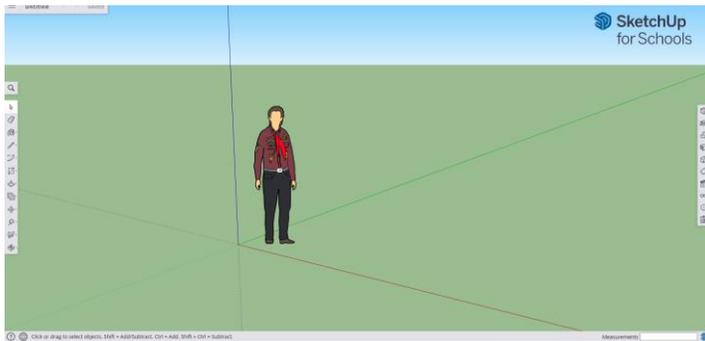
Step by step tutorials <https://www.sketchup.com/>



Keywords

orbit	shape
tools	measurement
dimension	pan
rectangle	zoom
zoom	guide
move	eraser

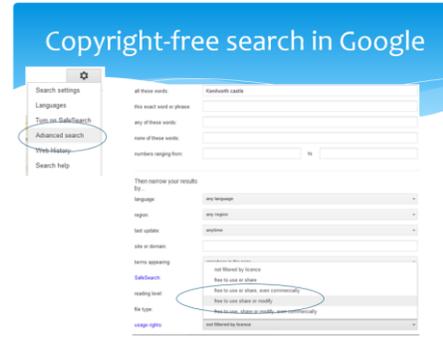
Quiz	A	B	C
What is SketchUp?	A computer-aided design tool.	A TV programme about art.	A search engine.
What does CAD stand for?	Control additional data.	Complex-aided design.	Computer-aided design.
Where would I find SketchUp?	Computer-aided design.	On the internet	In a book.
What is aesthetic awareness?	Knowing when art shows great beauty.	Knowing when art shows great sadness.	Knowing when art needs a frame.



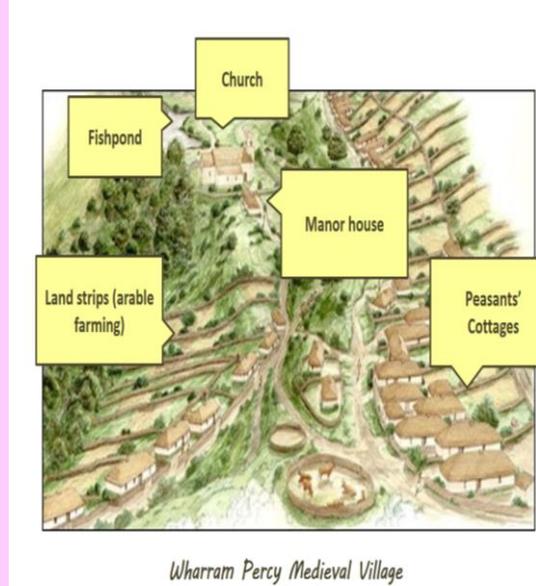
Unit Objective

- The key objective of this unit is to enable students to use & develop ICT skills to demonstrate the knowledge and understanding they have gained in another subject (History). The aim of this is twofold: to reinforce prior learning they have gained in another subject and to gain an appreciation of ICT in terms of how it is used in the wider world; using a set of tools used to achieve specific outcomes.

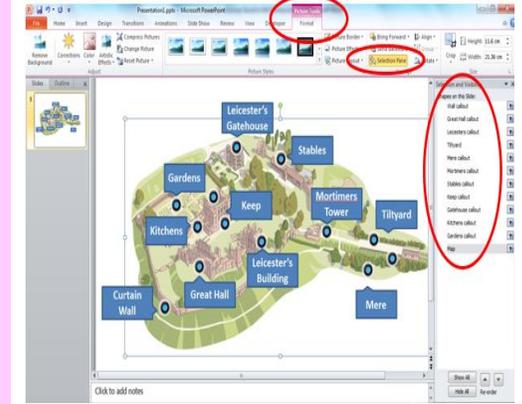
Year 8 Hi-ICT



Creating a discovery board.



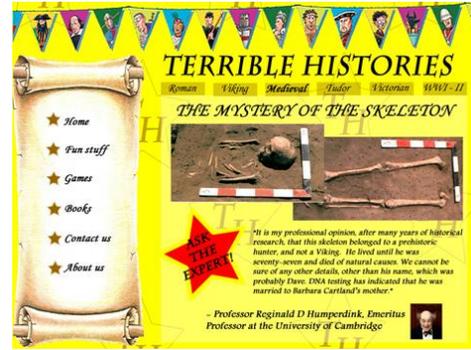
Then rename the callout boxes using shape selection pane (select the map – click Format – click Selection Pane). This will help you later on when you are working with all the different elements.



This is the main screen for our discovery board.

We're now going to create a "pathway" in our product. A pathway is a sequence of slides with links between them, containing information on a certain subject, which allows the user to explore different information about that subject. The subject we are going to look at is the keep.

Analysing data



At the end of this project students will have learned how to:

- Undertake effective historical enquiry using a range of ICT tools & techniques
- Assess the value of the results of this enquiry and assess the Nature, Origin and Purpose of a digital artefact
- Collect and analyse historical data using a range of ICT tools and techniques
- Present the findings of their enquiry using a variety of digital artefacts in a digital multimedia product
- Evaluate the effectiveness of their project work



Keywords	
Multimedia	(of art, education, etc.) using more than one medium of expression or communication.
Boolean search	Boolean searches allow you to combine words and phrases using the words AND, OR, NOT (known as Boolean operators) to limit, broaden, or define your search
Database	a structured set of data held in a computer, especially one that is accessible in various ways.
Discovery Board	An interactive document that allows people to find specific information
historical enquiry	is the process by which students use the same methods as a professional historian when investigating an aspect of history