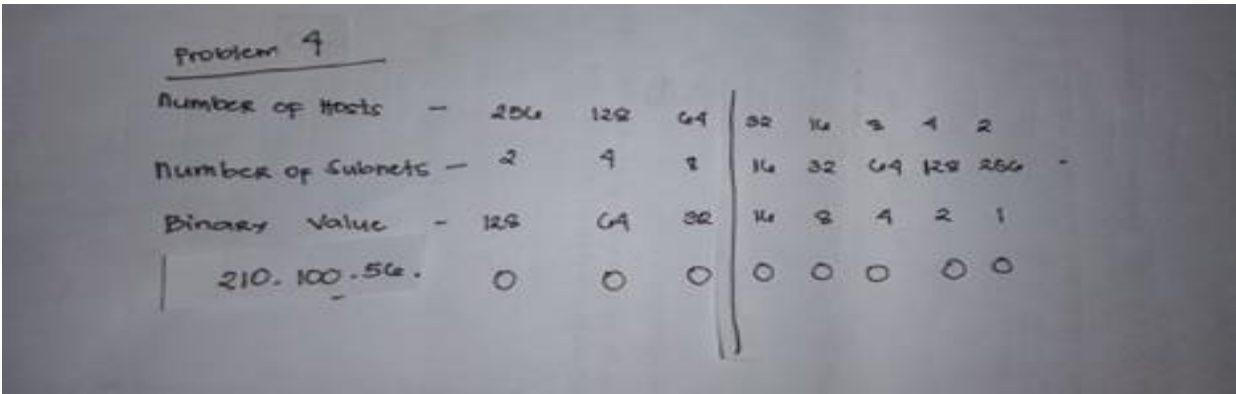


Custom Subnet Masks

Problem 4

Number of needed subnets	<u>6</u>
Number of needed usable hosts	<u>30</u>
Network Address	<u>195.85.8.0</u>
Address class	<u>C</u>
Default subnet mask	<u>255 . 255 . 255 . 0</u>
Custom subnet mask	<u>255 . 255 . 255 . 224</u>
Total number of subnets	<u>8</u>
Total number of host addresses	<u>32</u>
Number of usable addresses	<u>30</u>
Number of bits borrowed	<u>3</u>

Show your work for Problem 4 in the space below.



128

64

32

224

Custom Subnet mask

32

host

-2

30

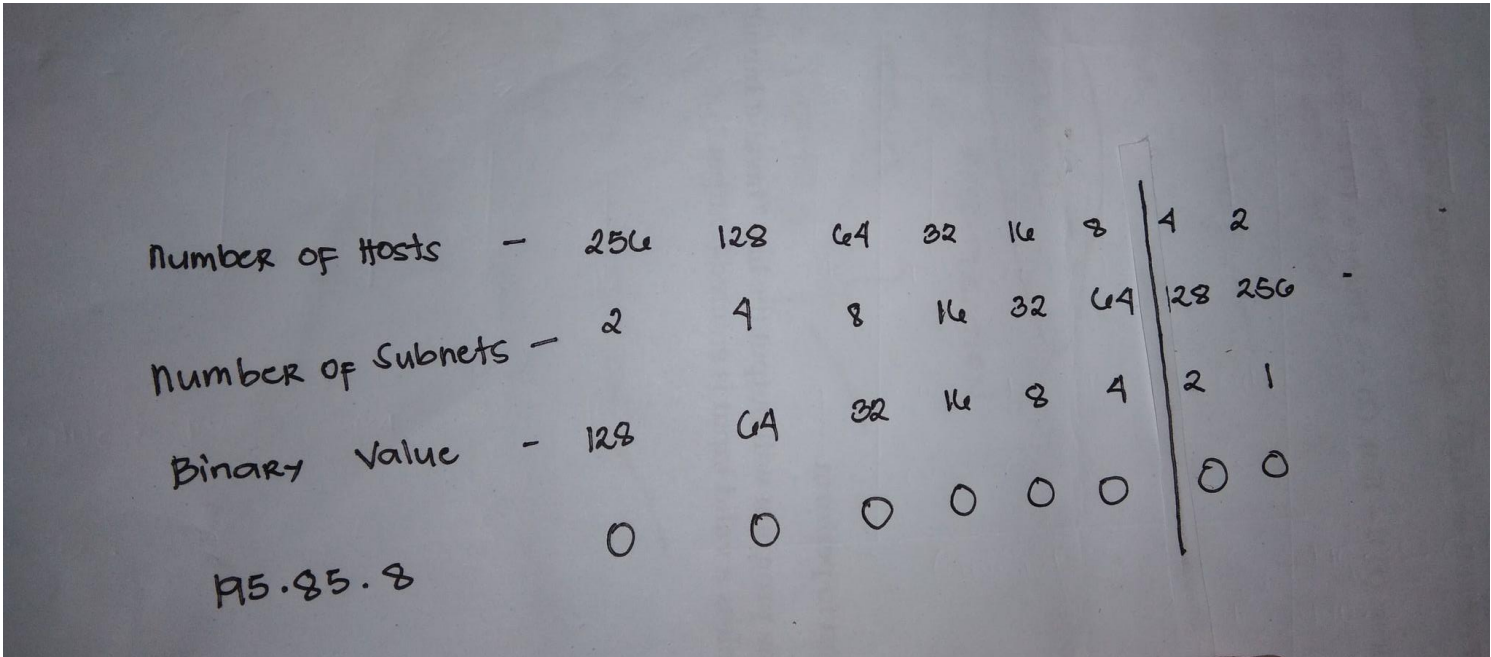
Unstable host

Custom Subnet Masks

Problem 5

Number of needed subnets	<u>6</u>
Number of needed usable hosts	<u>30</u>
Network Address	<u>210.100.56.0</u>
Address class	<u>C</u>
Default subnet mask	<u>255 . 255 . 255 . 0</u>
Custom subnet mask	<u>255 . 255 . 255 . 224</u>
Total number of subnets	<u>8</u>
Total number of host addresses	<u>32</u>
Number of usable addresses	<u>30</u>
Number of bits borrowed	<u>2</u>

Show your work for Problem 5 in the space below.



128	32	host
64	-2	
+32		30 usable host
224 Custom Subnet mask		

Custom Subnet mask

Problem 6

Number of needed subnets	<u>126</u>
Number of needed usable hosts	<u>131,070</u>
Network Address	<u>118.0.0.0</u>
Address class	<u>A</u>
Default subnet mask	<u>255.0.0.0</u>
Custom subnet mask	<u>255.255.255.255</u>
Total number of subnets	<u>128</u>
Number of usable subnets	<u>126</u>
Total number of host addresses	<u>131072</u>
Number of usable addresses	<u>131070</u>
Number of bits borrowed	<u>7</u>

Show your work for Problem 6 in the space below.

Problem 6

Number of Host	1,191,304	2,047,152	1,045,536	522,768	261,384	131,072	65,536	32,768	16,384	8,192	4,096	2,048	1,024	512	256	128	64	32	16	8	4	2
Number of Subnets	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	16384	32768	65536	131072	262144	524288	1048576	2097152	4194304
Binary Value	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

$128+64+32+16+8+4+2=$ **254 Subnet mask**

$131172-2=$ **131070 usable addresses**

$128-2=$ **126 usable subnets**

Custom Subnet Masks

Problem 7

Number of needed subnets	<u>2000</u>
Number of needed usable hosts	<u>15</u>
Network Address	<u>178.100.0.0</u>
Address class	<u>B</u>
Default subnet mask	<u>255.255.0.0</u>
Custom subnet mask	<u>255.255.255.224</u>

Total number of subnets	<u>2048</u>
Number of usable subnets	<u>2046</u>
Total number of host addresses	<u>32</u>
Number of usable addresses	<u>30</u>
Number of bits borrowed	<u>11</u>

Show your work for Problem 7 in the space below.

Problem 7														
Number of Host	65,536	32,768	16,384	8,192	4,096	2,048	1,024	512	256	128	64	32	16	8
Number of Subnets	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	16384
Binary Value -	128	64	32	16	8	4	2	1	128	64	32	16	8	4
178.100	0	0	0	0	0	0	0	0	0	0	0	0	0	0

128+64+32+16+8+4+2+1=255 Custom subnet mask

2048-2=2046 usable subnets

32-2=30 usable addresses

Custom Subnet Masks

Problem 8

Number of needed subnets	<u>3</u>
Number of needed usable hosts	<u>45</u>
Network Address	<u>200.175.14.0</u>
Address class	<u>C</u>
Default subnet mask	<u>255.255.255.0</u>
Custom subnet mask	<u>255.255.255.192</u>
Total number of subnets	<u>4</u>
Number of usable subnets	<u>2</u>
Total number of host addresses	<u>64</u>
Number of usable addresses	<u>62</u>
Number of bits borrowed	<u>2</u>

Show your work for Problem 8 in the space below.

Problem 8

Number of Hosts	-	256	128	64	32	16	8	4	2
Number of Subnets	-	2	4	8	16	32	64	128	256
Binary Value	-	128	64	32	16	8	4	2	1
200.175.14.		0	0	0	0	0	0	0	0

128+64= 192

4-2=2

64-2=62

Number of usable subnets

usable subnets

usable addresses

Custom Subnet Masks

Problem 9

Number of needed subnets	<u>60</u>
Number of needed usable hosts	<u>1,000</u>
Network Address	<u>128.77.0.0</u>
Address class	<u>B</u>
Default subnet mask	<u>255.255.0.0</u>
Custom subnet mask	<u>255.255.252.0</u>
Total number of subnets	<u>64</u>
Number of usable subnets	<u>62</u>
Total number of host addresses	<u>1024</u>
Number of usable addresses	<u>1022</u>
Number of bits borrowed	<u>6</u>

Show your work for Problem 9 in the space below.

Problem 9

Number of Host	65,536	32,768	16,384	8,192	4,096	2,048	1,024	512	256	128	64	32	16	8	4	2
Number of Subnets	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	16384	32768	65536
Binary Value	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1
128.77.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

128+64+32+16+8+4= 252 Custom subnet mask

64-2=62 usable subnets

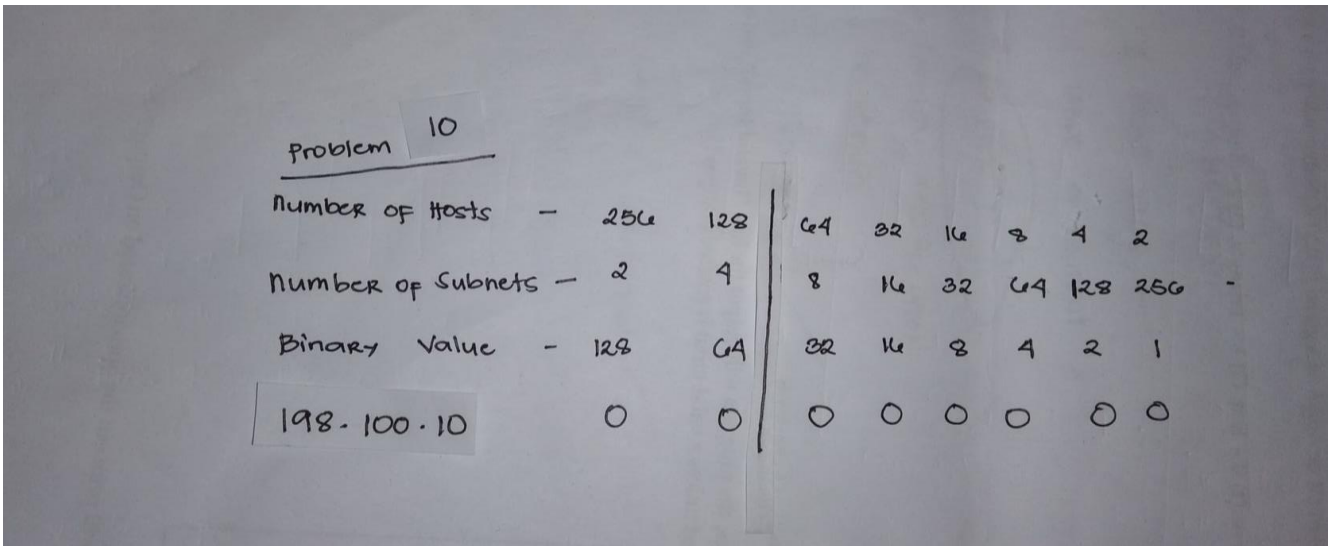
1024-2=1022 usable addresses

Custom Subnet Masks

Problem 10

Number of needed subnets	<u>60</u>
Number of needed usable hosts	<u>198.100.10.0</u>
Address class	<u>C</u>
Default subnet mask	<u>255.255.255.0</u>
Custom subnet mask	<u>255.255.255.192</u>
Total number of subnets	<u>4</u>
Number of usable subnets	<u>2</u>
Total number of host addresses	<u>64</u>
Number of usable addresses	<u>62</u>
Number of bits borrowed	<u>2</u>

Show your work for Problem 10 in the space below.



128+64= 192 Custom subnet mask

4-2=2 usable subnets

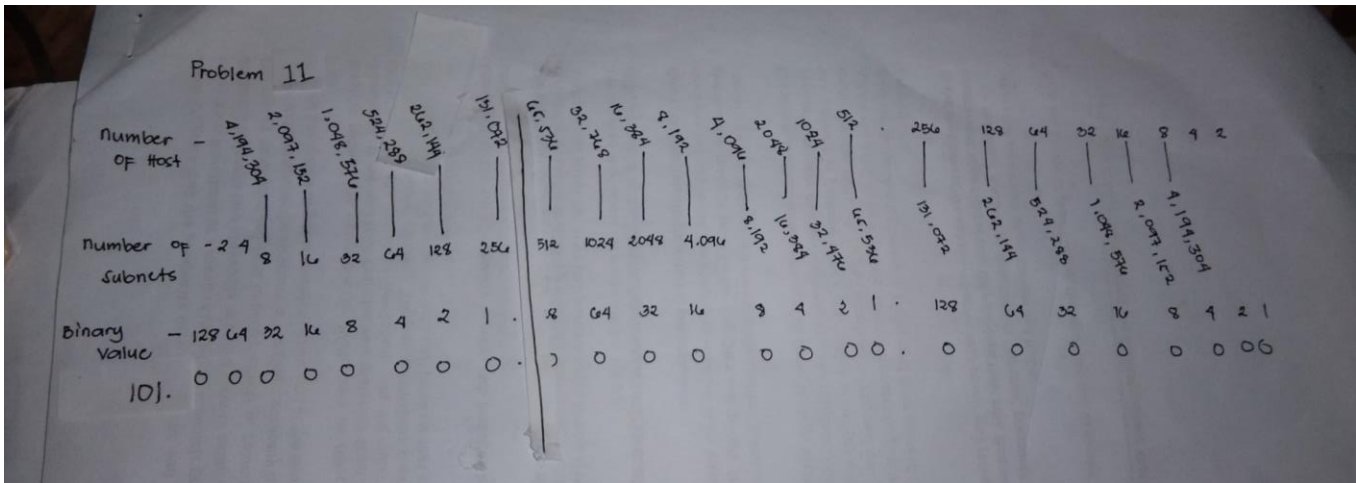
64-2=62 usable addresses

Custom Subnet Masks

Problem 11

Number of needed subnets	<u>250</u>
Number of needed usable hosts	<u>101.0.0.0</u>
Address class	A
Default subnet mask	<u>255.0.0.0</u>
Custom subnet mask	<u>255.255.0.0</u>
Total number of subnets	<u>256</u>
Number of usable subnets	<u>254</u>
Total number of host addresses	<u>65 356</u>
Number of usable addresses	<u>65 354</u>
Number of bits borrowed	<u>8</u>

Show your work for Problem 11 in the space below.

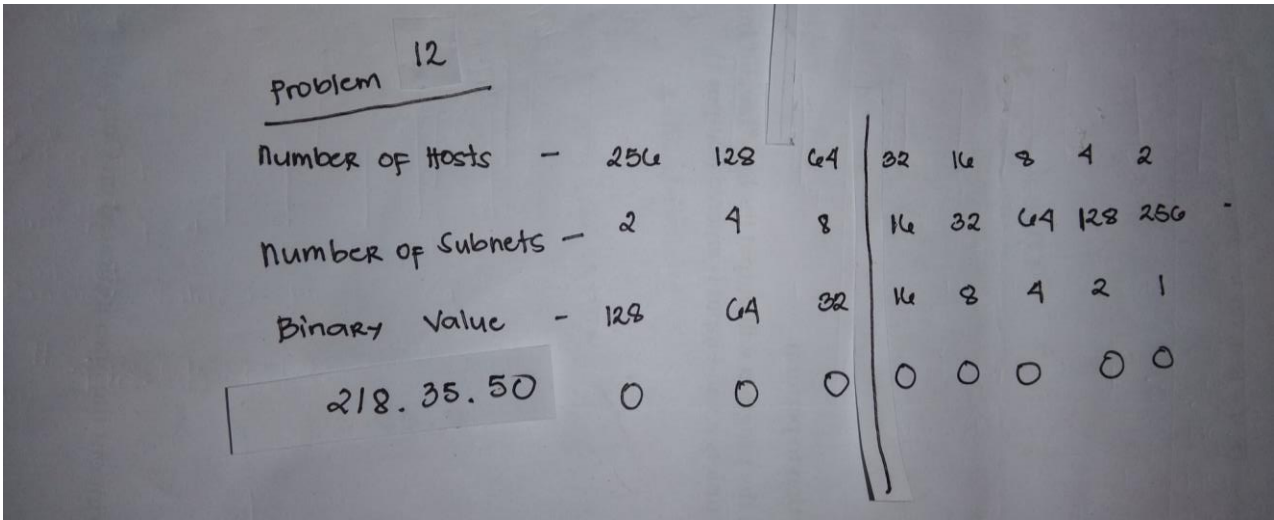


Custom Subnet Masks

Problem 12

Number of needed usable subnets	<u>5</u>
Network Address	<u>218.35.50.</u>
Address class	<u>C</u>
Default subnet mask	<u>255 . 255 . 255 . 0</u>
Custom subnet mask	<u>255 . 255 . 255 . 224</u>
Total number of subnets	<u>8</u>
Number of usable subnets	<u>6</u>
Total number of host	<u>32</u>
Addresses Number of usable addresses	<u>30</u>
Number of bits borrowed	<u>3</u>

Show your work for Problem 12 in the space below.



128 64 +32 =224 Custom subnet mask

64 -2 =62

4 -2 =2

Custom Subnet Masks

Problem 13

Number of needed subnets	<u>25</u>
Number of needed usable hosts	<u>218.35.50.0</u>
Address class	<u>C</u>
Default subnet mask	<u>255 . 255 . 255 . 0</u>
Custom subnet mask	<u>255 . 255 . 255 . 254</u>
Total number of subnets	<u>8</u>
Number of usable subnets	<u>6</u>
Total number of host addresses	<u>32</u>
Number of usable addresses	<u>30</u>
Number of bits borrowed	<u>3</u>

Show your work for Problem 13 in the space below.

Problem 12										
Number of Hosts	-	256	128	64	32	16	8	4	2	
Number of Subnets	-	2	4	8	16	32	64	128	256	
Binary Value	-	128	64	32	16	8	4	2	1	
218.35.50		0	0	0	0	0	0	0	0	

128 64 +32 =224 Custom subnet mask

32 -2 =30 Number of usable addresses

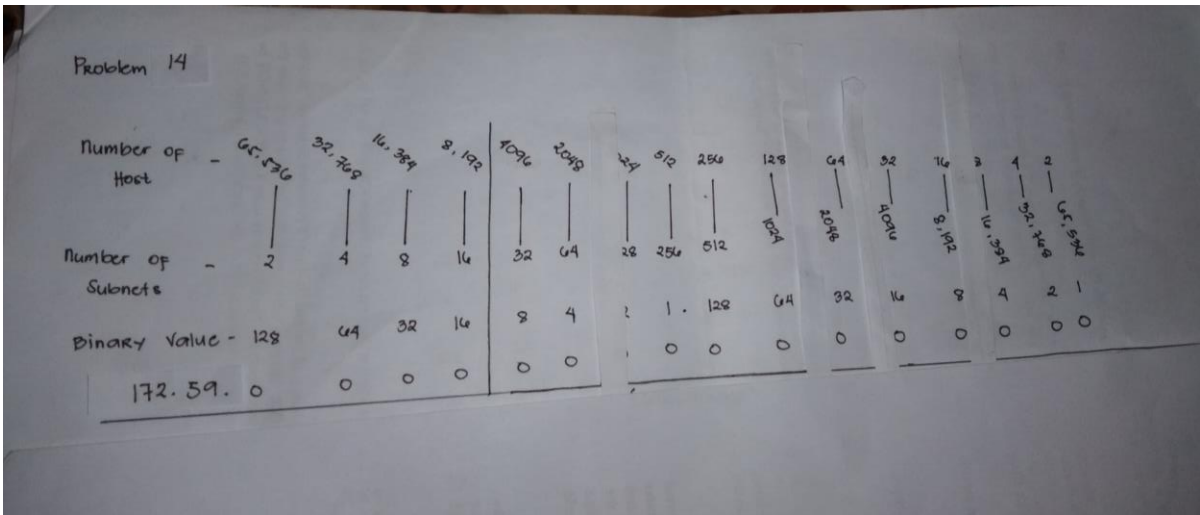
8 -2 =6 Number of usable subnets

Custom Subnet Masks

Problem 14

Number of needed subnets	<u>10</u>
Number of needed usable hosts	<u>172.59.0.0</u>
Address class	<u>B</u>
Default subnet mask	<u>255 . 255 . 0 . 0</u>
Custom subnet mask	<u>255 . 255 . 240 . 0</u>
Total number of subnets	<u>16</u>
Number of usable subnets	<u>14</u>
Total number of host addresses	<u>4,096</u>
Number of usable addresses	<u>4,094</u>
Number of bits borrowed	<u>4</u>

Show your work for Problem 14 in the space below.



128+ 64+ 32 +16= 240

Custom subnet mask

16 -2 =14

usable subnets

4,096 -2 =4,094

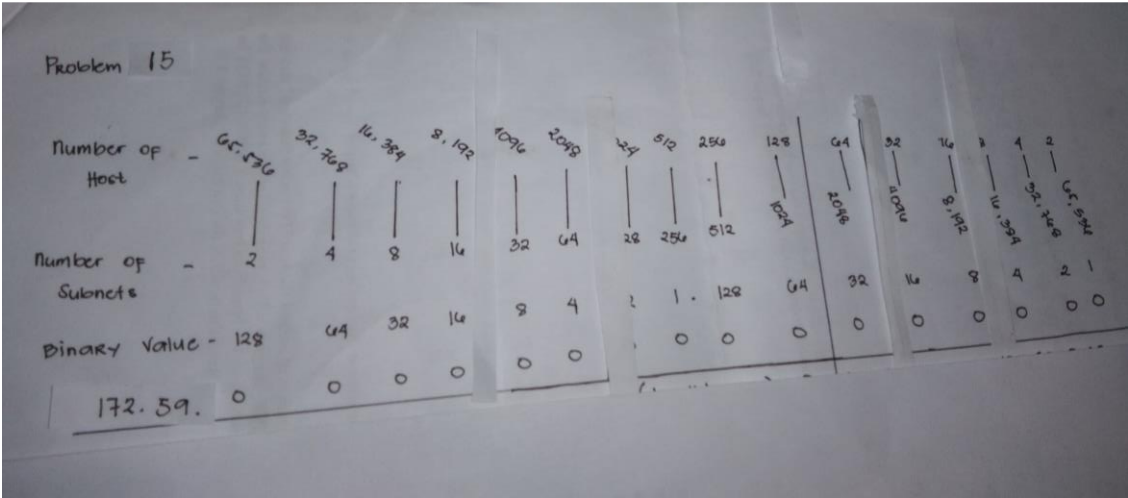
usable addresses

Custom Subnet Masks

Problem 15

Number of needed subnets	<u>50</u>
Number of needed usable hosts	<u>172.59.0.0</u>
Address class	<u>B</u>
Default subnet mask	<u>255 . 255 . 0 . 0</u>
Custom subnet mask	<u>255 . 255 . 255 . 192</u>
Total number of subnets	<u>1,024</u>
Number of usable subnets	<u>1,022</u>
Total number of host addresses	<u>64</u>
Number of usable addresses	<u>62</u>
Number of bits borrowed	<u>10</u>

Show your work for Problem 15 in the space below.



178.59. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

128+ 64+ 32+ 16+ 8+ 4+ 2 +1= 255 Custom subnet mask

128 +64 =192

64 -2= 62 usable addresses

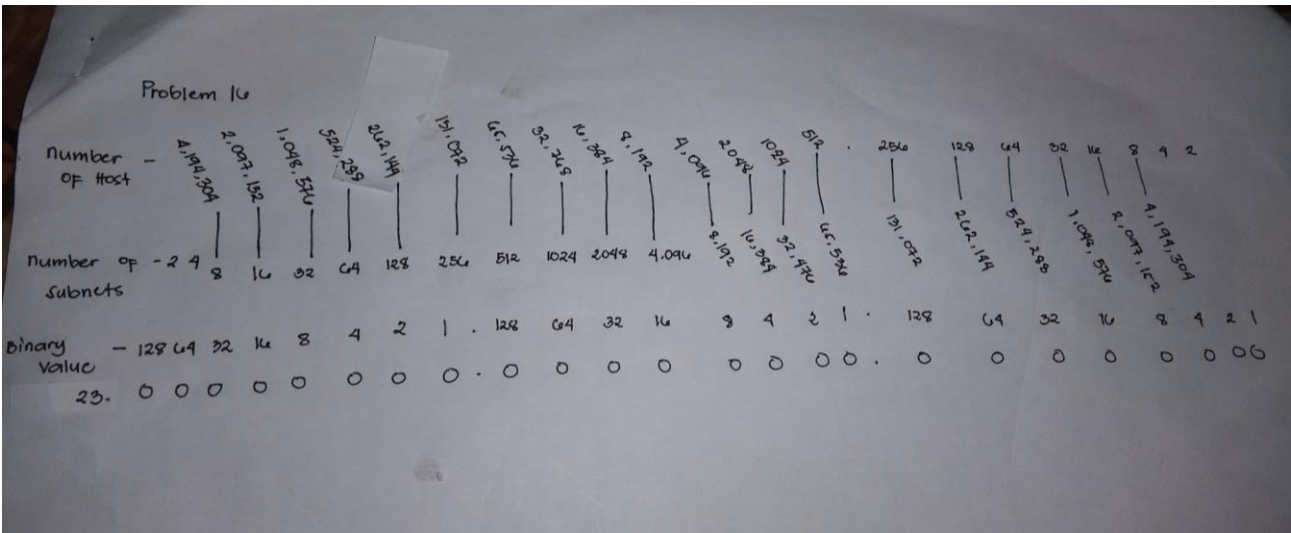
1,024 -2 =1,022 usable subnets

Custom Subnet Masks

Problem 16

Number of needed subnets	<u>29</u>
Number of needed usable hosts	<u>23.0.0.0</u>
Address class	<u>A</u>
Default subnet mask	<u>255 . 0 . 0 . 0</u>
Custom subnet mask	<u>255 . 255 . 255 . 254</u>
Total number of subnets	524,288
Number of usable subnets	<u>524,286</u>
Total number of host addresses	<u>32</u>
Number of usable addresses	<u>30</u>
Number of bits borrowed	<u>19</u>

Show your work for Problem 16 in the space below.



128 + 64 + 32 = 224 Custom subnet mask
32 - 2 = 30 usable addresses
524,288 - 2 = 524,286 usable subnets

Subnetting

Problem 3

Number of needed usable hosts	<u>1</u>
Number of needed usable hosts	<u>195.223.50.0</u>
Network Address Address class	<u>C</u>
Default subnet mask	<u>255.255.255.0</u>
Custom subnet mask	<u>255.255.255.192</u>
Total number of subnets	<u>4</u>
Number of usable subnets	<u>2</u>
Total number of host	<u>64</u>
Addresses Number of usable addresses	<u>62</u>
Number of bits borrowed	<u>2</u>
What is the 3rd usable subnet range?	<u>190.35.3.128 to 190.35.3.191</u>
What is the subnet number for the 7th usable subnet?	<u>195.223.50.64</u>
What is the subnet broadcast address for the 12th usable subnet?	<u>190.35.2.127</u>
What are the assignable addresses for the 8th usable subnet?	<u>195.223.50.129 - 195.223.50.190</u>

Show your work for Problem 3 in the space below.

2020.10.0

SUBNETTING

Problem 3

Number of Host	256	128	64	32	16	8	4	2
Number of Subnet	2	4	8	16	32	64	128	256
Binary Value	128	64	32	16	8	4	2	1
195. 223. 50	0	0	0	0	0	0	0	0
(Invalid ranged) (0)		0	195. 223. 50. 0 - 195. 223. 50. 63					
(1)		1	195. 223. 50. 64 - 195. 223. 50. 127					
(2)	1	0	195. 223. 50. 128 - 195. 223. 50. 191					
(Invalid ranged) (3)	1	1	195. 223. 50. 192 - 195. 223. 50. 255					

$$\begin{array}{r}
 128 \\
 + 64 \\
 \hline
 192
 \end{array}
 \qquad
 \begin{array}{r}
 4 \\
 - 2 \\
 \hline
 2
 \end{array}
 \qquad
 \begin{array}{r}
 64 \\
 - 2 \\
 \hline
 62
 \end{array}$$

Subnetting

Problem 4

Number of needed usable hosts	<u>750</u>
Number of needed usable hosts	<u>190.35.0.0</u>
Network Address Address class	<u>B</u>
Default subnet mask	<u>255.255.255.0</u>
Custom subnet mask	<u>255.255.255.192</u>
Total number of subnets	<u>1024</u>
Number of usable subnets	<u>1022</u>
Total number of host	<u>64</u>
addresses Number of usable addresses	<u>62</u>
Number of bits borrowed	<u>10</u>
What is the 14th usable subnet range?	<u>195.223.50.128 - 195.223.50.191</u>
What is the subnet number for	
the 12th usable subnet?	<u>190.35.3.0</u>
What is the subnet broadcast	
address for the 9th usable subnet?	<u>190.35.2.127</u>
What are the assignable addresses	
for the 5th usable subnet?	<u>190.35.1.65 to 190.35.1.126</u>

Show your work for Problem 4 in the space below.

Problem 4

Number of Host	64, 32, 16, 8, 4, 2, 1	128, 64, 32, 16, 8, 4, 2, 1
Number of Subnets	2, 4, 8, 16, 32, 64, 128, 256, 512, 1024	2, 4, 8, 16, 32, 64, 128, 256, 512, 1024
Binary Value	128, 64, 32, 16, 8, 4, 2, 1	128, 64, 32, 16, 8, 4, 2, 1

128
+64
252

128
64
32
16
8
4
2
+1
252

1024
-2
1022

64
-2
62

(Invalid range)

190.35.0.0 - 190.35.0.63
190.35.0.64 - 190.35.0.127
190.35.0.128 - 190.35.0.191
190.35.0.192 - 190.35.0.255
190.35.1.0 - 190.35.1.63
190.35.1.64 - 190.35.1.127
190.35.1.128 - 190.35.1.191
190.35.1.192 - 190.35.1.255
190.35.2.0 - 190.35.2.63
190.35.2.64 - 190.35.2.127
190.35.2.128 - 190.35.2.191
190.35.2.192 - 190.35.2.255
190.35.3.0 - 190.35.3.63
190.35.3.64 - 190.35.3.127
190.35.3.128 - 190.35.3.191
190.35.3.192 - 190.35.3.255

2020.10.01 20:43

Subnetting

Problem 5

Number of needed usable hosts	<u>6</u>
Number of needed usable hosts	<u>126.0.0.0</u>
Network Address class	<u>A</u>
Default subnet mask	<u>255.0.0.0</u>
Custom subnet mask	<u>255.255.255.248</u>
Total number of subnets	<u>2,097,152</u>
Number of usable subnets	<u>2,097,150</u>
Total number of host	<u>8</u>
Addresses Number of usable addresses	<u>6</u>
Number of bits borrowed	<u>21</u>
What is the 4th usable subnet range?	<u>126.0.0.8 to 126.0.0.15</u>
What is the subnet number for the 12th usable subnet?	<u>126.0.0.32</u>
What is the subnet broadcast address for the 9th usable subnet?	<u>126.0.0.55</u>
What are the assignable addresses for the 5th usable subnet?	<u>126.0.0.73 to 126.0.0.78</u>

Show your work for Problem 5 in the space below.

2020.10.01 21:01

Problem 5

Number of Host	65,536	32,768	16,384	8,192	4,096	2,048	1,024	512	256	128	64	32	16	8	4	2
Number of Subnets	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	16384	32768	65536
Binary Value	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1
190.35.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

128
64
32
16
8
4
2
+1
255

128
64
32
16
8
+8
240

3097,152
- 2
2,097,150

(Invalid range)

0	126.0.0.0 - 126.0.0.7
1	126.0.0.8 - 126.0.0.15
0	126.0.0.16 - 126.0.0.23
1	126.0.0.24 - 126.0.0.31
0	126.0.0.32 - 126.0.0.39
1	126.0.0.40 - 126.0.0.47
0	126.0.0.48 - 126.0.0.55
1	126.0.0.56 - 126.0.0.63
0	126.0.0.64 - 126.0.0.71
1	126.0.0.72 - 126.0.0.79
0	126.0.0.80 - 126.0.0.87
1	126.0.0.88 - 126.0.0.95
0	126.0.0.96 - 126.0.0.103
1	126.0.0.104 - 126.0.0.111
0	126.0.0.112 - 126.0.0.119
1	126.0.0.120 - 126.0.0.127

Subnetting

Problem 6

Number of host needed	<u>10</u>
Number of needed usable hosts	<u>192.70.0.0</u>
Network Address Address class	<u>C</u>
Default subnet mask	<u>255.255.255.0</u>
Custom subnet mask	<u>255.255.255.240</u>
Total number of subnets	<u>16</u>
Number of usable subnets	<u>14</u>
Total number of host addresses	<u>16</u>
Number of usable addresses	<u>14</u>
Number of bits borrowed	<u>4</u>
What is the 8th usable subnet range?	<u>192.70.10.128 to 192.70.10.143</u>
What is the subnet number for the 3rd usable subnet?	<u>192.70.10.48</u>
What is the subnet broadcast address for the 11th usable subnet?	<u>192.70.10.191</u>
What are the assignable addresses for the 9th usable subnet?	<u>192.70.10.145 to 192.70.10.158</u>

Show your work for Problem 6 in the space below.

Subnetting No. 6

number of Hosts -	256	128	64	32	16	8	4	2
number of subnets -	2	4	8	16	32	64	128	256
Binary value -	128	64	32	16	8	4	2	1

192.70.10.0 0 0 0 0 0 0 0 0

128 16 16
+ 64 -2 -2

240 14 14

(Invalid range)

0 0 0 0 0 0 0 0

(Invalid range)

192.70.10.0	192.70.10.15
192.70.10.16	192.70.10.31
192.70.10.32	192.70.10.47
192.70.10.48	192.70.10.63
192.70.10.64	192.70.10.79
192.70.10.80	192.70.10.95
192.70.10.96	192.70.10.111
192.70.10.112	192.70.10.127
192.70.10.128	192.70.10.143
192.70.10.144	192.70.10.159
192.70.10.160	192.70.10.175
192.70.10.176	192.70.10.191
192.70.10.192	192.70.10.207
192.70.10.208	192.70.10.223
192.70.10.224	192.70.10.239
192.70.10.240	192.70.10.255

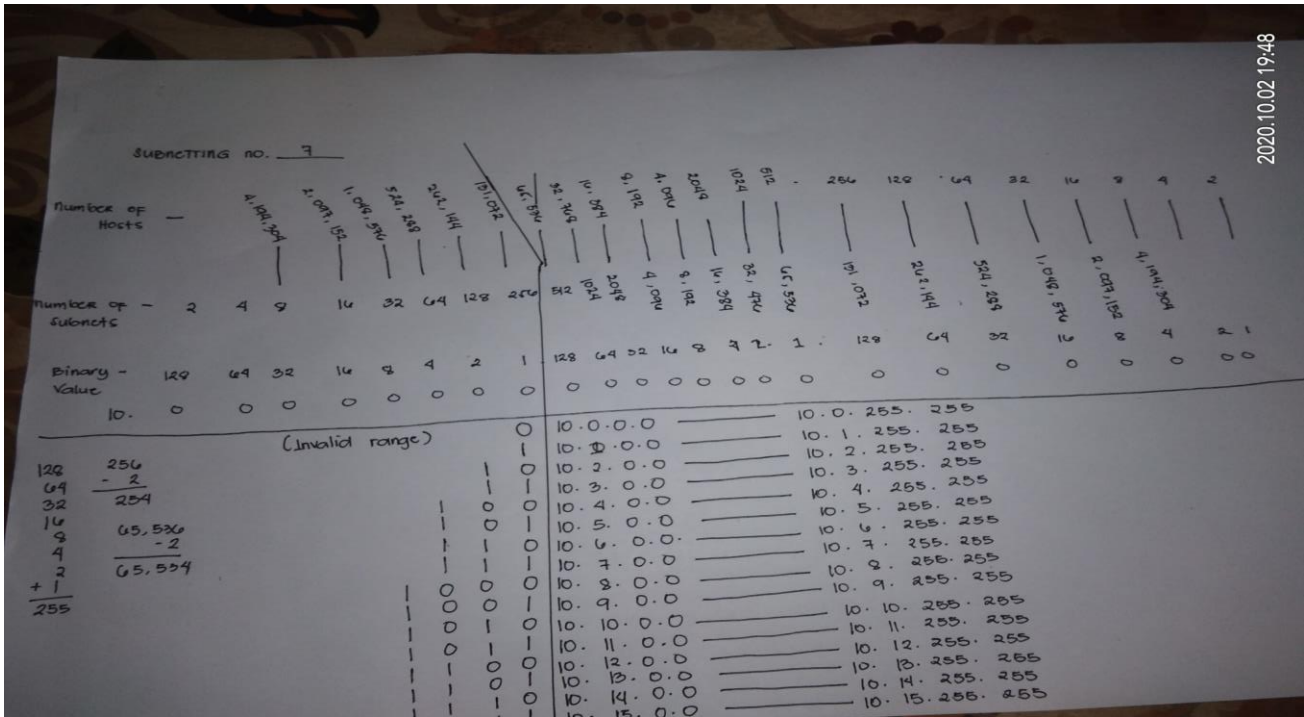
2020.10.02 19:48

Subnetting

Problem 7

Number of needed usable hosts	10.0.0.0 /16
Network Address Address class	A
Default subnet mask	255.0.0.0
Custom subnet mask	255.255.0.0
Total number of subnets	256
Number of usable subnets	254
Total number of host addresses	65,536
Number of usable addresses	65,534
Number of bits borrowed	8
What is the 10th usable subnet range?	10.10.0.0 to 10.10.255.255
What is the subnet number for the 5th usable subnet?	10.5.0.0
What is the subnet broadcast address for the 1st usable subnet?	10.1.255.255
What are the assignable addresses for the 8th usable subnet?	10.8.0.1 to 10.8.255.254

Show your work for Problem 7 in the space below.



Subnetting

Problem 8

Number of needed usable hosts	5
Number of needed usable hosts	172.50.0.0
Network Address Address class	<u>B</u>
Default subnet mask	<u>255.255.0.0</u>
Custom subnet mask	<u>255.255.224.0</u>
Total number of subnets	<u>8</u>
Number of usable subnets	<u>6</u>
Total number of host	<u>8,192</u>
addresses Number of usable addresses	<u>8,190</u>
Number of bits borrowed	<u>3</u>
What is the 3rd usable subnet range?	<u>172.50.96.0 to 172.50.127.255</u>
What is the subnet number for	
the 4th usable subnet?	<u>172.50.128.0</u>
What is the subnet broadcast	
address for the 5th usable subnet?	<u>172.50.191.255</u>
What are the assignable addresses	
for the 2nd usable subnet?	<u>172.50.64.1 to 172.50.95.254</u>

Show your work for Problem 8 in the space below.

Subnetting No. 8

Number of Hosts	64,512	32,768	16,384	8,192	4,096	2,048	1,024	512	256	128	64	32	16	8	4	2
Number of subnets	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	16384	32768	65536
Binary Value	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1

172.50.0.0

(0)	0	172.50.0.0	172.50.31.255
(1)	1	172.50.32.0	172.50.63.255
(2)	1	172.50.64.0	172.50.95.255
(3)	1	172.50.96.0	172.50.127.255
(4)	0	172.50.128.0	172.50.159.255
(5)	0	172.50.160.0	172.50.191.255
(6)	1	172.50.192.0	172.50.223.255
(7)	1	172.50.224.0	172.50.255.255

128
64
32
16
8
4
+2
254

8,192
-2
8,190

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Subnetting

Problem 9

Number of needed usable hosts	28
Network Address	<u>172.50.0.0</u>
Address class	<u>B</u>
Default subnet mask	<u>255.255.0.0</u>
Custom subnet mask	<u>255.255.255.224</u>
Total number of subnets	<u>2048</u>
Number of usable subnets	<u>2046</u>
Total number of host addresses	<u>32</u>
Number of usable addresses	<u>30</u>
Number of bits borrowed	<u>11</u>
What is the 1st usable subnet range?	172.50.0.32 to 172.50.0.63
What is the subnet number for the 9th usable subnet?	172.50.1.<u>32</u>
What is the subnet broadcast address for the 3rd usable subnet?	<u>172.50.0.127</u>
What are the assignable addresses for the 5th usable subnet?	<u>172.50.0.161 to 172.50.0.190</u>

Show your work for Problem 9 in the space below.

subnetting No. 9

Number of Hosts	65,536	32,768	16,384	8,192	4,096	2,048	1,024	512	256	128	64	32	16	8	4	2
Number of subnets	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	16384	32768	65536
Binary Value	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1

172.50.0.0

128
64
32
16
8
4
2
+1
252

128
64
+32
224

1,024
-2
1,022

64
-2
62

(Invalid range)

0	172.50.0.0	172.50.0.31
1	172.50.0.32	172.50.0.63
0	172.50.0.64	172.50.0.95
1	172.50.0.96	172.50.0.127
0	172.50.0.128	172.50.0.159
1	172.50.0.160	172.50.0.191
0	172.50.0.192	172.50.0.223
1	172.50.0.224	172.50.0.255
0	172.50.1.0	172.50.1.31
1	172.50.1.32	172.50.1.63
0	172.50.1.64	172.50.1.95
1	172.50.1.96	172.50.1.127
0	172.50.1.128	172.50.1.159
1	172.50.1.160	172.50.1.191
0	172.50.1.192	172.50.1.223
1	172.50.1.224	172.50.1.255

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Problem 10

Number of needed usable hosts	45
Network Address	<u>220.100.100.0</u>
Address class	<u>C</u>
Default subnet mask	<u>255.255.255.0</u>
Custom subnet mask	<u>255.255.255.252</u>
Total number of subnets	<u>64</u>
Number of usable subnets	<u>62</u>
Total number of host addresses	<u>4</u>
Number of usable addresses	<u>2</u>
Number of bits borrowed	<u>6</u>
What is the 4th usable subnet range?	<u>220.100.100.16 to 220.100.100.19</u>
What is the subnet number for the 3rd usable subnet?	<u>220.100.100.12</u>
What is the subnet broadcast address for the 21th usable subnet?	<u>220.100.100.51</u>
What are the assignable addresses for the 11th usable subnet?	<u>220.100.100.45 to 220.100.100.46</u>

Show your work for Problem 10 in the space below.

Subnetting No. 10

Number of Hosts -	256	128	64	32	16	8	4	2
Number of Subnets -	2	4	8	16	32	64	128	256
Binary value -	128	64	32	16	8	4	2	1

220.100.100.0 0 0 0 0 0 0 0 0

(Invalid range)

```

128      64      4
64      - 2      - 2
32      64      2
16
8
+ 4
---
252

```

0	220.100.100.0	220.100.100.3
1	220.100.100.4	220.100.100.7
0	220.100.100.8	220.100.100.11
1	220.100.100.12	220.100.100.15
0	220.100.100.16	220.100.100.19
1	220.100.100.20	220.100.100.23
0	220.100.100.24	220.100.100.27
1	220.100.100.28	220.100.100.31
0	220.100.100.32	220.100.100.35
1	220.100.100.36	220.100.100.39
0	220.100.100.40	220.100.100.43
1	220.100.100.44	220.100.100.47
0	220.100.100.48	220.100.100.51
1	220.100.100.52	220.100.100.55
0	220.100.100.56	220.100.100.59
1	220.100.100.60	220.100.100.63

Subnetting

Problem 11

Number of needed usable hosts	8,000
Network Address	<u>135.70.0.0</u>
Address class	<u>B</u>
Default subnet mask	<u>255.255.0.0</u>
Custom subnet mask	<u>255.255.224.0</u>
Total number of subnets	<u>8</u>
Number of usable subnets	<u>6</u>
Total number of host addresses	<u>8,192</u>
Number of usable addresses	<u>8,190</u>
Number of bits borrowed	<u>3</u>
What is the 5th usable subnet range?	<u>135.70.160.0 to 135.70.191.255</u>
What is the subnet number for the 6th usable subnet?	<u>135.70.192.0</u>
What is the subnet broadcast address for the 3rd usable subnet?	<u>135.70.95.255</u>
What are the assignable addresses for the 5th usable subnet?	<u>135.70.128.1 to 135.70.159.254</u>

Show your work for Problem 11 in the space below.

Subnetting No. 11

Number of Hosts	65,536	32,768	16,384	8,192	4,096	2,048	1,024	512	256	128	64	32	16	8	4	2
Number of subnets	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	16384	32768	65536
Binary value	135.70.0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(Invalid range)

135.70.0.0

135.70.32.0

135.70.64.0

135.70.96.0

135.70.128.0

135.70.160.0

135.70.192.0

135.70.224.0

(Invalid range)

135.70.31.255

135.70.63.255

135.70.95.255

135.70.127.255

135.70.159.255

135.70.191.255

135.70.223.255

135.70.255.255

8

-2

6

128

64

32

224

8,192

-2

8,190

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Subnetting

Problem 12

Number of needed usable hosts	45
Network Address	<u>198.125.50.0</u>
Address class	<u>C</u>
Default subnet mask	<u>255.255.255.0</u>
Custom subnet mask	<u>255.255.224.192</u>
Total number of subnets	<u>4</u>
Number of usable subnets	<u>2</u>
Total number of host addresses	<u>64</u>
Number of usable addresses	<u>62</u>
Number of bits borrowed	<u>2</u>
What is the 5th usable subnet range?	<u>198.125.50.64 to 98.125.50.127</u>
What is the subnet number for the 6th usable subnet?	<u>198.125.50.64</u>
What is the subnet broadcast address for the 3rd usable subnet?	<u>198.125.50.191</u>
What are the assignable addresses for the 5th usable subnet?	<u>198.125.50.129 to 198.125.50.190</u>

Show your work for Problem 12 in the space below.

Subnetting No. 12

Number of Hosts -	256	128	64	32	16	8	4	2
Number of Subnets -	2	4	8	16	32	64	128	256
Binary value -	128	64	32	16	8	4	2	1

198 - 125 - 50 - 0

(Invalid range)

(Invalid range)

0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0	0

198.125.50.0

198.125.50.64

198.125.50.128

198.125.50.192

198.125.50.63

198.125.50.127

198.125.50.191

198.125.50.255

128

4

64

+169

-2

-2

192

2

62

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Problem 13

Network Address	165.200.0/26
Address class	<u>B</u>
Default subnet mask	<u>255.255.0.0</u>
Custom subnet mask	<u>255.255.225.192</u>
Total number of subnets	<u>1,024</u>
Number of usable subnets	<u>1,022</u>
Total number of host addresses	<u>64</u>
Number of usable addresses	<u>62</u>
Number of bits borrowed	<u>10</u>
What is the 9th usable subnet range?	<u>165.200.2.64 to 165.200.2.127</u>
What is the subnet number for the 10th usable subnet?	<u>165.200.2.128</u>
What is the subnet broadcast address for the 1022nd usable subnet?	<u>165.200.255.191</u>
What are the assignable addresses for the 1021st usable subnet?	<u>165.200.255.65 to 165.200.255.126</u>

Show your work for Problem 13 in the space below.

Subnetting No. 13

Number of Hosts	Number of subnets	Binary Value
64, 32, 16, 8, 4, 2	2, 4, 8, 16, 32, 64, 128, 256, 512, 1024	165.200.0.0

Binary Value

165.200.0.0

(Invalid range)

128
64
32
16
8
4
2
+1
255

1,024
-2
1,022
64
-2
62

(Invalid range)

1021
1022
1023

165.200.0.0
165.200.0.64
165.200.0.128
165.200.0.192
165.200.1.0
165.200.1.64
165.200.1.128
165.200.1.192
165.200.2.0
165.200.2.64
165.200.2.128
165.200.2.192
165.200.3.0
165.200.3.64
165.200.3.128
165.200.3.192
165.200.255.64
165.200.255.128
165.200.255.192

165.200.0.43
165.200.0.127
165.200.0.191
165.200.0.255
165.200.1.63
165.200.1.127
165.200.1.191
165.200.1.255
165.200.2.63
165.200.2.127
165.200.2.191
165.200.2.255
165.200.3.63
165.200.3.127
165.200.3.191
165.200.3.255

165.200.255.127
165.200.255.191
165.200.255.255

Subnetting

Problem 15

Network Address	93.0.0.0 \19
Address class	A
Default subnet mask	255.0.0.0
Custom subnet mask	255.255.224.0
Total number of subnets	2,048
Number of usable subnets	2,046
Total number of host addresses	8,192
Number of usable addresses	8,190
Number of bits borrowed	11
What is the 14th usable subnet range?	93.1.192.0 to 93.1.223.255
What is the subnet number for the 8th usable subnet?	93.1.0.0
What is the subnet broadcast address for the 6th usable subnet?	93.0.223.255
What are the assignable addresses for the 11th usable subnet?	93.1.96.1 to 93.1.127.254

Show your work for Problem 15 in the space below.

Subnetting no. 15

Number of Hosts	1,048,304	2,097,152	1,048,576	524,288	262,144	131,072	65,536	32,768	16,384	8,192	4,096	2,048	1,024	512	256	128	64	32	16	8	4	2	
Number of subnets	2	4	8	16	32	64	128	256	512	1,024	2,048	4,096	8,192	16,384	32,768	65,536	131,072	262,144	524,288	1,048,576	2,097,152	4,194,304	
Binary Value	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

(Invalid range)

128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2
128	64	32	16	8</																		