Chapter 3
COMPTIA A+
CORE 1

CPU's

A Central Processing Unit runs programs
- Every CPU has internal features to process commands
- Every CPU runs code based on a specific machine language
- CPUs use pipelines (cores) to optimize the processing of commands
- the capability of a CPU is measured by clock speed & cores
- Modern CPUs support advanced features such as multi cores
- ARM chips operate using reduced instruction set computing (RISC) methodology
- Accelerated Processing Units (APUs) are CPUs with graphics cards built in
  32-bit (x86) 64-bit (x64) ISA (Instruction Set Architecture)
  ISA x86~64 supports 32 bit & 64 bit applications
  IA-32 is Intel Architecture & it supports x86 AKA 32 bit
- x64 offers greater data handling, improved graphics, & better security
- CPUs designed for laptops come with features to help with power consumption and battery usage
- Higher end CPUs offer more cores and a faster clock speed
- Intensive tasks such as 3D gaming and video editing benefit from more CPU cores
- some CPU's are unlocked & can be overclocked

- Intel & AMD are the main brands for CPU's the higher the CPU tier the better performance
  the generation gives a good indicator of CPU age
- the model refers to the performance of the CPU
- the suffix denotes whether the CPU is unlocked or has integrated graphics

- 1 cycle per second = Hz

- Heat sinks use metal fins & pipes to passively transfer heat
- thermal paste & pads are both used to fill gaps and provide better thermal conductivity between CPU & heat sink
- there are numerous sizes of fans & radiators
- liquid cooling has higher thermal transfer capabilities than air cooling
- Always use ESD prevention when handling CPUs
- PGA is AMD and LGA is Intel they are socket types
- Zero insertion force ZIF mechanism is used to secure CPU in Motherboard
When troubleshooting a non functional CPU, first check all connections & make sure the fan, heat sink, and cpu itself are seated properly before proceeding
- Most CPUs measured in giga hertz
Core is just another lane to the RAM at the same time
clock speed is how quick per sec measured in giga hertz

x86 - 32 bit , x64 - 64 bit | x86 - 64 support both

| Intel | Core i9 | 12 | 900 | K |
| Brand | Tier | Generation | model | Suffix |

higher tier = better performance

| AMD | Ryzen 9 | 5 | 900 | X |

X : comes overclocked   G : integrated graphics

ESD = Electro Static discharge

Intel uses Land Grid (Flat connection)

AMD uses Pin Grid (Pin connection)

(ZIF) Zero insertion Force : used to secure CPU to socket

1 When an instruction is sent to the CPU in a binary pattern, how does the CPU know what the instruction pattern means?
- Code Book

2 Example of ISA
- x64 , x86 , x86-64 , IA 32

Chapter 3 continued notes

3) What is the generation : Intel core i9 12900k
   - 12

4) Before installing the CPu whats best way to protect it?
   - ESD mat