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1. What is the maximum number of characters or symbols that can be represented by Unicode?
    a. Unicode uses 32 bits to represent a symbol or character in any language. This means we can define 2^32 different symbols or characters.
2. A color image uses 16 bits to represent a pixel. What is the maximum number of different colors that can be represented?
    a. There can be up to 2^16 different colors.
3. Assume six devices are arranged in a mesh topology. How many cables are needed? How many ports are needed for each device?
    a. Cable links: (n(n-1))/2 where n = 6,
        i. 6(5)/2 = **15** cables
    b. Ports: 6 - 1 = **5** ports
4. Assume that the number of hosts connected to the Internet at year 2010 is five hundred million. If the number of hosts increases only 20 percent per year, what is the number of hosts in year 2030?
    a. A = P(1+r)^nt
        i. A = 500,000,000(1+0.2)^20 = **19,000,000,000** hosts
5. Assume a system uses five protocol layers. If the application program creates a message of 100 bytes and each layer (including the fifth and the first) adds a header of 10 bytes to the data unit, what is the efficiency (the ratio of application-layer bytes to the number of bytes transmitted) of the system?
    a. 100/150 = 0.667 or 66.7%