## Year 7 Knowledge Organiser & Revision Guide 1

## Binary

### What is Binary?

Binary is a base-2 numeral system that uses only two digits: 0 and 1. It is the fundamental language of computers, as all data in all computers is represented in binary form. This means your text messages, pictures, video, and voice notes are all processed in binary!

### Binary Chart

**0001111 =**

**8+4+2+1 =15**


### Understanding Conversion

To **convert binary to denary**, assign a power of 2 to each digit, starting from the right (0th power) to the left. Add up the values of the digits where there is a '1'.

To **convert denary to binary**, start from the left and place a ‘1’ in the boxes until you have created your value. If the value becomes too large, place a 0.

### Binary Activity

**Convert the following binary numbers to denary:**

0110 =
1010 =
0001 =
01101111 =
11011110 =

**Convert the following denary numbers to binary:**

5 =
27 =
54 =
7 =
179 =

## File Management

### What is File Management?

File management refers to the process of storing, naming, organising, and retrieving files on a computer. Good file management helps keep digital documents easy to find and reduces clutter.

### Key Tips:

* Create folders for different subjects or projects.
* Use clear naming conventions for files.
* Regularly back up important files.

### File Organisation Activity

|  |
| --- |
| Match the term to its description by highlights the term and description the same colour.  |
| Folder | Physical devices that hold data |
| File extension/File Type | A copy of data to prevent data loss |
| Backup | A way to organize files neatly |
| Storage Device | The format of a file (e.g. .docx, .pptx, .jpg) |

## What is Social Networking?

### Understanding Social Networking

Social networking refers to the platforms and websites that facilitate social interaction and communication between users. E.g., Facebook, X, Instagram, Snapchat and TikTok

### Social Networking Activity:

### List as many methods of online communication you can think of when using apps such as Instagram or TikTok.

### Likes

## Staying safe online

### Key Principles for Staying Safe

* Use strong, unique passwords.
* Be cautious when sharing personal information.
* Check your online profiles privacy settings.
* Report suspicious activities.

There are various agencies you can speak to if you have an issue online, in addition to speaking to a trusted adult such as a parent, guardian or teacher.

* **CEOP** (Child Exploitation and Online Protection Command) is a command of the National Crime Agency in the UK that helps protect children from online sexual abuse and exploitation.
* **Childline** is a free and confidential support service in the UK for children and young people where they can talk about anything that’s troubling them.

### Staying Safe Online Activity

**Question 1:**
What are three pieces of advice you would give a friend to help them stay safe online?

## Social Media and Digital Footprint

### Understanding Digital Footprint

A digital footprint is the record of all your online activities. It includes everything from social media posts to searches and website visits. What you put online is extremely difficult to remove, and even if you delete it from your profile is likely to be saved on a server somewhere.

### Case Study

“Emma is a Year 7 student who loves sharing her thoughts on social media. She often posts pictures from her holidays and shares her opinions on various topics. Although she finds it fun, Emma doesn't know that potential future employers will check her social media presence. A university she applies to later raises concerns over her past posts about controversial topics after doing a routine search. This impact on her digital footprint could affect her opportunities and how she is perceived in the future.”

### Digital Footprint Activity

**Reflection Activity:**
Write a short paragraph about how your digital footprint can affect your choices later in life.

## 8. Encryption and Decryption Methods

### What is Encryption?

Encryption is the process of converting information into code to prevent unauthorized access. Decryption is the process of converting the coded message back into its original form so that I can be read by the receiver. A key is applied during the process to lock and unlock the message, protecting personal data from being accessed by others.

### Activity

**Matching Question:**
Match the following terms to their definitions: (copy and paste the definition underneath each term).

1. *Encryption*
2. *Decryption*
3. *Key*
4. *Cipher*

**Definitions:**
A. The method or process applied to encrypt or decrypt data.
B. The process of turning a message to code.
C. The process of turning coded data back into a readable message.
D. The code language type used to encrypt data.

## The Enigma Machine

### Overview

The Enigma Machine was a cipher device used during World War II by the Germans to encrypt military communication. It was a complex machine that helped keep messages secret. The enigma machine used 3 rotating cogs, each with 25 rotations to represent a letter and encrypted text differently for each letter input.

## The Bombe Machine

### Overview

Alan Turing was a mathematician and computer scientist who played a crucial role in breaking the Enigma code. He is often regarded as the father of computer science.

The Bombe Machine was developed by Alan and his team at Bletchley Park to decrypt messages sent by the Enigma Machine. It significantly contributed to the Allied success in WWII.

### Activity

1. **What was the purpose of the Enigma Machine?**
2. **Who developed the Bombe Machine, and what was its primary function?**
3. **How did Alan Turing contribute to the efforts in World War II?**
4. **Where was the British School of Ciphers located?**
5. **What was the significance of breaking the Enigma code?**

**Research Challenge: What was the Bombe Machine, and how did it help shape and develop modern computers?**

## The Caesar Cipher

### Overview

The Caesar Cipher is a simple encryption technique where each letter in the text is shifted by a fixed number of places up or down the alphabet. For example, Crompton + 2 would become:
**C** = E **R** = T  **O** = Q **M** = O  **P** = R  **T** = V  **O** = Q  **N** = P

### Activity

**Encrypt the following message using a Caesar Cipher with a shift of + 3:**
"REVISION”

**Decrypt the following message that has been encrypted using a Caesar Cipher with a shift of -2. You must reapply the 2 to decrypt this message and make it readable:**A M K N S R C P

## Using Email Effectively

### Key Points

### • Use a clear subject line to help inform the receiver what the email is about.• Be polite and professional.• Check your spelling and grammar before sending.• BCC (Blind Carbon Copy) allows you to send an email to multiple recipients without them seeing each other's email addresses.• CC (Carbon Copy) allows recipients to see who else received the email.• Attachments can be added to provide additional information or documents.

**Scamming and Phishing via email:**

Imagine you get an email that looks like it's from your favorite online game. The email says:

*"Hello, Player! You need to log in to your account right now to claim a free reward. If you don't, your account might be closed. Click this link:* [*www.fakegame-rewards.com*](http://www.fakegame-rewards.com/)*."*

But wait! This email might not be real. Someone could be pretending to be the game company to trick you. If you click the link, they might steal your username and password.

### **How to Spot a Phishing Email:**

1. **Look for mistakes:** Are there spelling errors or a weird link?
2. **Check the sender:** Does the email really come from the company?
3. **Don’t rush:** A real company won’t threaten to close your account so quickly.

If you're not sure, **don’t click**. Ask an adult for help!

Confused? Watch this video: [What is Phishing?](https://www.youtube.com/watch?v=9TRR6lHviQc&t=80s)



### **Activity**

**Scenario Question:**
You need to email your teacher about a missed lesson and your recently completed homework. Outline below the key components you would include in your email.

**Phishing Question:**

Highlight the words/sentences in the email below that suggest it is a phishing scam.

From: **rewards@freegamerprizes.com**Subject: Urgent: Claim Your Free Bonus Coins Now!

Hi Bob,

We noticed you're a loyal player of Mega Fun Game, and we want to thank you! You've been selected to receive 1,000 bonus coins—absolutely free.

Click the link below to claim your reward:
**Claim Your Bonus Coins**

But hurry—this offer expires in 24 hours! Don’t miss out on this amazing opportunity.

Please Note: If you do not claim your prize, your account may be temporarily locked.

Stay awesome,
Mega Fun Game Rewards Team

### Activity

**Scenario Question:**
You need to email your teacher about a missed lesson and your recently completed homework. Outline below the key components you would include in your email.

## Searching the Internet

### Understanding Web Browsers and Search Engines

* **Web Browser**: A software application that enables users to access and navigate the Internet (e.g., Chrome, Firefox).
* **Search Engine**: A website dedicated to searching for information on the Internet (e.g., Google, Bing).

### Activity

**Task 1: Conduct a Google search for "Olympics" and filter the results to show news articles published in the last month.**

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**Task 2: Use Google Advanced Search to find images related to "London" with a size of "Medium".**

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