



RAM vs ROM

IGCSE Computer Science Revision Sheet

■ **Big Idea:** RAM is temporary working memory. ROM is permanent memory that stores essential start-up instructions.

What is RAM? & What is ROM?

RAM — Random Access Memory	ROM — Read-Only Memory
RAM temporarily stores the programs and data the CPU is currently using. It is volatile — its contents are lost when the power is turned off.	ROM stores important instructions needed to start the computer, such as the BIOS. It is non-volatile — it keeps its contents even when the power is off.

KEY FACT: RAM = volatile (loses data on power off). ROM = non-volatile (keeps data always).

Teacher note: Volatile vs non-volatile is the single most tested distinction. Students who can use both terms correctly in context earn marks others miss.

RAM vs ROM Comparison

Feature	RAM	ROM
Full name	Random Access Memory	Read-Only Memory
Purpose	Stores data and programs currently in use	Stores start-up (boot) instructions
Volatile?	✗ Yes — data lost when power off	✓ No — data kept when power off



Can be changed?	Yes — contents change constantly	Normally not changed by the user
Used by	CPU during active processing	Computer during boot/start-up
Example	Opening apps, files, browser tabs	BIOS / firmware instructions

EXAM TIP: Use the words volatile and non-volatile in every memory answer. These are key mark-earning terms in comparison questions.

Teacher note: This table is the core of the topic. Encourage students to cover the RAM and ROM columns and recall each answer from the Feature column — simple but effective exam preparation.

Simple Memory Analogy

RAM = Desk	ROM = Locked Instruction Card
Holds everything you are currently working on. When you finish for the day and clear the desk, everything is gone.	A set of essential instructions locked in place. Every time the computer turns on, the same instructions are ready and unchanged.

Teacher note: Analogies are powerful for memory topics. Ask students to suggest their own — personalised analogies stick better than provided ones.

Key Words

Key Word	Meaning
Volatile	Data is lost when power is turned off.
Non-volatile	Data is kept even when power is turned off.
Boot	The start-up process of a computer.
CPU	The processor that carries out all instructions.





Firmware	Permanent software instructions stored in hardware (e.g. BIOS in ROM).
BIOS	Basic Input/Output System — the start-up instructions stored in ROM.





Quick Check Questions

1.	Which type of memory is volatile: RAM or ROM?
2.	Which memory stores start-up instructions?
3.	Why does RAM clear when the computer is switched off?
4.	Give one difference between RAM and ROM.
5.	Why does a computer need RAM when running programs?

Answers on the next page →





Answer Guide

1.	RAM is volatile.
2.	ROM stores start-up (boot) instructions.
3.	RAM requires a constant power supply to store data, therefore all contents are lost when the computer is switched off.
4.	RAM is volatile and temporary; ROM is non-volatile and permanent. (Accept any correct difference from the comparison table.)
5.	RAM holds the programs and data the CPU is currently using, so they can be accessed quickly during processing.

■ **FutureLogic Summary:** RAM = temporary workspace for the CPU — volatile, cleared on power off. ROM = permanent start-up instructions — non-volatile, always retained.

