
Name: _____

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TECHSHEETS.DEV

MODERN COMPUTING SERIES

Alan Turing

The Father of Computer Science

Long before the first smartphone or laptop was ever built, a brilliant British mathematician named **Alan Turing** imagined how they would work. Born in 1912, Turing was fascinated by puzzles, logic, and mathematics. His incredible mind not only laid the theoretical foundation for all modern computers, but it also helped save millions of lives during World War II.

During WWII, the German military used a complex machine called **Enigma** to send secret, encrypted messages. The Enigma code was considered unbreakable because the cipher changed every single day, creating billions of possible combinations. Turing was recruited to work at a top-secret British facility called Bletchley Park. There, he designed an electromechanical machine called the *Bombe*, which could rapidly test combinations and crack the Enigma code. Historians believe Turing's work shortened the war by at least two years!

Even before the war, Turing published a paper describing a theoretical device he called a "Universal Machine" (now known as a **Turing Machine**). He proved that this machine could compute absolutely any mathematical problem if given the right step-by-step instructions (an algorithm). This was revolutionary. Before Turing, machines were built to do only one specific job. Turing imagined a single machine that could read instructions from a tape and re-program itself to do *anything*. He had just invented the concept of computer software!

Later in life, Turing asked a question that still shapes technology today: "*Can machines think?*" He created the **Turing Test**, an experiment where a human judge chats with both a human and a computer. If the judge can't tell which one is the machine, the computer is said to have exhibited artificial intelligence. Today, Alan Turing is widely celebrated as the father of modern computer science and artificial intelligence.

Part 1: Reading Comprehension

1. What was the name of the German encryption machine that Turing helped break during WWII?

2. What did the "Bombe" machine do at Bletchley Park?

3. Why was the theoretical "Turing Machine" so different from other machines built before it?

4. Explain how a computer passes the "Turing Test."

Part 2: Critical Thinking

5. Modern Artificial Intelligence (like ChatGPT) can write essays, tell jokes, and answer complex questions. Do you think modern AI passes the Turing Test? Why or why not?

Part 3: The Bletchley Park Codebreaker

At Bletchley Park, Alan Turing and his team decoded messages hidden by cryptography. Let's try a simple version of this called a **Caesar Cipher**, where every letter is shifted forward by exactly 3 spaces in the alphabet.

The Decoder Key (Shift + 3)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C

Find the encoded (blue) letter on the bottom row, and look directly above it to find the real (gray) letter!

Mission 1: Decode the Secret Word

The enemy has intercepted this encoded word: **E U D L Q**

Real Word: _____

Mission 2: Decode the Message

You found a note left by Alan Turing himself. It says: **W X U L Q J P D F K L Q H**

Real Message: _____

Mission 3: Send Your Own Code

Now, write your FIRST NAME and use the key (look at the top row, convert to the bottom row) to encrypt it.

My Real Name: _____

My Encrypted Name: _____