Key Vocabulary…

Term	Definition
Computational Thinking	An organised way of thinking – a series of steps that will get you to the solution.
Abstraction	Looking at a problem and picking out the most important information.
Decomposition	Breaking a difficult or large problem down into smaller tasks.
Binary	A number system used by computers which only uses 2 digits (0, 1).
Denary	A number system used by humans which uses 10 digits (0 – 9)
ASCII	A binary code which is used to represent letters and numbers.
Cryptology/ Encryption	Making secret codes so that information can be passed between people safely.
Bitmap	A graphic made up of pixels. Pixels are small coloured dots in a grid.
Caesar Cipher	A code used by Julius Caesar to communicate with his army generals.
Bit / Byte	A binary unit either a 0 or a 1 A byte is 8 bits together.

Picture This…

Converting Binary to Denary

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

1. Add the place value of the 1s.
   64+16+4+2 = 86

Converting Denary to Binary   164

1. Minus the placeholder from the 164.
2. 164 – 128 = 36 (place a 1 under 128 placeholder)
3. Is 36 bigger than 64?
4. If no , put 0 under 64.
5. 36 – 32 = 4 (put a 1 under the 32 placeholder
6. Is 4 bigger than 16?
7. If no, put a 0 under the 16.
8. Repeat the steps until you get to the end of the placeholder list.

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

Always Remember…

- Computers can only store data as 0s or 1s.
- When computers hold data such games, images or words, it looks like this image.

- There are two types of images used in computers, bitmaps and vector. Bitmaps are made by colouring individual boxes in a grid.
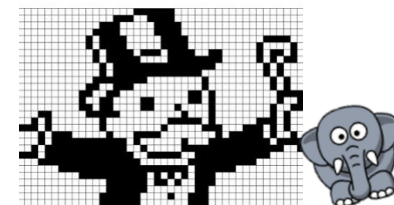

Questions

1. Which number make up binary?
2. Explain what is meant by decomposition? Give an example.
3. Explain what is meant by abstraction? Give an example.
4. Convert the following numbers from binary to denary.
   1. 0011 1100
   2. 1111 0000
5. What is the purpose of ascii code?
6. What is a pixel?

Deeper Learning…

Why do computers use binary?

Computers use binary because they use transistors which carry electrical charges. If the charge is ON, it's a 1 and there is no charge then it is a 0.

It is difficult for us to read binary as you can see and in year 9, we will learn how interpreters and compilers help us with translation.

Activity – Using Abstraction and decomposition plan a cinema trip with 5 friends. How could you break this task into smaller pieces and what abstraction techniques would you use to make sure that you are watching a suitable film.

Key Vocabulary…

Term	Defintion
E-safety	Process of staying safe online.
Cyberbullying	Intentionally hurting someone by name calling or teasing using social media or text messages.
Social media	Apps used by people to communicate with each other.
Sexting	Sending, receiving or forwarding sexually explicit images. An image of someone under 18 is considering illegal.
CEOP	UK crime fighters that are involved in prosecuting people who send indecent images.
Identity Theft	Criminals who use viruses and the internet to steal bank details from people.
Internet	A collection of connected computers across the world.
URL	An address to access website and the data that is held on them.
World wide web	A collection of websites that anyone can access hosted on the internet.
Grooming	People who use the internet and other methods to trick a young person into behaving in a way that they would feel uncomfortable with. If you are approached by someone who is trying to groom you online, you need to press the alert button.

CLICK CEOP
Internet Safety

Picture This…

What is cyberbullying?
Cyberbullying is when someone uses the internet or an electronic device to intentionally hurt someone else.
Cyberbullying includes:
Hate Speak
Racist messages
Homophobic messages
Sexual messages (sexting)

What are the dangers of being online?
Exposure to strangers
Exposure to inappropriate material/illegal content, violence, sexual material.
Fraud (identity theft)
Viruses

Tik Tok

Social Media
Social media apps or websites that allow people to communicate with each other. The age limit for a lot of these services is 13 years old.
People often share personal data but don't know how to set their privacy settings so that information is kept secure.

Questions

1. Define the term cyberbullying.
2. Name two ways to manipulate images.
3. Name two places you can get help from when being cyberbullied.
4. Define the term copyright.
5. Explain what a layer is in an image.
6. What are pictures made up of?
7. Why should passwords not be shared?

Always Remember…

When you go online and share images, or post tweets and comments or visit websites- it leaves a trail. This is known as your digital footprint, and this can stay with you forever.
It is important that you behave responsibly online so that this doesn't get you into trouble.

When you send or post an image, you don't own it anymore and have no control about what happens to the image.

Surface Web
Deep Web
Dark Web

Deeper Learning…

World Wide Web
Google can only search what is in its database. Not all of the internet can be accessed through a search engine.
The 1st layer of the web is called the **surface laye**r, this allows us to access websites such as BBC weather.
The second layer is the **deep web** which is protected webpages which aren't indexed and not easily available. Used by banks etc.
The third layer is the **dark web** which are hidden websites, often linked to illegal and criminal activities. Special software is needed for this, but it can be **against the law to even try to access the dark web and it is not advised.**

Activity – Create a poster or leaflet which explains the dangers of the online world, you might need to do some additional research using the internet to find some statistics.