Worksheet 3 **Name** GLENN LOPEZ ____ 37

MCSE1

1. Fill in the following table.
[9]

Decimal	Binary	Hexadecimal
314	xxx1.0011.1010	0x13A
198	11000110	0xC6
2, 16, 32, 256	0b1011 0010	0x B2
107	0 1 1 0 1 0 1 1	0x6B
17	10001	0x11
$2^8 = 256$	1111 1111	0xFF
1069	0100.0010.1101	0x42D
2, 4, 32, 64, 512	1001100110	0x 266
1, 4, 8, 16, 128	1001.1101	0x9D

2. How many bits are there in an IP address?
[1] 8 . 8 . 8 . 8 = 32 bits (8 × 16 × 16)

3. How many octets in an IP address?
[1] 4 OCTETS

4. How many bits in a Hexadecimal digit?
[1] 16 bits

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

[3]

IP address	Binary equivalent
157.36.100.224	1001 1101 . 0010 0100 . 0110 0100 . 1110 0000
44.197.20.209	0010 1100 . 1100 0101 . 0001 0100 . 1101 0001
222.1.68.190	1101 1110 . 0000 0001 . 0100 0100 . 1011 1110

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

[1] RANGE = 128 – 191
HIGHER ORDER BITS: 10

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

[1] RANGE = 192 – 223
HIGHER ORDER BITS: 110

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

[1] RANGE = 1 – 126
HIGHER ORDER BITS: 0

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

[1] AS PER RFC 1918 PUBLISHED IN FEB 1996: (ADDRESS ALLOCATION FOR PRIVATE INTERNET)
10.0.0.0; 172.16.0.0; 192.168.0.0 IS RESERVED FOR PRIVATE USE
TO EXTEND THE LIFE OF IPv4

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 – 172.31.0.0
31 − 16 = 15 CLASSES OF CLASS B LICENSE

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

[3] 1 FOR HOST ADDRESS
1 FOR NETWORK REFERENCE } – 2

"n" IS THE NUMBER OF BITS ALLOCATED FOR THE HOST
ie: 11111111.11111111.11111000.00000000
$2^{11} - 2 = 2046$ HOSTS ON
255 . 255 .

12. What is NAT used for? ENABLES PRIVATE IP NETWORKS TO CONNECT TO THE INTERNET.

[2] ALLOWS MULTIPLE HOST OR A PRIVATE NETWORK TO ACCESS THE INTERNET USING A SINGLE PUBLIC IP ADDRESS

13. Where do you configure the IP address on a computer? ← WHAT OS IS RUNNING? WHAT KIND OF COMPUTER? ARM? x86? RISC?

* IN A COMMAND LINE VIA LINUX TERMINAL:

[1] ↳ SUDO IFCONFIG eth0 10.10.0.1 netmask 255.255.255.0"

* IN A COMMAND PROMPT VIA NETSH: (NETWORK SHELL)
  ↳ USE "NETSH HELP" FOR MORE INFO

14. What is the purpose of DHCP?

DHCP(CLIENT) BROADCASTS TO DHCP(SERVER) SO SERVER CAN LEASE AN

[1] ADDRESS FOR THE DHCP(CLIENT) TO USE,
  ↑ LOCAL IP ADDRESS HELD INDEFINITELY BY CLIENT

15. What is the purpose of DNS?

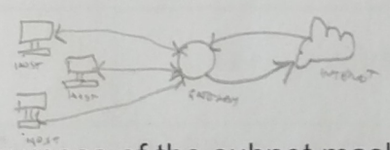
TURNS ~~8.8.8.8~~ 216.58.192.238 INTO GOOGLE.COM

[1] ↳ ITS A "PHONE BOOK" TURNING HOST NAMES INTO MACHINE READABLE IP ADDRESS

16. What is the purpose of the gateway?

ROUTES TRAFFIC FROM WORKSTATIONS TO OUTSIDE NETWORK

[1]



17. What is the purpose of the subnet mask?

A BOOLEAN OPERATOR THAT "ANDS" ONE OR MORE BYTES OF IP

[1] ADDRESS TO ALLOW MULTIPLE HOSTS TO BE CREATED FROM A SINGLE IP ADDRESS

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

A CLASS B IP ADDRESS USES 255.255.0.0 SUBNET BY DEFAULT

[1]

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

191.34.0.0

[1]

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

1111 1111 . 1111 1111 . 1100 0000 . 0000 0000

[2] 10 . 214 . 128 . 0 /18

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

1111 1111 . 1111 1111 . 1110 0000 . 0000 0000

[2] 10 . 214 . 160 . 0 /19