**Worksheet 3 Name \_\_\_\_\_\_\_\_ANSWERS\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_**

**37**

**MCSE1**

1. Fill in the following table.

*http://www.rapidtables.com/convert/number/ascii-hex-bin-dec-converter.htm*

[9]

|  |  |  |
| --- | --- | --- |
| **Decimal** | **Binary** | **Hexadecimal** |
| **314** | **10011 1010** | **13A** |
| **198** | **11000110** | **C6** |
| **178** | **1011 0010** | **B2** |
| **107** | **110 1011** | **6B** |
| **17** | **10001** | **11** |
| **255** | **1111 1111** | **FF** |
| **1069** | **100 0010 1101** | **42D** |
| **614** | **1001100110** | **266** |
| **157** | **1001 1101** | **9D** |

2. How many bits are there in an IP address?

[1] 32 bits long (8+8+8+8 = 32)

3. How many octets in an IP address?

[1] 4 octets

4. How many bits in a Hexadecimal digit?

Each 0x digit is composed of 4 bits (1 nibble aka: ½ of a byte)

ie: 0xC = 1100 has 4 binary numbers

[1]

5. What is the binary equivalent of the following IP addresses?

[3]

|  |  |
| --- | --- |
| IP address | Binary equivalent |
| 157.36.100.224 | 157 =  36 =  100 =  224 = |
| 44.197.20.209 | 44 = 197 =  20 =  209 = |
| 222.1.68.190 | 222 =  1 =  68 =  190 = |

6. What is the range of numbers for the first octet of a class B license?

[1] 128 - 191

7. What is the range of numbers for the first octet of a class C license?

[1] 192 - 223

8. What is the range of numbers for the first octet of a class A license?

[1] 0 - 127

9. Why did IANA reserve some IP addresses for private use?

[1] To preserve the life of IPv4; longevity

10. What is the range of useable IP addresses for the **private class B** networks? (List the first useable host to the last useable host).

[2] 172.16.0.0 – 172.31.255.255

11. When you want to calculate the number of useable hosts on a network, the formula is 2n – 2. What does the “n” stand for? Why do we subtract 2 from the total?

[3] n is the number of bits allocated to the host  
subtract 2 for Broadcast and Network address

12. What is NAT used for?

[2] Network Address Translation; maps the private address into a unique public address

13. Where do you configure the IP address on a computer?

[1]

14. What is the purpose of DHCP?

[1] Dynamic Host Configuration Protocol: Dynamically distributes ip address for devices and interfaces and keeps track of what IP’s have been issued so it does not issue the same IP address to more than 1 client computer

15. What is the purpose of DNS?

[1] The Domain Name Service server translates domain and host names into IP addresses

16. What is the purpose of the gateway?

[1] A gateway is a router that can take packets off one network and place them on another network.

17. What is the purpose of the subnet mask?

[1] Subnetting is the process of stealing bits from the HOST part of an IP address in order to divide the larger network into smaller sub-networks called subnets.

18. What is the default subnet mask for an IP address 191.34.217.67?

[1] 191 is Class B public IP address; Default Class B subnet is 255.255.0.0

19. What is the network address for the host in question 18?

[1] 191.34.0.0

20. What is the network address for the IP address 10.214.180.56/18?

[2] 10.214.128.0

21. What is the network address for the IP address 10.214.180.56/19?

[2] 10.214.160.0