End of Exercise 11

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 the 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?

1920 pixels *1080 pixels * 3 bytes * 60 frames per second = 373 MB/second

1 PCI Express lane is required

11.7

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

10 gb = 1.25 Gb

3 PCI Express lanes are required