# Custom Subnet Masks

**Problem 7**

Number of needed subnets **2000**

Number of needed usable hosts **15**

Network Address **178.100.0.0**

Address class \_\_\_B\_\_\_\_\_\_\_

Default subnet mask \_\_\_\_255.255.0.0\_\_\_\_\_\_\_\_\_\_

Custom subnet mask \_\_\_255.255.255.224\_\_\_

Total number of subnets \_\_\_\_\_\_\_2048\_\_\_\_\_\_\_

Total number of host addresses \_\_\_\_\_\_\_\_\_\_64\_\_\_\_\_\_\_

Number of usable addresses \_\_\_\_\_\_\_\_62\_\_\_\_\_\_\_\_\_

Number of bits borrowed \_\_\_\_\_\_\_11\_\_\_\_\_\_\_\_\_\_\_

## Show your work for Problem 7 in the space below.

*Number of*

*Hosts -*

*Number of*

*. 256 128 64 32 16 8 4 2*

*Subnets - 2 4 8 16 32 64 128 256.*

*Binary values -*

*128 64 32 16 8 4 2 1* ***.***

*128 64 32 16 8 4 2 1*

### 178 . 100 . 0 0 0 0 0 0 0 0 . 0 0 0 0 0 0 0 0

18

# Custom Subnet Masks

**Problem 15**

Number of needed usable hosts **50**

Network Address **172.59.0.0**

Address class \_\_B\_\_\_\_\_

Default subnet mask \_\_\_\_\_255.255.0.0\_\_\_\_\_\_\_\_\_

Custom subnet mask \_\_\_\_\_255.255.255.224\_\_\_\_\_\_

Total number of subnets \_\_\_\_\_\_2048\_\_\_\_\_

Total number of host addresses \_\_\_\_\_\_\_64\_\_\_\_\_\_\_\_\_

Number of usable addresses \_\_\_\_\_\_\_62\_\_\_\_\_\_\_\_\_\_

Number of bits borrowed \_\_\_\_\_\_\_11\_\_\_\_\_\_\_\_\_\_\_\_

## Show your work for Problem 15 in the space below.

26

# Subnetting

**Problem 11**

Number of needed usable hosts **8,000**

Network Address **135.70.0.0**

Address class \_\_\_B\_\_\_\_\_

Default subnet mask \_\_\_255.255.0.0\_\_\_\_\_\_\_\_\_

Custom subnet mask \_\_\_\_\_255.255.224.0\_\_\_\_\_

Total number of subnets \_\_\_\_\_16\_\_\_\_\_\_\_

Total number of host addresses \_\_\_8192\_\_\_\_\_\_\_\_\_\_\_

Number of usable addresses \_\_\_\_\_8190\_\_\_\_\_\_\_\_\_\_

Number of bits borrowed \_\_\_\_\_3\_\_\_\_\_\_\_\_\_\_\_\_

What is the 6th

subnet range? 137.50.160.0 – 137.50.191.255

What is the subnet number for the 7th subnet?

What is the subnet broadcast address for the 3rd subnet?

\_\_\_137.50.192.0\_\_\_\_\_\_\_\_\_\_

\_\_137.50.95.255\_\_\_\_\_\_\_\_\_\_\_\_\_

What are the assignable addresses for the 5th

subnet? \_\_\_137.50.128.1 – 137.50.159.254\_\_

48

## Show your work for Problem 11 in the space below.

49

# Subnetting

**Problem 12**

Number of needed usable hosts **45**

Network Address **198.125.50.0**

Address class \_\_\_\_C\_\_\_\_\_\_

Default subnet mask \_\_\_\_\_\_\_255.255.255.0\_\_\_\_\_\_

Custom subnet mask \_\_\_\_\_\_255.255.255.192\_\_

Total number of subnets \_\_\_\_\_4\_\_\_\_\_

Total number of host addresses \_\_\_\_\_\_64\_\_\_\_\_\_

Number of usable addresses \_\_\_\_\_\_62\_\_\_\_\_\_\_\_\_\_

Number of bits borrowed \_\_\_\_\_\_2\_\_\_\_\_\_\_\_\_\_

What is the 2nd

subnet range? 198.125.50.64 - 198.125.50.127

What is the subnet number for the 2nd subnet?

What is the subnet broadcast address for

the 4th subnet?

\_\_\_\_\_\_\_\_\_198.125.50.64\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_198.125.50.255\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What are the assignable addresses for the 3rd

subnet? \_\_\_\_\_\_\_\_198.125.50.129 - 198.125.50.190\_\_\_\_\_\_

50

## Show your work for Problem 12 in the space below.

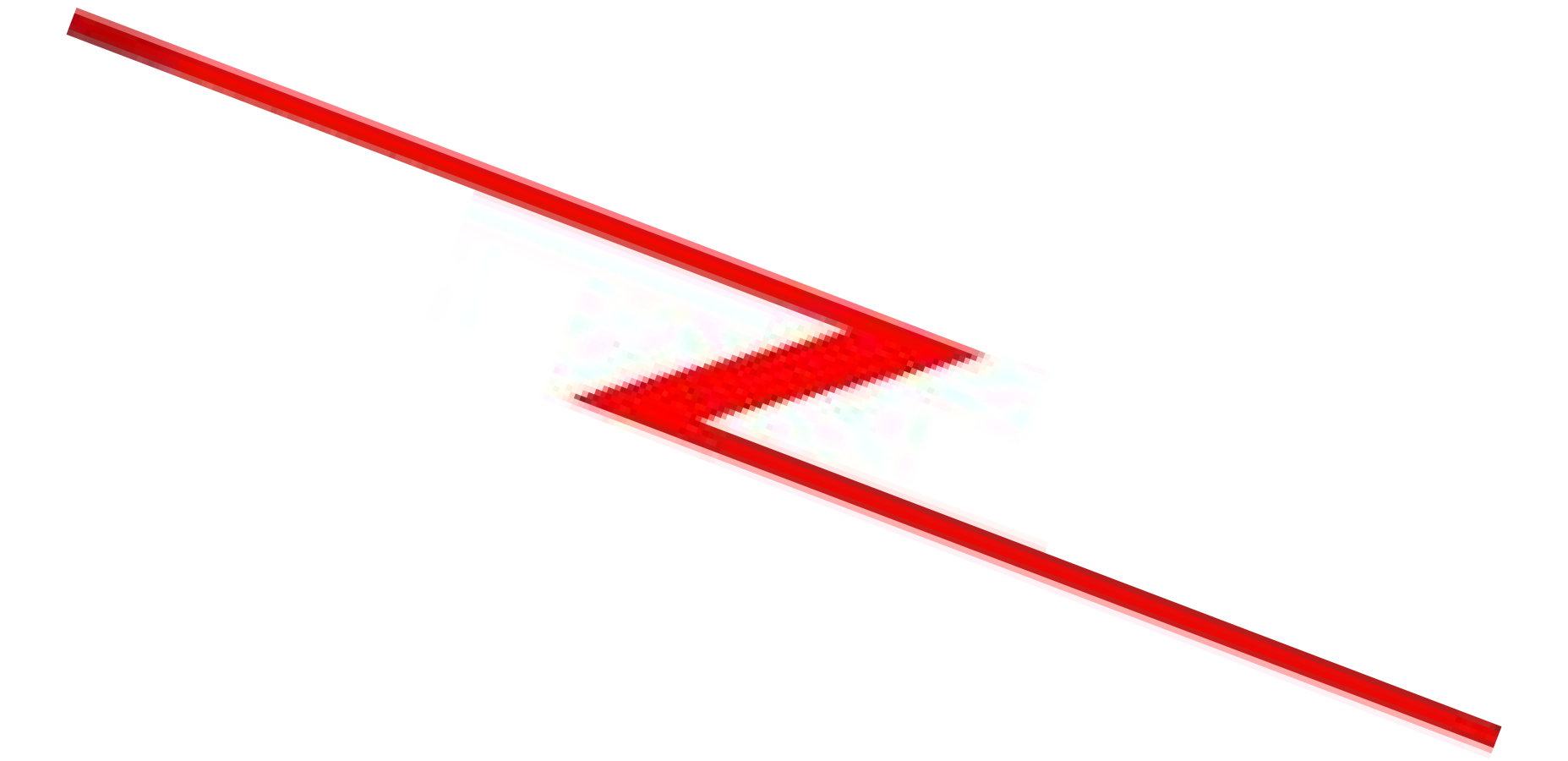
51

# 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.

**IP Address 135.126.0.0**

**F0/0 S0/0/0**



Router A

**S0/0/1**

**S0/0/1**

**F0/0**

**S0/0/0**

Router B

Dallas 150 Hosts

**F0/1**

Router C **F0/0**

New York

Washington D.C. 220 Hosts

325 Hosts

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

\_\_\_\_B\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_255.255.240.0\_\_\_\_\_\_\_\_\_\_

\_\_\_5\_\_\_\_\_

\_+\_\_4\_\_\_\_\_

\_=\_\_\_9\_\_\_\_\_

\_\_\_325\_\_\_\_\_

\_+\_\_228\_\_\_

\_=\_\_\_553\_\_\_\_\_

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

\_\_135.126.0.0 – 135.126.15.255\_\_\_

\_\_\_135.126.16.0 – 135.126.31.255\_

\_135.126.32.0 – 135.126.37.255\_\_

\_135.126.48.0 - 135.126.63.255\_

\_135.126.64.0 - 135.126.79.255\_\_

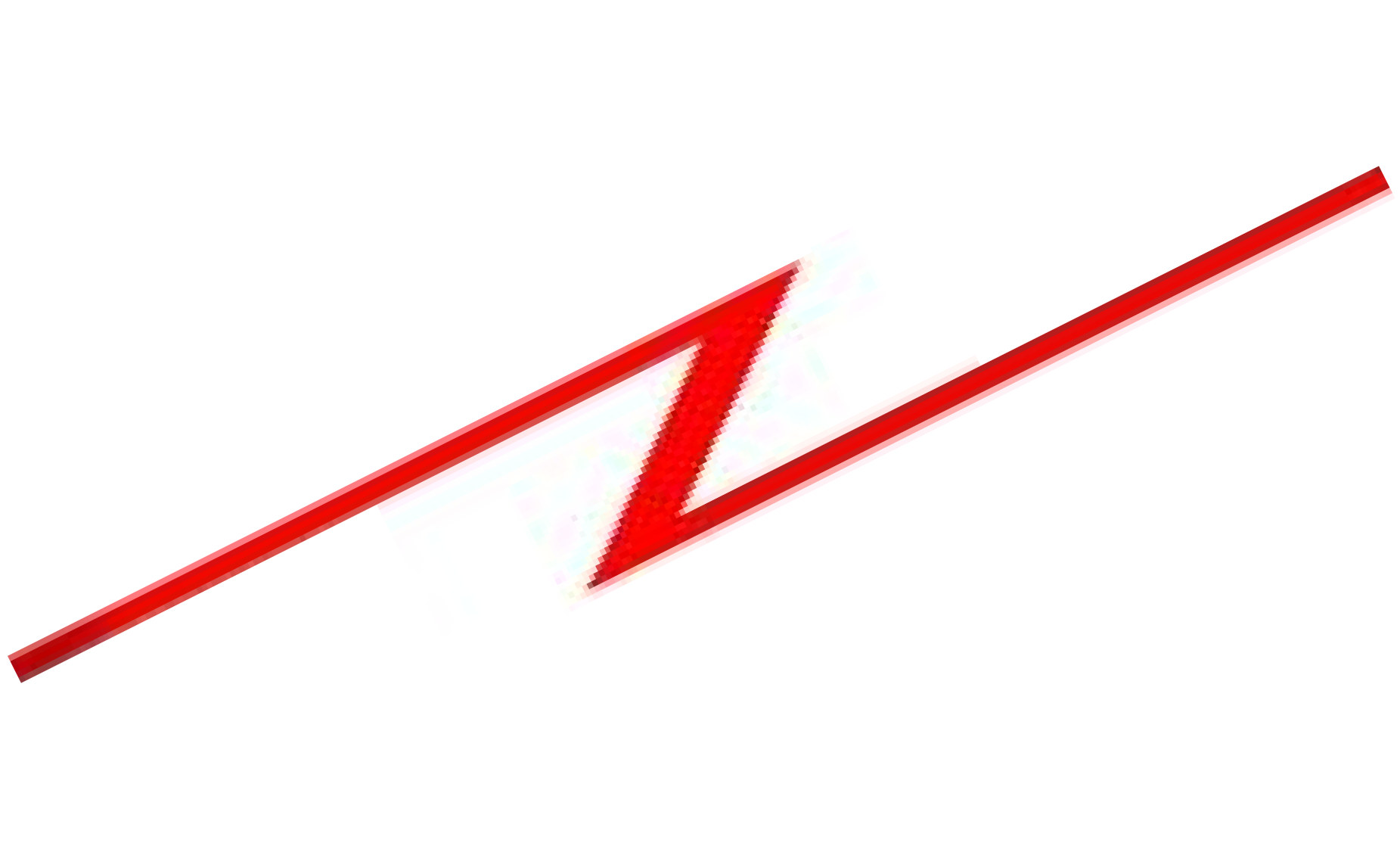
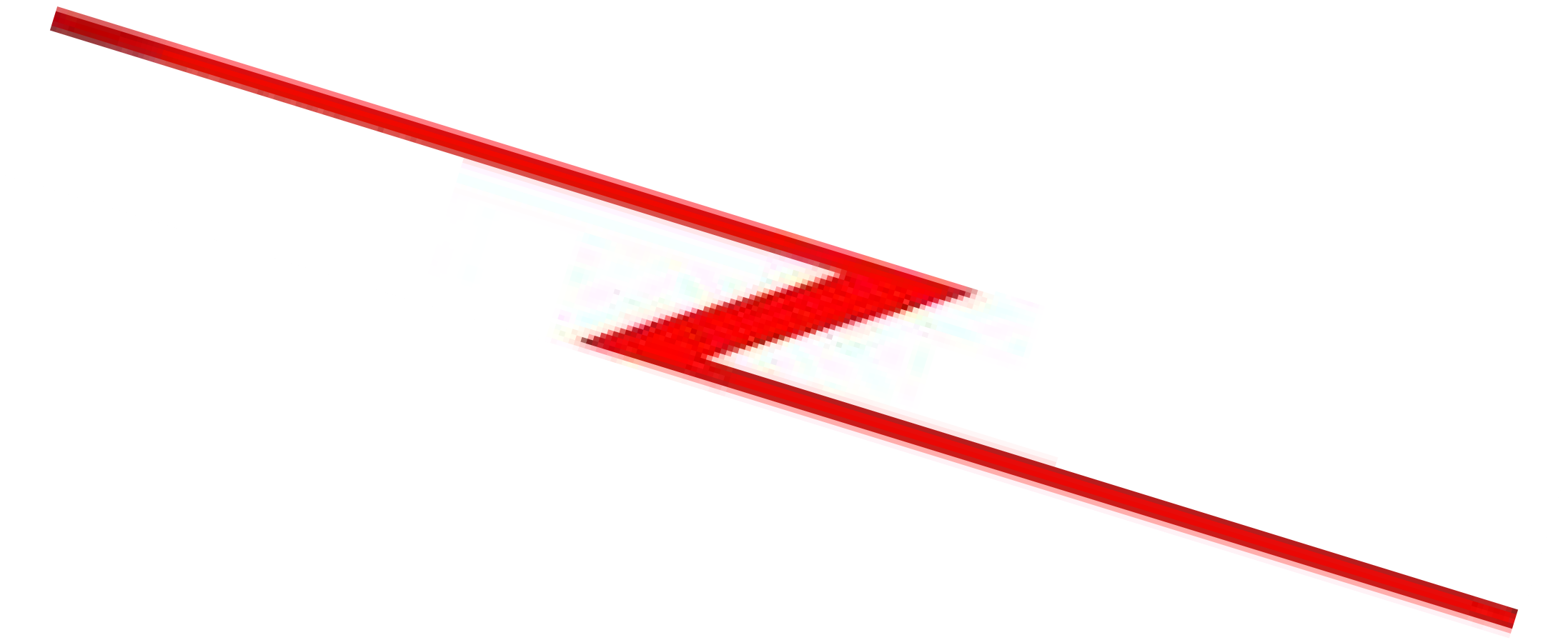
64

## Show your work for Problem 4 in the space below.

65

# 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.



**S0/0/0**

**IP Address 10.0.0.0**

Router A

**F0/0**

**S0/0/1**

**S0/0/1**

**S0/0/0**

Technology Building 320 Hosts

**S0/0/0**

Art & Drama

**S0/0/1**

Router B

**F0/1**

75 Hosts

Router C

**F0/0**

**F0/1**

Administration 35 Hosts

Science Building 225 Hosts

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

\_\_A\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_250.240.0.0\_\_\_\_\_

\_\_\_\_7\_\_\_\_\_

\_+\_\_\_2\_\_\_\_\_

\_=\_\_\_9\_\_\_\_\_

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

\_\_10.0.0.0 - 10.15.255.255\_\_\_\_\_

\_\_10.16.0.0 – 10.31.255.255\_\_\_\_

\_\_\_10.32.0.0 – 10.47.255.255\_\_\_\_

\_\_\_10.48.0.0 – 10.63.255.255\_\_\_\_

\_10.64.0.0 – 10.79.255.255\_\_

\_\_10.80.0.0 – 10.95.255.255\_\_\_

\_\_\_10.96.0.0 – 10.127.255.255\_