Subnet Calculations:

**Assignment:**

**1 - 30.10.40.0/17 create 8 subnets. 4 each in private and public**

* 32-17= 2^15, which will have 32768 IPS
* We need to create 8 subnets, so each subnet will have 4096 IPs (2^12)

**Network ID: 30.10.40.0 Broadcast ID: 30.10.167.254**

* **Public subnet1**
  + IPv4 subnet CIDR block
    - 30.10.40.0/20
  + IP Range From
    - 30.10.40.1
  + IP Range To
    - 30.10.55.254
* Public subnet2
  + IPv4 subnet CIDR block
    - 30.10.56.0/20
  + IP Range From
    - 30.10.56.1
  + IP Range To
    - 30.10.71.254
* Public subnet3
  + IPv4 subnet CIDR block
    - 30.10.72.0/20
  + IP Range From
    - 30.10.72.1
  + IP Range To
    - 30.10.87.254
* Public subnet4
  + IPv4 subnet CIDR block
    - 30.10.88.0/20
  + IP Range From
    - 30.10.88.1
  + IP Range To
    - 30.10.103.254
* Private subnet1
  + IPv4 subnet CIDR block
    - 30.10.104.0/20
  + IP Range From
    - 30.10.104.1
  + IP Range To
    - 30.10.119.254
* Private subnet2
  + IPv4 subnet CIDR block
    - 30.10.120.0/20
  + IP Range From
    - 30.10.120.1
  + IP Range To
    - 30.10.135.254
* Private subnet3
  + IPv4 subnet CIDR block
    - 30.10.136.0/20
  + IP Range From
    - 30.10.136.0
  + IP Range To
    - 30.10.151.254
* Private subnet4
  + IPv4 subnet CIDR block
    - 30.10.152.0/20
  + IP Range From
    - 30.10.152.1
  + IP Range To
    - 30.10.167.254

**2 - 75.0.10.0/24 create 6 subnets. 3 each in private and public**

* 32-24=2^8, which will have 256 Ips
* We need to create 6 subnets (3 subnets will have 64 Ips,1 subnet will have 32 Ips, 2 subnets will have16 ips )

**Network ID: 75.0.10.0 Broadcast ID: 75.0.10.255**

* Public subnet1
  + CIDR Block 75.0.10.0/26
  + Range
    - 75.0.10.0 - 75.0.10.63
* Public subnet2
  + CIDR Block 75.0.10.64/26
  + Range
    - 75.0.10.64 - 75.0.10.127
* Public subnet3
  + CIDR Block 75.0.10.128/26
  + Range
    - 75.0.10.128 - 75.0.10.191
* Private subnet1
  + CIDR Block 75.0.10.192/27
  + Range
    - 75.0.10.192 - 75.0.10.223
* Private subnet2
  + CIDR Block 75.0.10.224/28
  + Range
    - 75.0.10.224 - 75.0.10.239
* Private subnet3
  + CIDR Block 75.0.10.240/28
  + Range
    - 75.0.10.240 - 75.0.10.255

**3 - 192.10.0.0/20 create 10 subnets. 5 each in private and public**

* 32-20=2^12, which will have 4096 Ips
* We need to create 10 subnets. (6 subnets will have 512 IPS and 4 subnets will have 256 IPs)

**Network ID: 192.10.0.0 Broadcast ID: 192.10.15.255**

* Public subnet1
  + CIDR Block 192.10.0.0/23
  + Range
    - 192.10.0.0 – 192.10.1.255
* Public subnet2
  + CIDR Block 192.10.2.0/23
  + Range
    - 192.10.2.0 – 192.10.3.255
* Public subnet3
  + CIDR Block 192.10.4.0/23
  + Range
    - 192.10.4.0 – 192.10.5.255
* Public subnet4
  + CIDR Block 192.10.6.0/23
  + Range
    - 192.10.6.0 – 192.10.7.255
* Public subnet5
  + CIDR Block 192.10.8.0/23
  + Range
    - 192.10.8.0 – 192.10.9.255
* Private subnet1
  + CIDR Block 192.10.10.0/23
  + Range
    - 192.10.10.0 – 192.10.11.255
* Private subnet2
  + CIDR Block 192.10.12.0/24
  + Range
    - 192.10.12.0 – 192.10.12.255
* Private subnet3
  + CIDR Block 192.10.13.0/24
  + Range
    - 192.10.13.0 – 192.10.13.255
* Private subnet4
  + CIDR Block 192.10.14.0/24
  + Range
    - 192.10.14.0 – 192.10.14.255
* Private subnet5
  + CIDR Block 192.10.15.0/24
  + Range
    - 192.10.15.0 – 192.10.15.255