#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?"

Answer:

Total bytes per second   = 1920 x 1080 x 3 (bytes per pixel) x 60 (frames per second)
                              = 373,248,000 bytes per second
                              = 373.248 MB

According to each lane is capable of a maximum data rate of 500 MB per second

Therefore, **only 1 lane is required to support the monitor at full capability**.

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

Answer:

According to previous question, each lane is capable of a maximum data rate of 500 MB per second

Total required PCI-Express lanes   = 10 gb per second / 500 MB per second
                                      = 10,000 MB per second / 500 MB per second
                                      = 20 lanes

Therefore, **the number of PCI-Express lanes**, that are required to support a 10gb per second Ethernet card, **are 20 lanes**.