**Processor & RAM Questions**

**Thinking about the simulation you have seen and p169 – 172 in the text book, which show how a processor works, answer the following questions. Use slideshow 9 (and maybe 8) to help:**

1. MAR, MDR, PC, AC and IR are all registers in this processor. What is a register?
2. What does the Control Unit do?
3. What does the ALU do?
4. What does the clock do?
5. What does the Program Counter do?
6. What does the AC (Accumulator) do?
7. The size of the registers in a processor is known as the ***word length***. What is the size of the word length for 32-bit processors?
8. One of the three wiring systems that connect the processor to RAM (memory) is called the Address Bus. What is it for?
9. Another one of the wiring systems that connects the processor to RAM (memory) is called the Data Bus. What is it for?
10. If each memory location has a 16-bit address, how many memory locations in RAM are possible?
11. The whole simulation to execute one instruction takes 10 clock cycles (“ticks” of the clock). How many similar instructions can be executed on a 3GHz processor each second?
12. If you could look inside the memory locations of RAM describe what you would see!
13. How can you tell the difference between memory locations which are storing instructions and those which are storing data for the instructions?
14. What is meant by an Op-Code?
15. What is an operand?
16. All the different possible Op-Codes for a processor are ***processor specific***. What does this mean?
17. What is meant by the ***instruction set*** for a processor?
18. The ***fetch-decode-execute*** cycle is what the processor does from the moment the computer is switched on, until the moment it is switched off. Explain what this phrase means.