# Computing - Knowledge Organiser

# Year 7 – HT2 – Computing Components

| Keywords: | |
|---|---|
| **Hardware** | Hardware refers to the computer's components that store and run the written instructions provided by the software. (Hardware is also known as the physical parts of the computer that you can touch). |
| **CPU** | The component of a computer system that controls the interpretation and execution of instructions |
| **RAM** | Short term memory where data is stored as the processor needs it |
| **Motherboard** | A printed circuit board and foundation of a computer that is the biggest board in a computer chassis |
| **Graphics Card** | A type of display adapter or video card installed within most computing devices to display graphical data with high clarity, colour, definition and overall appearance |
| **Power Supply** | A power supply is an electrical device that offers electric power to an electrical load such as laptop computer, server, or other electronic devices |
| **Hard Drive** | Stores the operating system, applications, and data files such a documents, pictures and music that your computer uses |
| **Software** | A set of instructions, data or programs used to operate computers and execute specific tasks |
| **Peripherals** | Peripherals are devices that are not the computer's core architecture involved in memory and processing ( e.g., device allowing information to be entered into a computer) |
| **Clock Speed** | Measures the number of cycles your CPU executes per second, measured in GHz (gigahertz) |
| **IoT (Internet of Things)** | Refers to the collective network of connected devices and the technology that facilitates communication between devices and the cloud, as well as between the devices themselves |

**Examples of hardware:** RAM,CPU, Motherboard, Graphics Card, Hard-drive.
**Examples of software:** Word processor (e.g., word, google docs), Web browser (e.g., chrome, edge),Operating systems (e.g., Microsoft Windows, Android, MacOS)

**Examples of peripherals:**
**Input devices, e.g.,** Keyboard, mouse, scanner. **Date input** can be via text typed, images scanned or recording sound
**Output devices**: e.g. monitor, **external storage**, e.g. USB memory stick

**Infographic:** Visual representation of information or data. This could be as, e.g. as a chart or diagram:

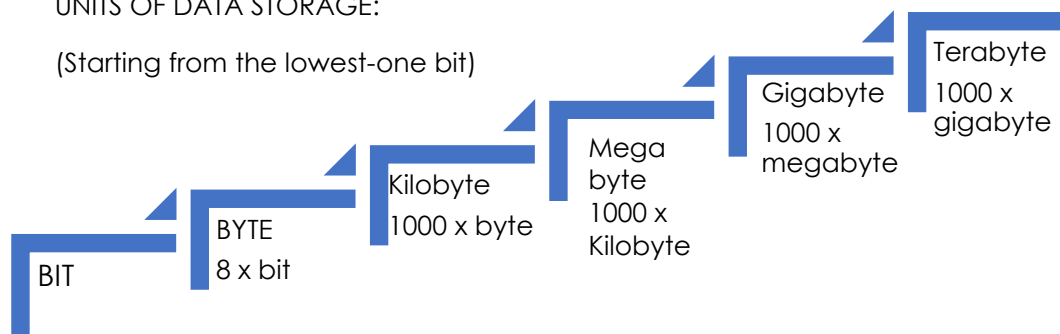**Computer performance** is measured by performance of hardware:

| Hardware | How measured | Measure |
|---|---|---|
| CPU | clock speed | hertz( Hz) |
| RAM | read/write/access speed and storage | hertz( Hz) and bytes |
| Hard Drive | how much it can store | Bytes |

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UNITS OF DATA STORAGE:

(Starting from the lowest-one bit)

Terabyte
1000 x gigabyte

Gigabyte
1000 x megabyte

Mega byte
1000 x Kilobyte

Kilobyte
1000 x byte

BYTE
8 x bit

BIT

The speed at which the CPU can carry out instructions is called the clock speed and is measured in cycles per second. One cycle per second is known as 1 hertz (Hz).

1000x 1 hertz = 1 Kilohertz,
1000 x 1Kilohertz= 1 Megahertz
1000 x 1 Megahertz= 1 Gigahertz

Therefore, 1,000,000,000 hertz = 1,000,000 kilohertz = 1,000 megahertz = 1 gigahertz

Three main factors that determine how quickly a CPU can carry out instructions are:
   a. Clock speed
   b. Number of cores
   c. Cache (a tiny block of memory built on to the CPU) size

E.g. the higher the clock speed the faster the CPU can process instructions (The number of Fetch-execute cycles/second)

**Storage device** (primary and secondary)**:** computer hardware/peripheral **used to store/save data (**e.g. hard disk drive, **memory stick, DVD drive, Optical drive**) **to a storage medium** (e.g. CD, DVD, Blu-ray disc)

**Primary storage** : accessed directly (by the CPU) and is often the fastest memory( RAM) in a computer. It is volatile, i.e., **data** stored **is lost when the power is switched off**.

**Secondary storage does not** lose data when computer power is switched off**:**

1.   magnetic storage: e.g., hard disk drives

2.   optical storage: e.g., CD , DVD and Blu-ray discs

3.   solid state storage: , e.g., solid state drives and USB memory sticks