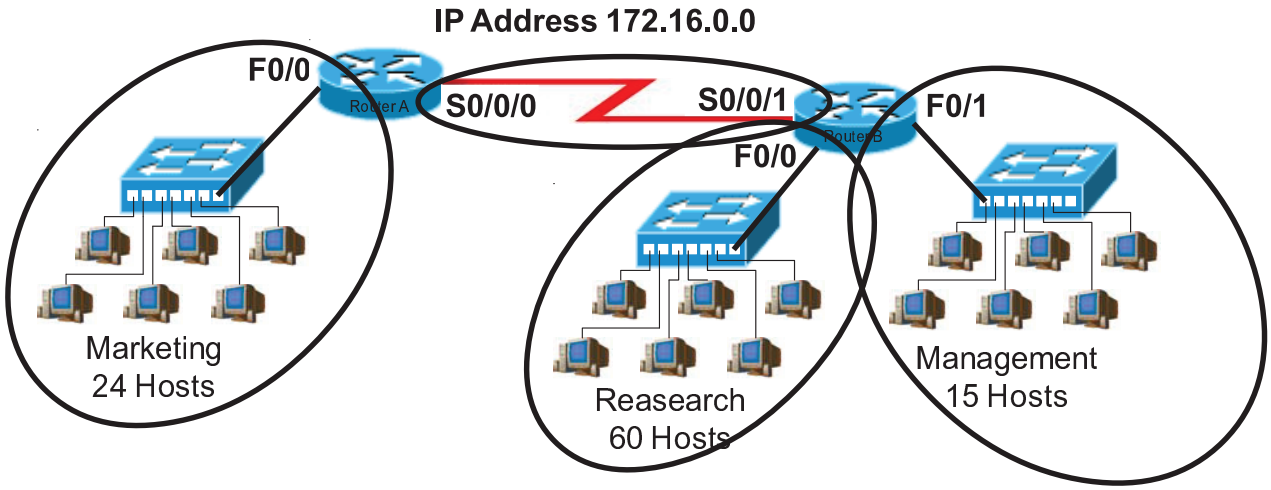
Practical Subnetting 1

Based on the information in the graphic shown, design a network addressing scheme that will supply the **minimum number of subnets**, and allow enough extra subnets and hosts for 100% growth in both areas. Circle each subnet on the graphic and answer the questions below.



Address class	B
Custom subnet mask	255.255.224.0
Minimum number of subnets needed	4
Extra subnets required for 100% growth (Round up to the next whole number)	+ 4
Total number of subnets needed	= 8
Number of host addresses in the largest subnet group	60
Number of addresses needed for 100% growth in the largest subnet (Round up to the next whole number)	+ 60
Total number of address needed for the largest subnet	= 120

Start with the first subnet and arrange your sub-networks from the largest group to the smallest.

IP address range for Research	172.16.0.0 to 172.31.255
IP address range for Marketing	172.16.32.0 to 172.63.255
IP address range for Management	172.16.64.0 to 172.95.255
IP address range for Router A to Router B serial connection	172.16.96.0 to 172.127.255

Show your work for Practical Subnetting 1 in the space below.

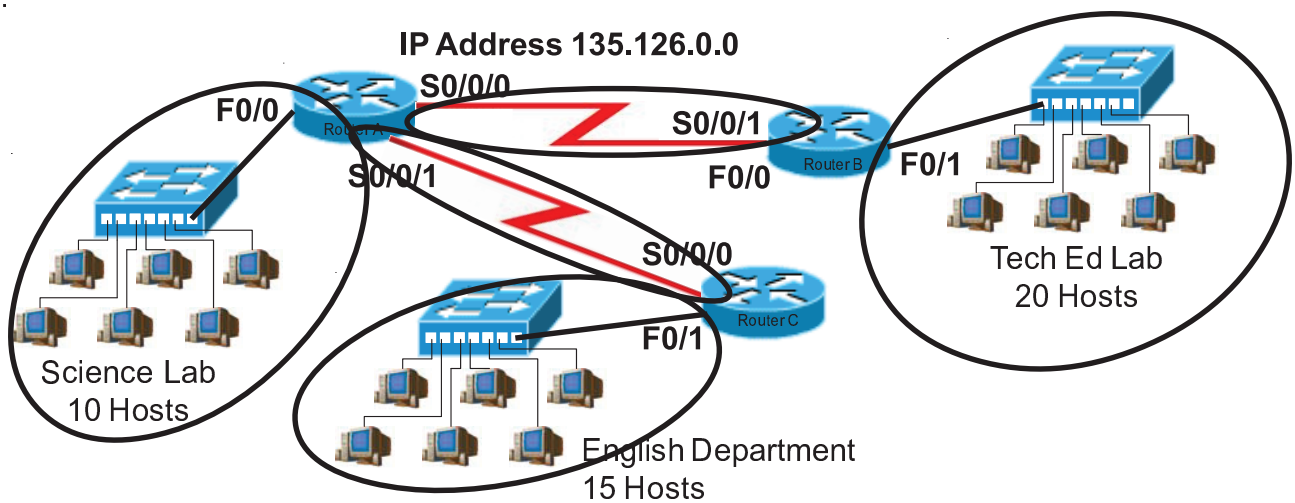
Number of Hosts –	65,536	32,768	16,384	8,192	4,096	2,048	1,024	512	.256	128	64	32	16	8	4	2
Number of Subnets –	2	4	8	16	32	64	128	256.	512	1024	2048	4,096	8,192	16,384	32,768	65,536
Binary values –	128	64	32	16	8	4	2	1 .	128	64	32	16	8	4	2	1
172 . 16 .	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0 .**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

(1)			0	172.16.0.0	to	172.16.31.255
(2)			1	172.16.32.0	to	172.16.63.255
(3)		1	0	172.16.64.0	to	172.16.95.255
(4)		1	1	172.16.96.0	to	172.16.127.255
(5)	1	0	0	172.16.128.0	to	172.16.159.255
(6)	1	0	1	172.16.160.0	to	172.16.191.255
(7)	1	1	0	172.16.192.0	to	172.16.223.255
(8)	1	1	1	172.16.224.0	to	172.16.255.255

$$\begin{array}{r} 4 \\ \times 1.0 \\ \hline 4 \end{array} \qquad \begin{array}{r} 60 \\ \times 1.0 \\ \hline 60 \end{array}$$

Practical Subnetting 2

Based on the information in the graphic shown, design a network addressing scheme that will supply the **minimum number of hosts per subnet**, and allow enough extra subnets and hosts for 30% growth in all areas. Circle each subnet on the graphic and answer the questions below.



Address class	B
Custom subnet mask	255.255.255.224
Minimum number of subnets needed	5
Extra subnets required for 30% growth (Round up to the next whole number)	+ 2
Total number of subnets needed	= 7
Number of host addresses in the largest subnet group	20
Number of addresses needed for 30% growth in the largest subnet (Round up to the next whole number)	+ 6
Total number of address needed for the largest subnet	= 26

Start with the first subnet and arrange your sub-networks from the largest group to the smallest.

IP address range for Tech Ed	135.126.0.0 to 135.126.0.31
IP address range for English	135.126.0.32 to 135.126.0.63
IP address range for Science	135.126.0.64 to 135.126.0.95
IP address range for Router A to Router B serial connection	135.126.0.96 to 135.126.0.127
IP address range for Router A to Router B serial connection	135.126.0.128 to 135.126.0.159

Show your work for <u>Problem 2</u> in the space below.

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	4,096	8,192	16,384	32,768	65,536
Binary values –	128	64	32	16	8	4	2	1 .	128	64	32	16	8	4	2	1
135. 126 .	0	0	0	0	0	0	0	0 .	0	0	0	0	0	0	0	0

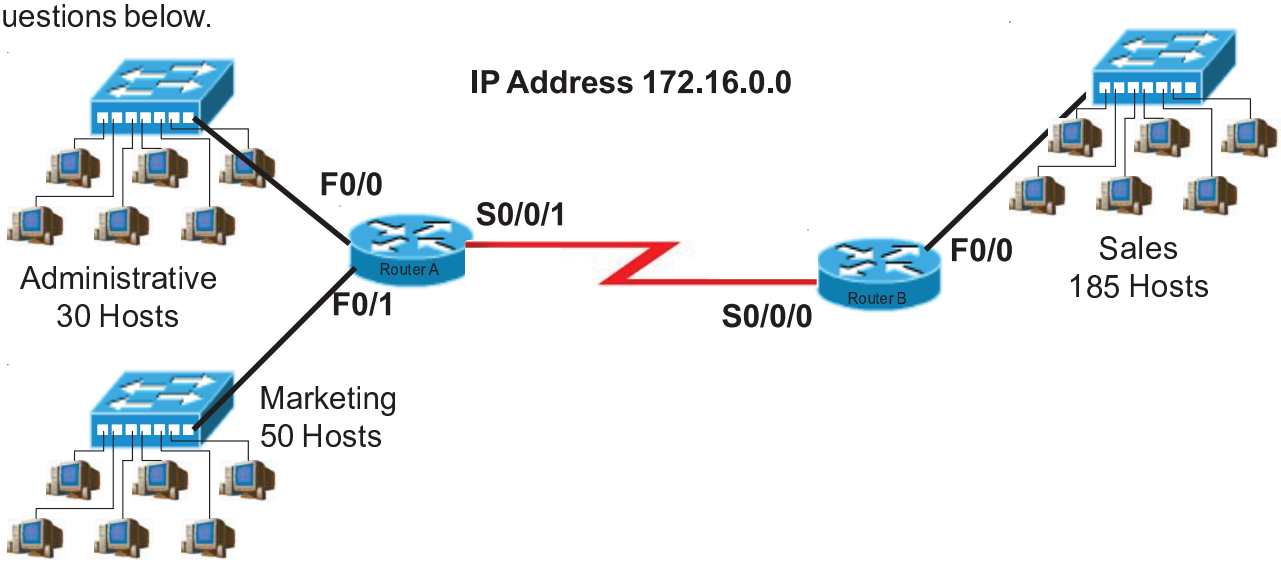
(1)	.			0	135.126.0.0 to 135.126.0.31
(2)				1	135.126.0.32 to 135.126.0.63
(3)			1	0	135.126.0.64 to 135.126.0.95
(4)			1	1	135.126.0.96 to 135.126.0.127
(5)		1	0	0	135.126.0.128 to 135.126.0.159
(6)		1	0	1	135.126.0.160 to 135.126.0.191
(7)		1	1	0	135.126.0.192 to 135.126.0.223
(8)		1	1	1	135.126.0.224 to 135.126.0.255
(9)	1 .	0	0	0	135.126.1.0 to 135.126.1.31
(10)	1 .	0	0	1	135.126.1.32 to 135.126.1.63
(11)	1 .	0	1	0	135.126.1.64 to 135.126.1.95
(12)	1 .	0	1	1	135.126.1.96 to 135.126.1.127
(13)	1 .	1	0	0	135.126.1.128 to 135.126.1.159
(14)	1 .	1	0	1	135.126.1.160 to 135.126.1.191
(15)	1 .	1	1	0	135.126.1.192 to 135.126.1.223
(16)	1 .	1	1	1	135.1261.224 to 135.126.1.255

5
x.3
1.5
(Round up to 2)

20
x.3
6

Practical Subnetting 3

Based on the information in the graphic shown, design a classfull network addressing scheme that will supply the **minimum number of hosts per subnet**, and allow enough extra subnets and hosts for 25% growth in all areas. Circle each subnet on the graphic and answer the questions below.



Address class _____

Custom subnet mask _____

Minimum number of subnets needed _____

Extra subnets required for 25% growth + _____
(Round up to the next whole number)

Total number of subnets needed = _____

Number of host addresses in the largest subnet group _____

Number of addresses needed for 25% growth in the largest subnet + _____
(Round up to the next whole number)

Total number of address needed for the largest subnet = _____

Start with the first subnet and arrange your sub-networks from the largest group to the smallest.

IP address range for Sales _____

IP address range for Marketing _____

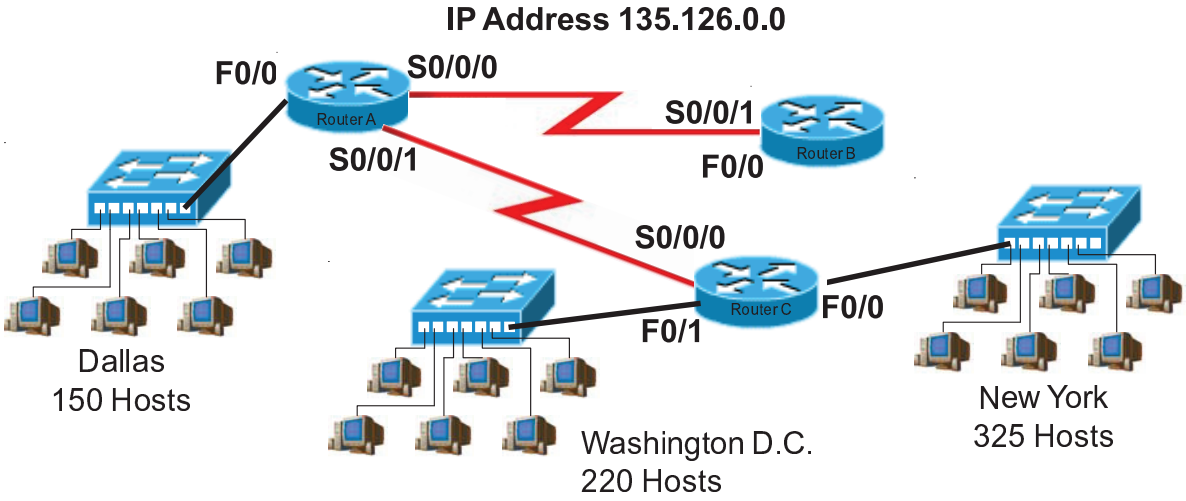
IP address range for Administrative _____

IP address range for Router A to Router B serial connection _____

Show your work for Problem 3 in the space below.

Practical Subnetting 4

Based on the information in the graphic shown, design a network addressing scheme that will supply the **minimum number of subnets**, and allow enough extra subnets and hosts for 70% growth in all areas. Circle each subnet on the graphic and answer the questions below.



Address class _____

Custom subnet mask _____

Minimum number of subnets needed _____

Extra subnets required for 70% growth + _____
(Round up to the next whole number)

Total number of subnets needed = _____

Number of host addresses in the largest subnet group _____

Number of addresses needed for 70% growth in the largest subnet + _____
(Round up to the next whole number)

Total number of address needed for the largest subnet = _____

Start with the first subnet and arrange your sub-networks from the largest group to the smallest.

IP address range for New York _____

IP address range for Washington D. C. _____

IP address range for Dallas _____

IP address range for Router A to Router B serial connection _____

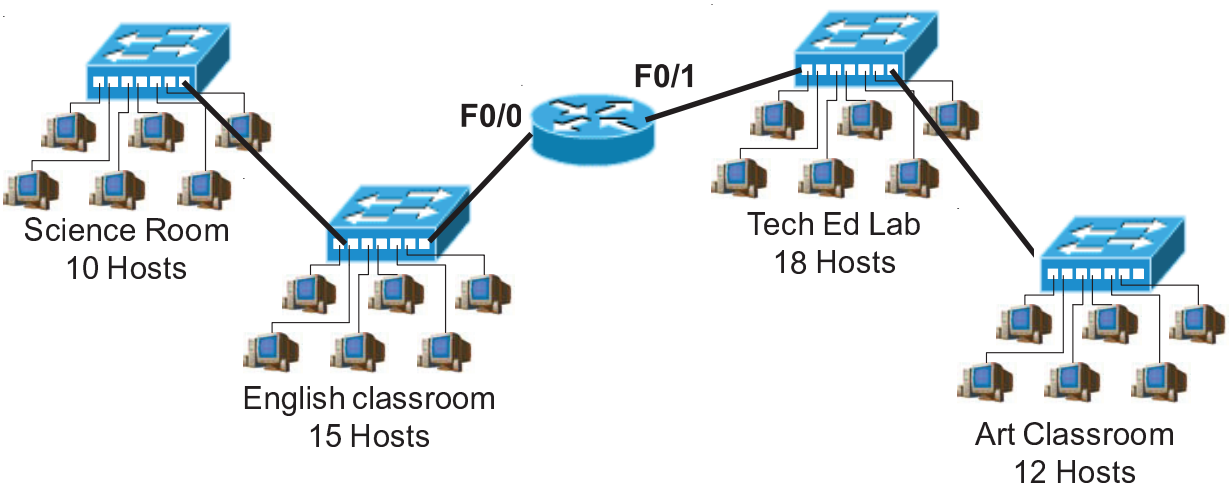
IP address range for Router A to Router C serial connection _____

Show your work for Problem 4 in the space below.

Practical Subnetting 5

Based on the information in the graphic shown, design a network addressing scheme that will supply the **minimum number of hosts per subnet**, and allow enough extra subnets and hosts for 100% growth in all areas. Circle each subnet on the graphic and answer the questions below.

IP Address 210.15.10.0



Address class _____

Custom subnet mask _____

Minimum number of subnets needed _____

Extra subnets required for 100% growth + _____
(Round up to the next whole number)

Total number of subnets needed = _____

Number of host addresses in the largest subnet group _____

Number of addresses needed for 100% growth in the largest subnet + _____
(Round up to the next whole number)

Total number of address needed for the largest subnet = _____

Start with the first subnet and arrange your sub-networks from the largest group to the smallest.

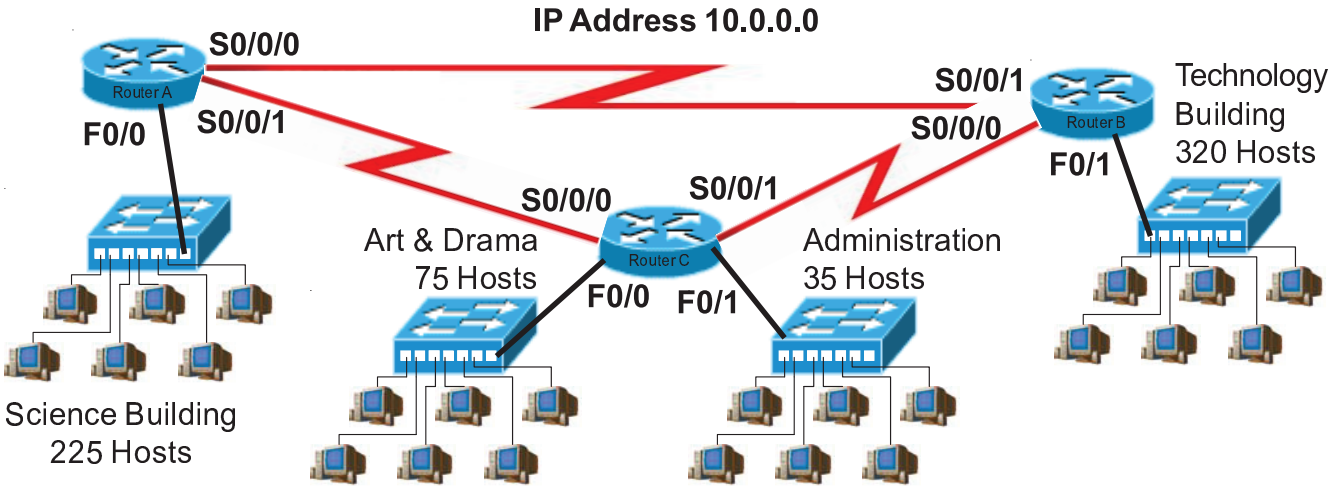
IP address range for Router F0/0 Port _____

IP address range for Router F0/1 Port _____

Show your work for Problem 5 in the space below.

Practical Subnetting 6

Based on the information in the graphic shown, design a network addressing scheme that will supply the **minimum number of subnets**, and allow enough extra subnets and hosts for 20% growth in all areas. Circle each subnet on the graphic and answer the questions below.



Address class _____

Custom subnet mask _____

Minimum number of subnets needed _____

Extra subnets required for 20% growth + _____
(Round up to the next whole number)

Total number of subnets needed = _____

Start with the first subnet and arrange your sub-networks from the largest group to the smallest.

IP address range for Technology _____

IP address range for Science _____

IP address range for Arts & Drama _____

IP Address range Administration _____

IP address range for Router A to Router B serial connection _____

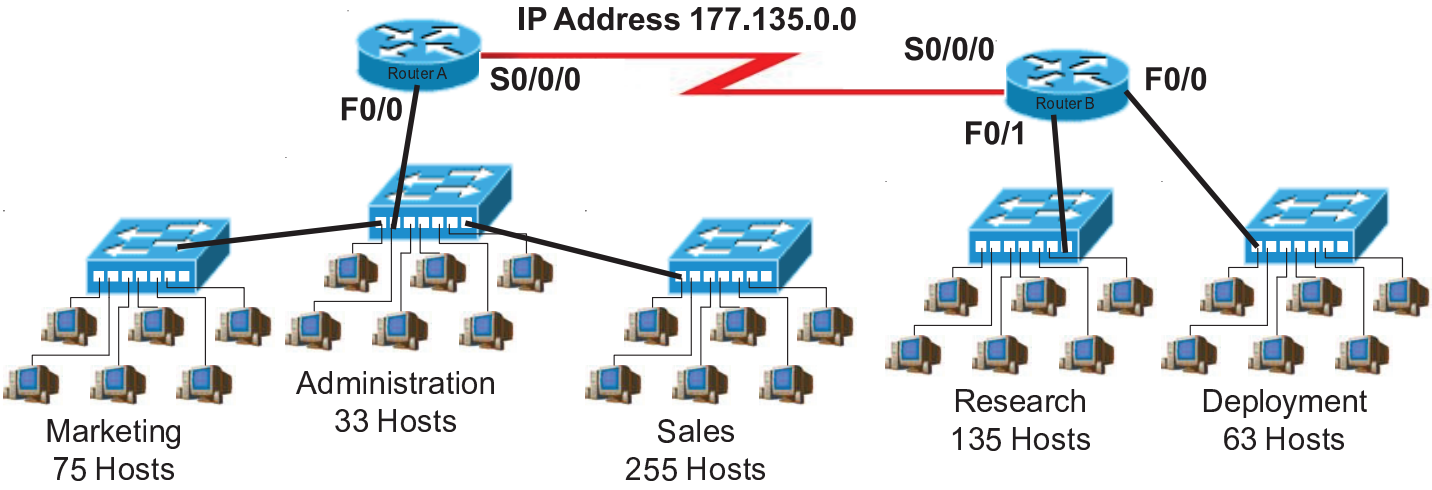
IP address range for Router A to Router C serial connection _____

IP address range for Router B to Router C serial connection _____

Show your work for Problem 6 in the space below.

Practical Subnetting 7

Based on the information in the graphic shown, design a network addressing scheme that will supply the **minimum number of hosts per subnet**, and allow enough extra subnets and hosts for 125% growth in all areas. Circle each subnet on the graphic and answer the questions below.



Address class _____

Custom subnet mask _____

Minimum number of subnets needed _____

Extra subnets required for 125% growth + _____
(Round up to the next whole number)

Total number of subnets needed = _____

Number of host addresses in the largest subnet group _____

Number of addresses needed for 125% growth in the largest subnet + _____
(Round up to the next whole number)

Total number of address needed for the largest subnet = _____

Start with the first subnet and arrange your sub-networks from the largest group to the smallest.

IP address range for Router A Port F0/0 _____

IP address range for Research _____

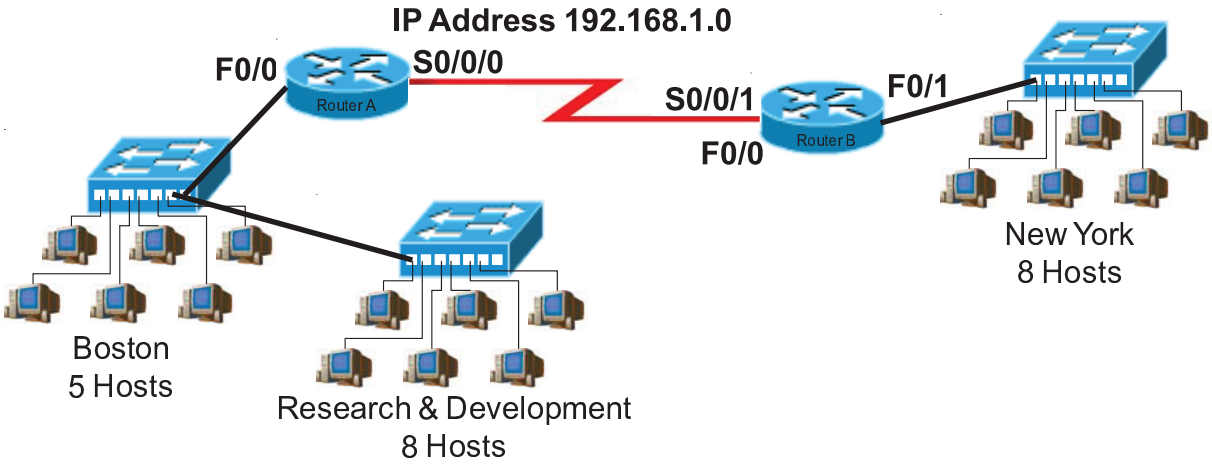
IP address range for Deployment _____

IP address range for Router A to Router B serial connection _____

Show your work for Problem 7 in the space below.

Practical Subnetting 8

Based on the information in the graphic shown, design a network addressing scheme that will supply the **minimum number subnets**, and allow enough extra subnets and hosts for 85% growth in all areas. Circle each subnet on the graphic and answer the questions below.



Address class _____

Custom subnet mask _____

Minimum number of subnets needed _____

Extra subnets required for 85% growth + _____
(Round up to the next whole number)

Total number of subnets needed = _____

Number of host addresses in the largest subnet group _____

Number of addresses needed for 85% growth in the largest subnet + _____
(Round up to the next whole number)

Total number of address needed for the largest subnet = _____

Start with the first subnet and arrange your sub-networks from the largest group to the smallest.

IP address range for Router A F0/0 _____

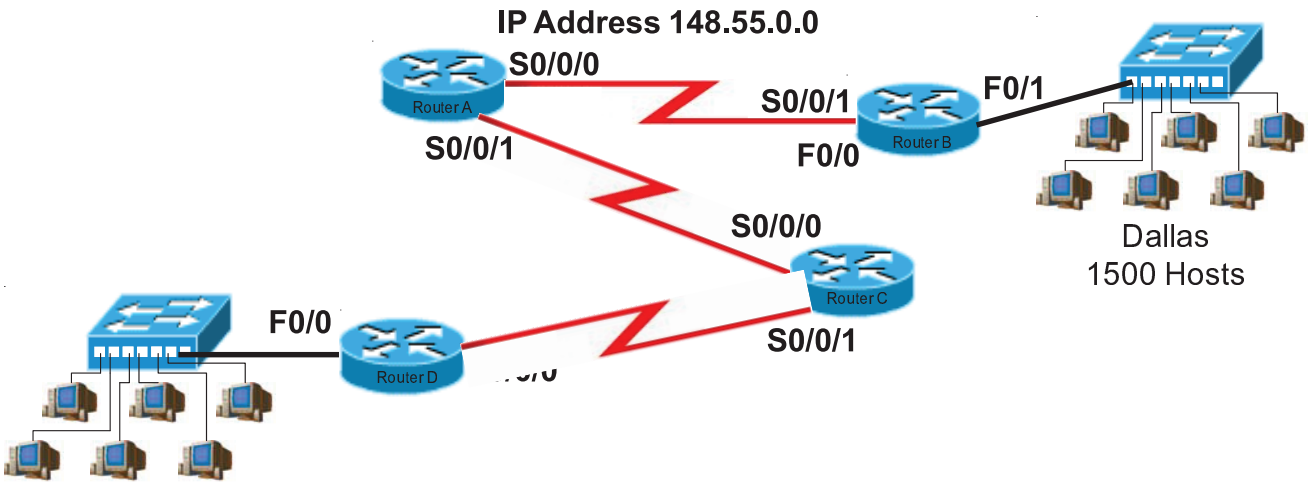
IP address range for New York _____

IP address range for Router A to Router B serial connection _____

Show your work for Problem 8 in the space below.

Practical Subnetting 9

Based on the information in the graphic shown, design a network addressing scheme that will supply the **minimum number of hosts per subnet**, and allow enough extra subnets and hosts for 15% growth in all areas. Circle each subnet on the graphic and answer the questions below.



Address class _____

Custom subnet mask _____

Minimum number of subnets needed _____

Extra subnets required for 15% growth + _____
(Round up to the next whole number)

Total number of subnets needed = _____

Number of host addresses in the largest subnet group _____

Number of addresses needed for 15% growth in the largest subnet + _____
(Round up to the next whole number)

Total number of address needed for the largest subnet = _____

Start with the first subnet and arrange your sub-networks from the largest group to the smallest.

IP address range for Ft. Worth _____

IP address range for Dallas _____

IP address range for Router A to Router B serial connection _____

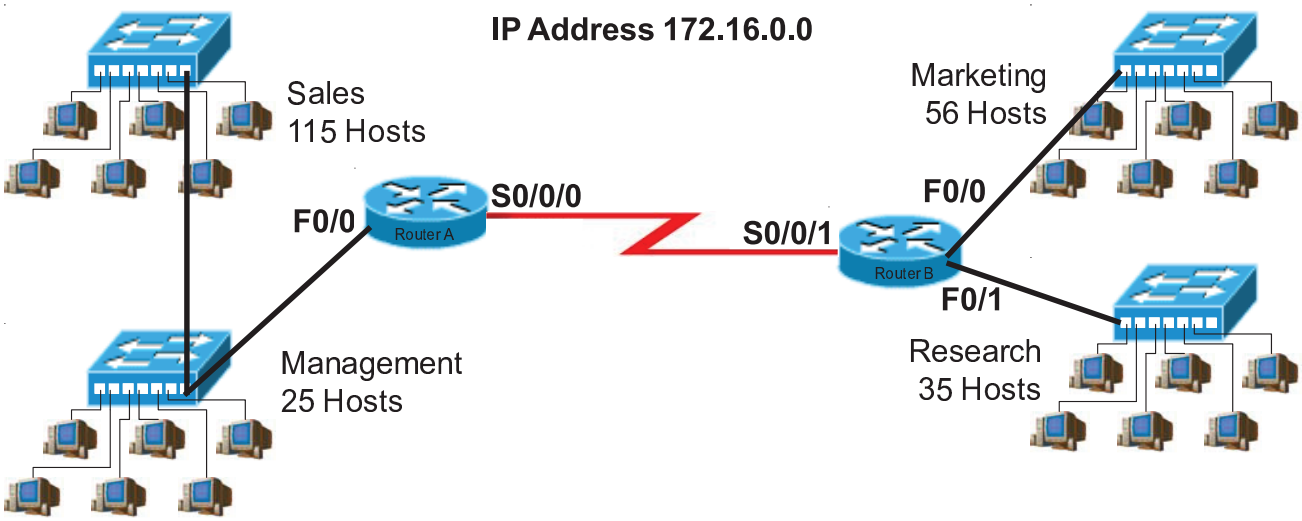
IP address range for Router A to Router C serial connection _____

IP address range for Router C to Router D serial connection _____

Show your work for Problem 9 in the space below.

Practical Subnetting 10

Based on the information in the graphic shown, design a network addressing scheme that will supply the **minimum number of subnets**, and allow enough extra subnets and hosts for 110% growth in all areas. Circle each subnet on the graphic and answer the questions below.



Address class _____

Custom subnet mask _____

Minimum number of subnets needed _____

Extra subnets required for 110% growth + _____
(Round up to the next whole number)

Total number of subnets needed = _____

Number of host addresses in the largest subnet group _____

Number of addresses needed for 110% growth in the largest subnet + _____
(Round up to the next whole number)

Total number of address needed for the largest subnet = _____

Start with the first subnet and arrange your sub-networks from the largest group to the smallest.

IP address range for Sales/Managemnt _____

IP address range for Marketing _____

IP address range for Research _____

IP address range for Router A to Router B serial connection _____

Show your work for Problem 10 in the space below.