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**11.5: As described in the text, the PCI-Express bus consists of thirty-two "lanes ". As of January 2009, each lane is capable of a maximum data rate of 500 MB per second. Lanes are allocated to a device 1,2,3,8,16, or 32 lanes at a time.**

**Assume that a PCI-Express bus is to be connected to a high-definition video card that is supporting a 1920 x 1080 true color (3 bytes per pixel) progressive scan monitor with a refresh rate of 60 frames per second. How many lanes will this video card require to support the monitor at full capability?"**

Ans: High definition: 1920 * 1080 * 3 * 60 = 373,248,000 bytes/second

(373,248,000) / (500 * 1024 * 1024) = 1 lane

**11.7 "How many PCI-Express lanes are required to support a 10gb per second Ethernet card?"**

Ans: Each bus has two simplex line pairs that carries data, addresses and control signals, in both directions at the maximum rate at 2GB/second approximately.

10/2=5 lanes