How Graphics Cards work - Quiz

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How Graphics Cards Work - Quiz Ideas

1) How many times more calculations per second are required to run Cyberpunk 2077 today vs Mario 64 in 1996?

    A. 36,000 times

    B. 50,000 times

    C. 360,000 times

    D. 500,000 times

2) From the analogy in the video, about how many Earths filled with people, each person doing one calculation per second, would be needed to match the computational power of a graphics card performing 36 trillion calculations per second? (Hint: Earth's population is 8.2 billion people)

    A. 2,200 Earths

    B. 3,300 Earths

    C. 4,400 Earths

    D. 36 trillion Earths

3) How are GPU and CPU architectures different?

    A. GPUs are highly flexible and CPUs are less flexible

    B. GPUs have 10,000s Cores and CPUs have 10s of Cores

    C. CPUs can process thousands of calculations in parallel and a GPU can only process a few calculations

    D. They are the same

4) How do the differences between GPU and CPU architectures inform which workloads are best suited?

    A. GPUs flexibility make them suited to run operating systems

    B. CPUs are inflexible and can only run simple arithmetic

    C. CPUs are slow and not ideal for small calculations

    D. GPUs many cores make them perfectly suited to run many calculations in parallel

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5) What is the GPU architecture hierarchy?

A. Graphics Processing Clusters → Streaming Multiprocessors → Warps/Ray Tracing Core → CUDA/Tensor Core

B. Streaming Multiprocessors → Warps/Ray Tracing Core → CUDA/Tensor Core → Graphics Processing Clusters

C. CUDA/Tensor Core → Warps/Ray Tracing Core → Streaming Multiprocessors → Graphics Processing Clusters

D. Warps/Ray Tracing Core → CUDA/Tensor Core → Graphics Processing Clusters → Streaming Multiprocessors

6) The GPU architecture has the highest quantity of which Core?

A. It has the same quantity of each Core

B. CUDA Cores

C. Ray Tracing Cores

D. Tensor Cores

7) What is the primary function of the CUDA Cores?

A. Matrix multiplications

B. Geometric transformations

C. Execute ray tracing algorithms

D. Binary calculations

8) How are the GPUs used in the NVIDIA RTX 3080 and NVIDIA RTX 3090ti different? Choose the best answer.

A. They have a different number of working cores

B. They have a different clock speed

C. Both A and B

D. Neither A and B

9) What operation is known as fused multiply and add?

A. A + B + C

B. A x B + C

C. A x B x C

D. sqrt (A x B + C)

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10) The Cuda cores in the RTX 3090 use what precision for FMA operations?

   A. 32-bit floating point and 32-bit integers

   B. 16-bit floating point and 16-bit integers

   C. 8-bit floating point and 8-bit integers

   D. 32-bit floating point and 16-bit integers

11) How many mathematical functions are performed by the Cuda core each clock cycle?

   A. 2 multiply and 2 add

   B. 1 multiply and 1 add

   C. 1 multiply

   D. 1 add

12) Which component of the GPU manages the graphics processing clusters and the streaming multiprocessors?

   A. PCIE Interface

   B. NVLink Controller

   C. Graphic Memory Controller

   D. Gigathread Engine

13) What is the technical name for the 24 gigabytes of graphics memory chips mentioned in the video?

   A. DDR4 SDRAM

   B. GDDR5 SDRAM

   C. GDDR6X SDRAM

   D. LPDDR5 SDRAM

14) Who designs and manufactures the memory chips inside the graphics card mentioned in the video?

   A. Micron

   B. Intel

   C. AMD

   D. NVIDIA

15) What is typically happening during a loading screen on a video game?

   A. Moving all 3D models from storage into graphics memory

   B. Managing network connections

   C. Cooling the GPU

   D. Resetting the Cuda cores

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16) What is the definition of the bus width of a graphic card?

   A. The number of Cuda Cores

   B. The number of GDDR6X SDRAM components

   C. The number of bits transferred at a time in parallel

   D. The bandwidth of the card

17) How have PAM-3 used in GDDR7 and PAM-4 used in GDDR6X graphic memory improved performance of graphic cards?

   A. By having a higher number of Cores

   B. By using multiple voltage levels to send multiple bits of data at a time

   C. By having a higher bus width

   D. By using binary data transfer

18) What are the benefits of using PAM-3 encoding over PAM-4?

   A. Reduce encoder complexity

   B. Improve signal to noise ratio

   C. Improve power efficiency

   D. All of the above

19) Why are GPUs ideal for running video game graphics, bit coin mining, neural networks, and AI?

   A. These workloads are easily broken down into parallel tasks

   B. Because GPUs are flexible for many workloads

   C. Because complex problems require expensive solutions

   D. Being able to run an operating system is key for these workloads

20) Why are the millions of SIMD, single instruction multiple data, calculations for displaying a 3D scene well suited for a GPU? Choose the best answer.

   A. They are simple calculations and GPUs can only perform simple calculations

   B. Every calculation has no dependency on any other calculation and thus can be distributed to the many Cores

   C. Ray tracing cores can perform SIMD calculations

   D. L2 Cache is needed to perform SIMD calculations