VLSM

1.

First, let's find the subnet mask for each subnet based on the number of required hosts:

Subnet A: 60 hosts

- Number of host bits required: 6

- Bitwise representation: 0011 1111

- Decimal representation: 63 > 60, hence this is the usable amount of bits

- Subnet mask for A: 32 – 6 = 26

Subnet B: 30 hosts

- Number of host bits required: 5

- Bitwise representation: 0001 1111

- Decimal representation: 31 > 30, hence this is the usable amount of bits

- Subnet mask for A: 32 – 5 = 27

Subnet C: 12 hosts

- Number of host bits required: 4

- Bitwise representation: 0000 1111

- Decimal representation: 15 > 12, hence this is the usable amount of bits

- Subnet mask for A: 32 – 4 = 28

Subnet D: 8 hosts

- Number of host bits required: 4

- Bitwise representation: 0000 1111

- Decimal representation: 15 > 8, hence this is the usable amount of bits

- Subnet mask for A: 32 – 4 = 28

Now, we can start subnetting:

Starting with the network address 192.168.10.0/24:

Subnet A:

- Subnet mask: /26

- Number of hosts: 2^6 - 2 = 62 (usable hosts)

- Subnet address range: 192.168.10.0 - 192.168.10.63

Subnet B:

- Subnet mask: /27

- Number of hosts: 2^5 - 2 = 30 (usable hosts)

- Subnet address range: 192.168.10.64 - 192.168.10.95

Subnet C:

- Subnet mask: /28

- Number of hosts: 2^4 - 2 = 14 (usable hosts)

- Subnet address range: 192.168.10.96 - 192.168.10.111

Subnet D:

- Subnet mask: /28

- Number of hosts: 2^4 - 2 = 14 (usable hosts)

- Subnet address range: 192.168.10.112 - 192.168.10.127