VLSM

with

Class A and B Addresses

Problem 36
Part 1 of 3

The school system you are working for is using the private address of 172.32.0.0 to subnet the entire district. Use the **Class B** address chart to break down the sub-subnetwork addresses for the different schools and offices.

At this stage of the problem you are creating sub-subnets with the third octet of the IP address. Remember which octet of the IP address you are working in.

School System Address 172.32.**0**.0

Customer Name	Number of Addresses	Address Range (Include subnet & broadcast addresses)		CIDR
North High	2,400	172.32.0.0 a 172.32.15.255	255.255.240.0	/20
South High	2,000	172.32.16.0 a 172.32.23.255	255.255.248.0	/21
North Middle	1,200	172.32.24.0 a 172.32.31.255	255.255.248.0	/21
South Middle	1,000	172.32.32.0 a 172.32.35.255	255.255.248.0	/22
Central Elem.	550	172.32.36.0 a 172.32.39.255		/22
Southern Elem.	475	172.32.40.0 a 172.32.41.255		/23
Eastern Elem.	450	172.32.42.0 a 172.32.43.255		/23
Central Office	400	172.32.44.0 a 172.32.45.255		/23
Western Elem.	300	172.32.46.0 a 172.32.47.255		/23

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Problem 36
Part 2 of 3

Eastern Elementary has been given 512 hosts, with the address range of 172.32.42.0 / 21 (255.255.248.0).

Based on the information below supply the required address ranges and subnet masks for each school area. Use the **Class C** address chart to break down the sub-subnetworks.

Hint:

Another way to look at this problem is to see that with the third octet range of 42 to 43 you have access to 2 groups of 255 addresses (172.32.42.0 and 172.32.43.0). Think in terms of having two Class C VLSM charts.

Eastern Elementary School
Address Range 172.32.**42.0** to 172.32.**43.255**

Customer Name	Number of Addresses	Address Range (Include subnet & broadcast addresses)	CIDR
Students	250	172.32.42.0 172.32.42.255	/24
Printers	45	172.32.43.0 172.32.43.63	/26
Staff	40	172.32.43.64 172.32.42.127	/26
Network Devices	25	172.32.43.128 172.32.42.159	/27
Administrative	12	172.32.43.160 172.32.42.175	/28

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Problem 36

Part 3 of 3

South High in part 1 of this problem has been given 2,048 hosts, with the address range of 172.32.16.0 / 21 (255.255.248.0).

Based on the information below supply the required address ranges and subnet masks for each school area. Use both the **Class B** and **Class C** address charts to break down the sub-subnetwork addresses for the different areas of the network.

Hint:

With this problem you are creating sub-subnets with both the third and fourth octets of the IP address. You may need to use the Class B VLSM chart for the *Students* addressing information. All the other addresses will be using the Class C VLSM chart. Another way to look at this problem is to see that with the third octect range of 16 to 23 you have access to 8 groups of 255 addresses or eight Class C VLSM charts.

South High School

Address Range 172.32.**16.0** to 172.32.**23.255**

Customer Name	Number of Addresses	Address Range (Include subnet & broadcast addresses)	CIDR
Students	1,000	172.32.16.0 a 172.32.19.255	/22
Network Devices	250	172.32.20.0 a 172.32.20.255	/24
Printers	200	172.32.21.0 a 172.32.21.255	/24
Staff	150	172.32.22.0 a 172.32.22.255	/24
Administrative	50	172.32.23.0 a 172.32.22.63	/26