

## BENCHMARKING

Time - 1.5 hours

**Round 1 - Let's take it a bit easy – Answer very briefly.  
2 points each.**

Q1 Explain AA and AF.

Q2 On what factors is the performance of a processor based on?

Q3 Now tell us something about the GPU as well.

Q4 How important is the amount of video memory on a graphics card?

Q5 What is the difference between HT technology and multi core processors?  
Explain.

Q6 Do you really require more than 60 FPS for gaming? Why or why not?

Q7 AMD eyefinity?

Q8 What are SSDs? Compare them with the normal HDDs.

## **Round 2 - Now we're talking**

**4 points each**

**Q1 Explain RAID. What is the difference between RAID 0 and Raid 1?**

**Q2 What is memory latency? Briefly explain.  
What do you mean by the numbers, 2-2-2-15 on a ram module?**

**Q3 Explain FSB and how does it limit the performance?**

Q.4 Though the Cell in Sony's PlayStation 3 is clearly much faster than the Xbox 360's tri core xenon and the graphic chips nearly match (the 360s a bit faster), still nearly, on all the multi-platform games the 360 gives much better performance. What is the reason behind this?

Q.5 The DDR2-800 runs at a clock speed of 200 MHz base clock. Keeping this in mind, calculate the base clock speed and overall clock speed of the DDR3-1600 module. What is prefetching?

Q.6 Increasing the system speed is often the only way to increase the CPU clock, which will automatically accelerate the memory as well, as its clock speed directly derives from the system clock speed. True or false? Explain in either case.

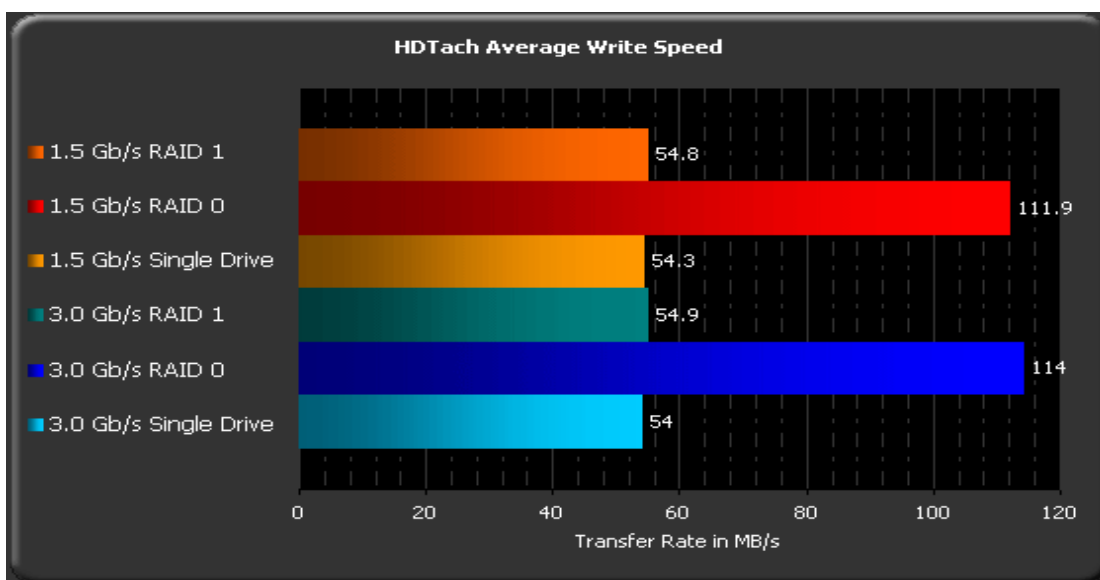
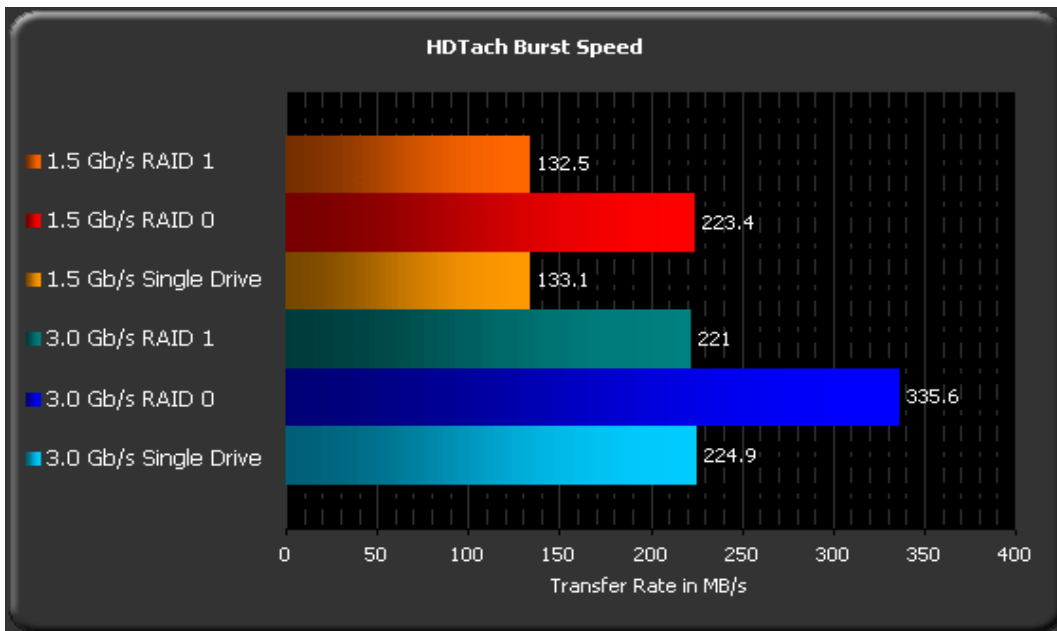
Q7 You are given a budget of Rs 30,000. Build a gaming machine to get the maximum performance.

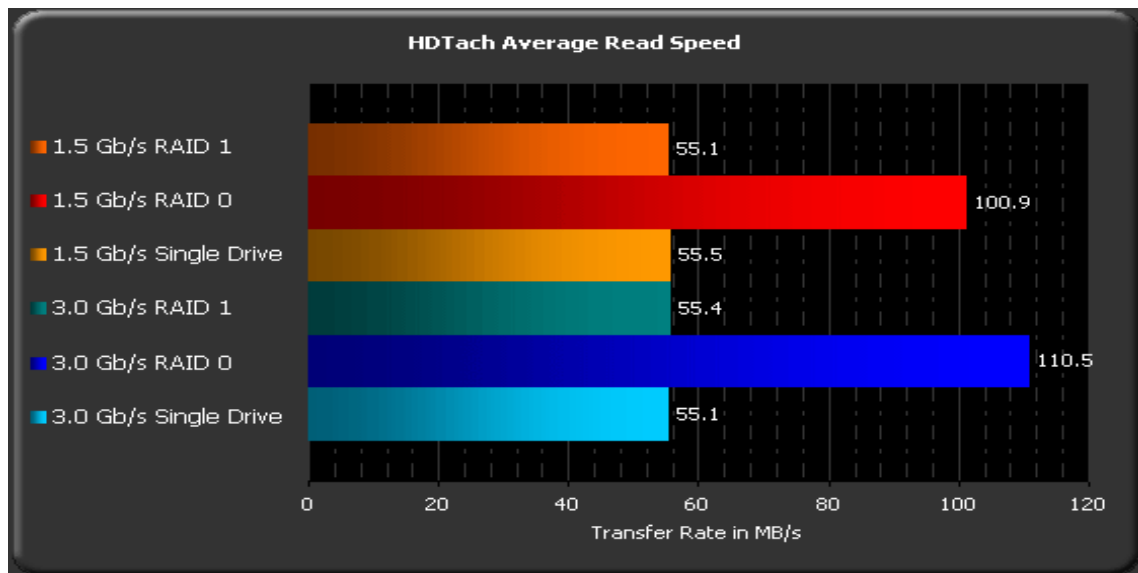
The user only requires a maximum resolution of 1680 x 1050.

## Round 3 – Let's get to the real stuff -

8 points each

Q. 1 – Consider the following charts -

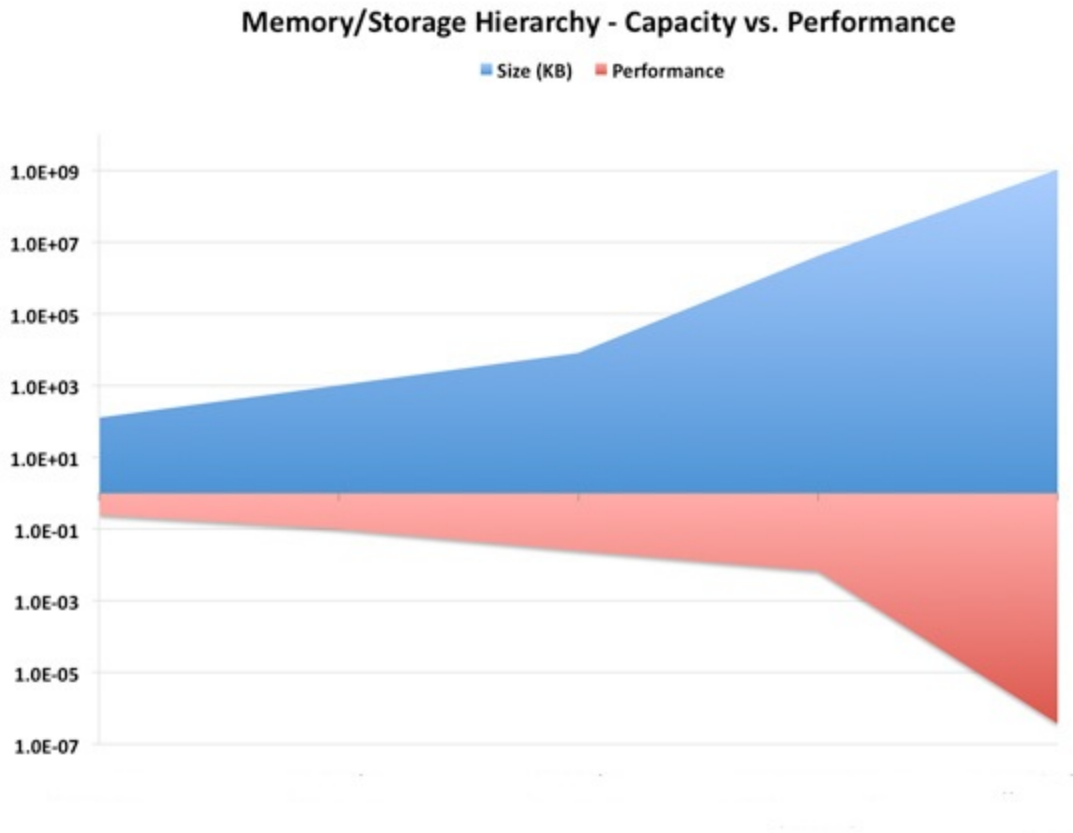




**A - What is burst speed, and what can you say about the burst speeds of the above 2 interfaces?**

**B - Why is there only a marginal increase in the read/write speeds from the SATA 1.5 Gb/s to the SATA 3 Gb/s interface.**

## Q. 2 Consider the following chart



**A. The upper portion of the graph represents the increase in memory in several memory structures – L3 Cache, Mechanical Storage, L2 Cache, L1 Cache and the system memory. While the lower is a representation of the gradual fall in performance.**

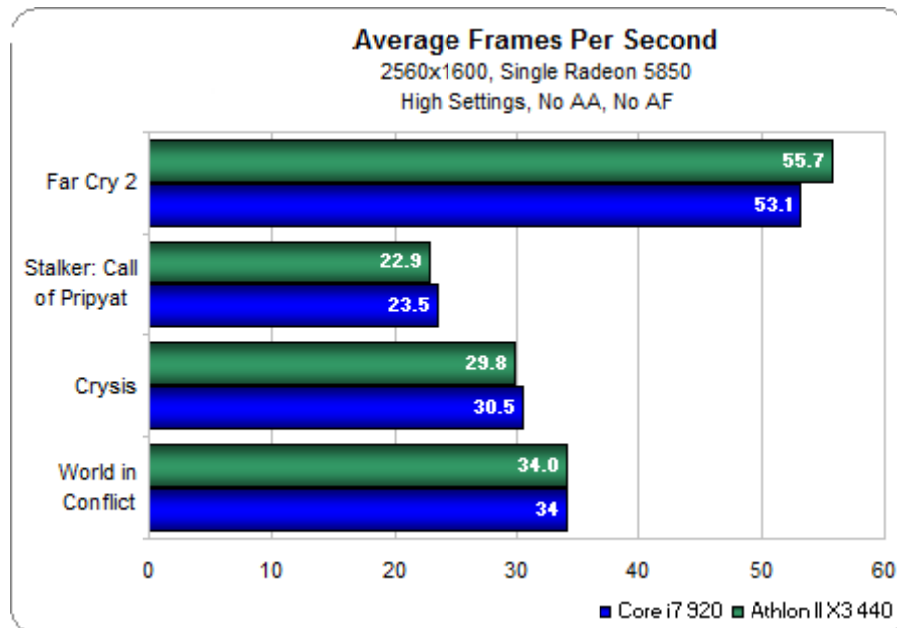
**Rank the above mentioned memory structures in the above graph.**

**B. Explain the steep fall in the lower portion of the graph.**

**C. How is it bounded by physics?**

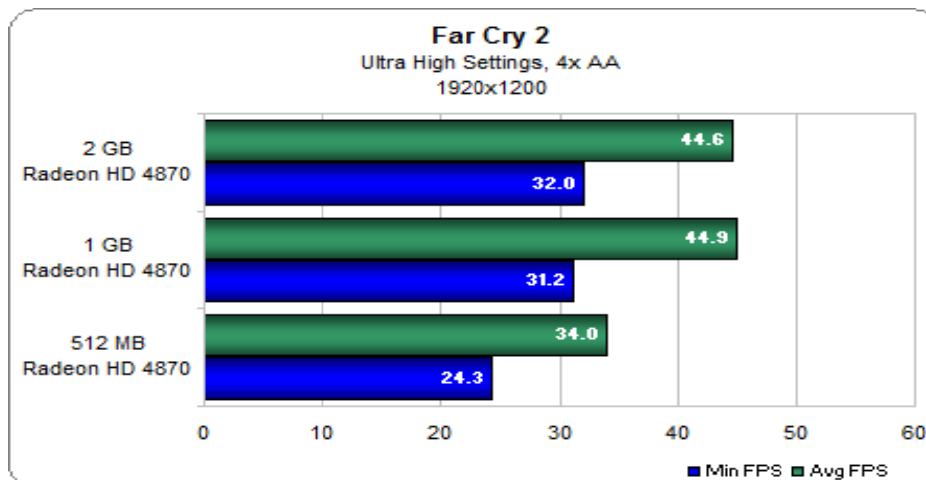
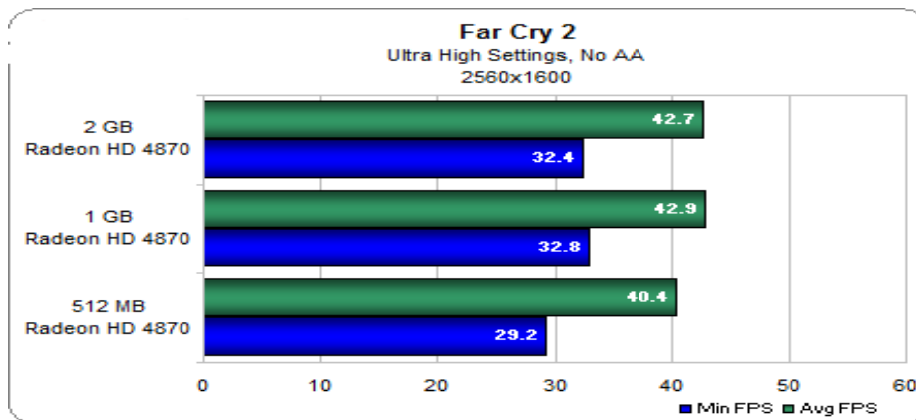
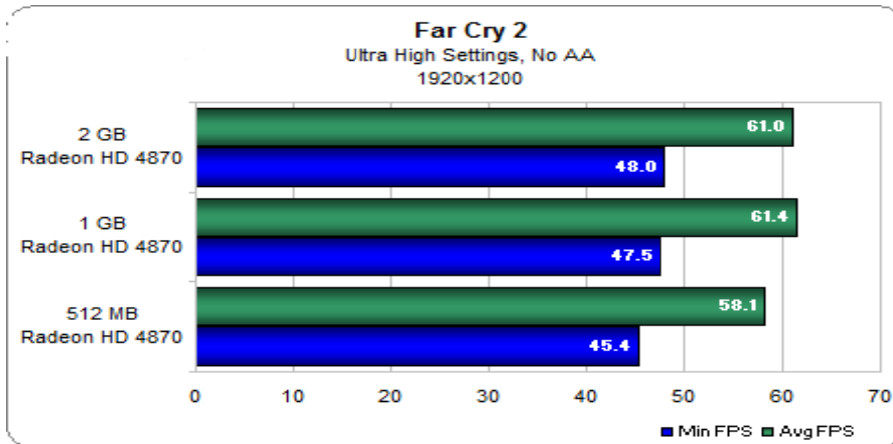
**4. Now you've been given a NAND drive (SSD). Modify the above graph, including the NAND storage in it.**

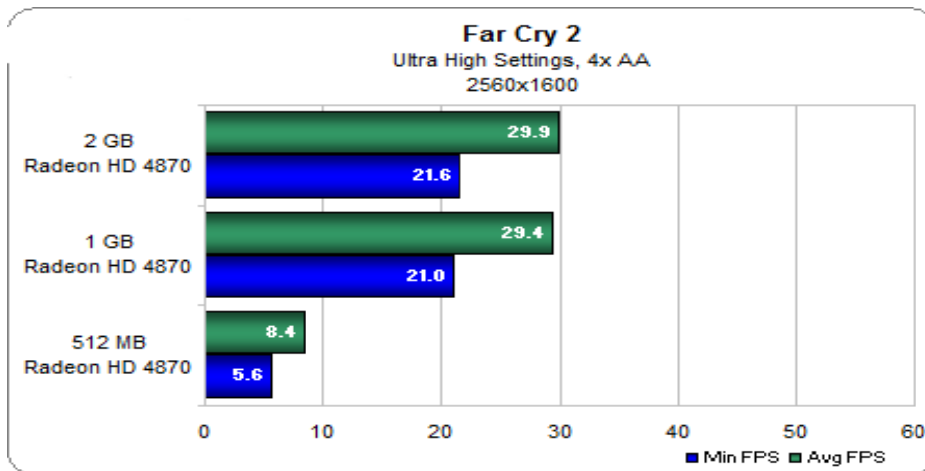
**Q.11 - The following chart, pits up an AMD Athlon II X3 440 against the mighty powerful - Core i7-920. The graphics card used during the benchmark was the Ati Radeon HD – 5870 and all system specs are exactly the same in the two cases. At the resolution of 2560x1600, as you can see you can't really make out which processor is the faster of the two. But in reality, the Athlon stands no way near the to the core i7. Explain the reason behind this and what can you say about the average fps on lower resolutions - From 1920x1080 till the resolution of 1280x1024?**



### Q.3 The amount of video ram.

#### Part A -

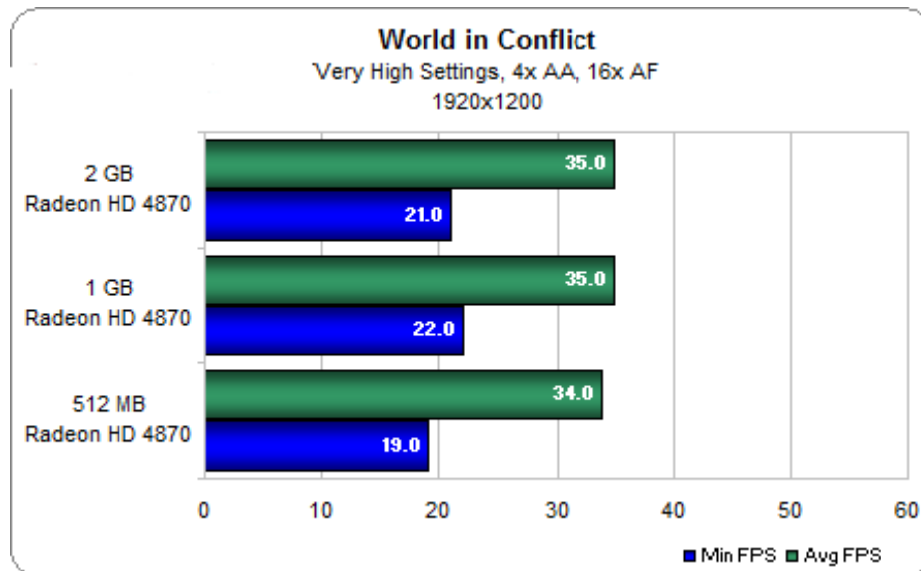
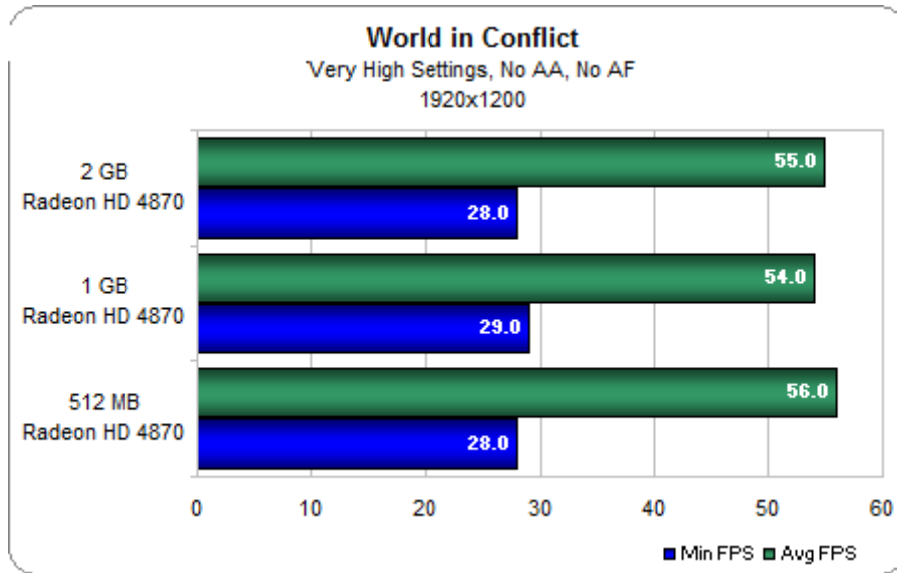




\*AA – Anti Aliasing.

As you can see, three HD 4870's with different amount of video memory are compared above. Looking at the charts above, what can you say about the requirement of the amount of video ram? How things change when AA is enabled?

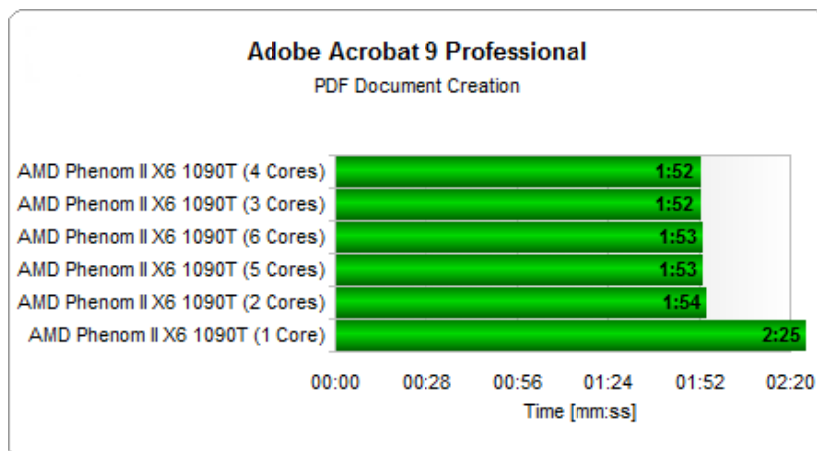
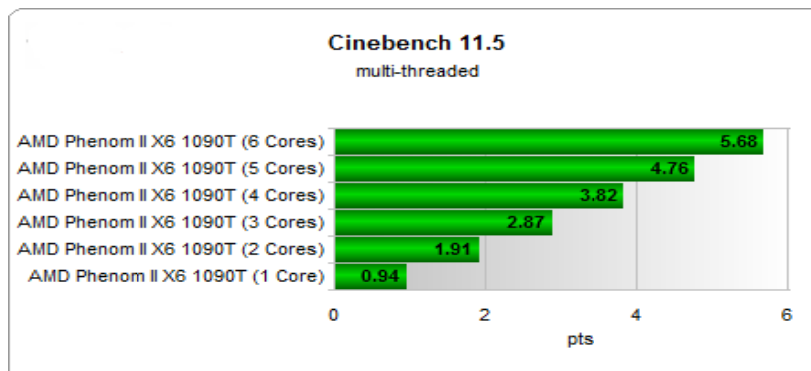
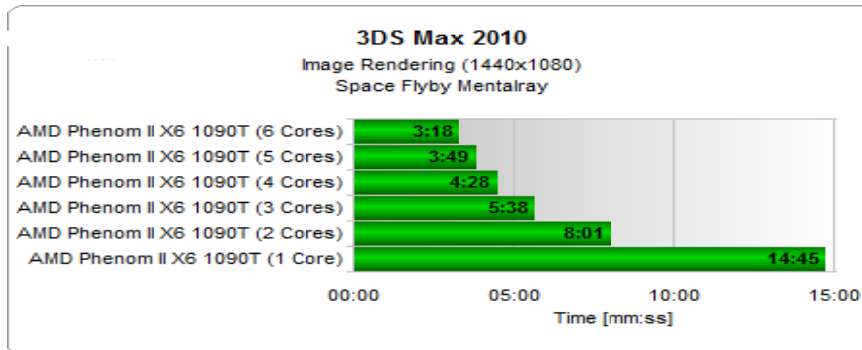
Part B - Now, have a look at World in Conflict -

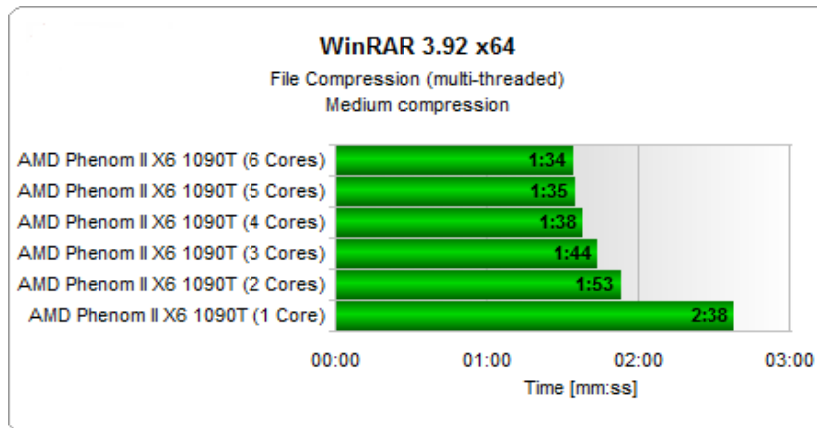


By looking at the benchmarks above, what can you say in general about the game? Why isn't there much of a change from 2GB to 512mb of memory?

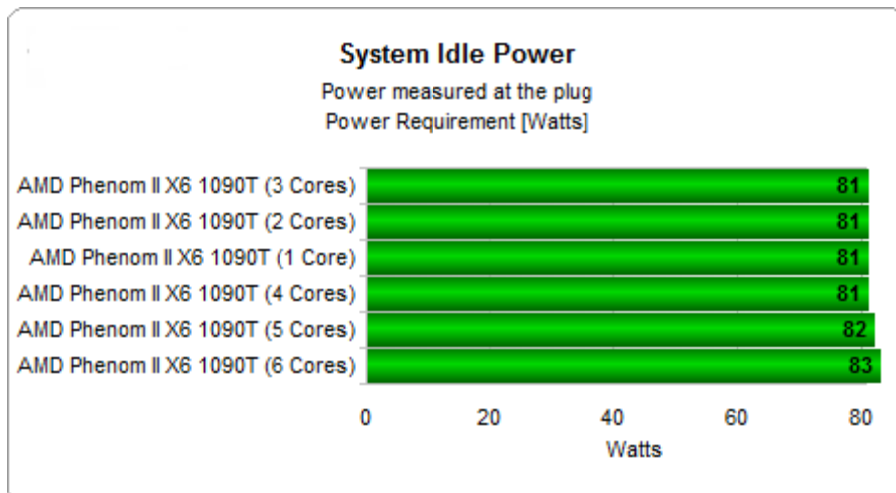
## Q.4 How many cores do you actually need?

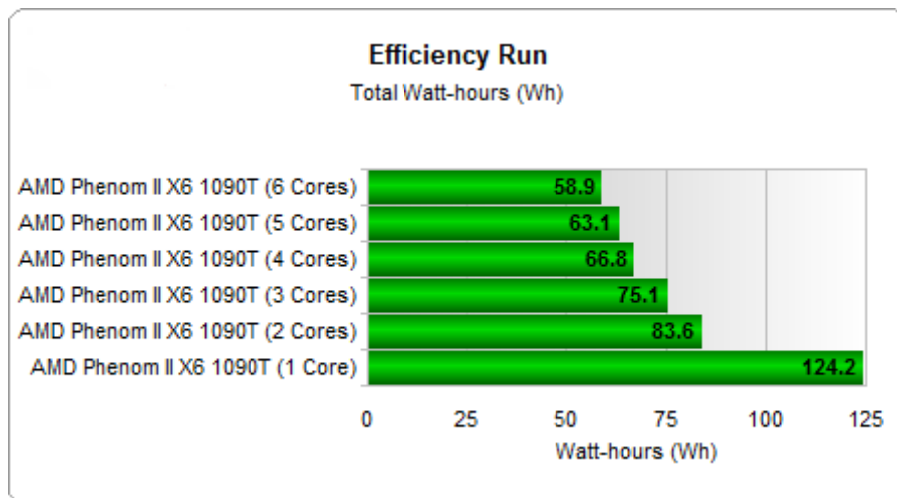
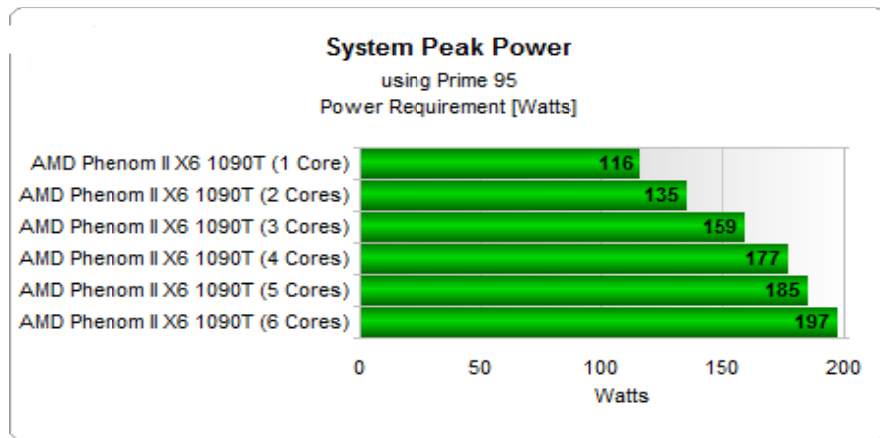
Part A - By looking at the following benchmarks, what can you say about the number of cores you actually need. Explain very briefly, how each application responds to the number of cores. What can you say in general about different kinds of workloads?





Part B – Look at the power consumption charts below -





Is it advisable in general to switch off the cores manually? Why or why not?  
 What can you say about the performance per watt?