1. Question

1.1. 120.156.21.95/12 – Class A

172.18.54.141/19 – Class B

192.167.43.58/27 – Class C

1.2. 120.156.21.95/12 – public

172.18.54.141/19 – private

192.167.43.58/27 – public

1.3.

	1st octet	2nd octet	3rd octet	4th octet
Host Address (decimal)	120	156	21	95
Mask (decimal)	255	240	0	0
Network Address (decimal)	120	144	0	0
First available host address (decimal)	120	144	0	1
Last available host address (decimal)	120	159	255	254
Broadcast address (decimal)	120	159	255	255
Host Address (binary)	01111000	10011100	00010101	01011111
Mask (binary)	11111111	11110000	00000000	00000000
Network Address (binary)	01111000	10010000	00000000	00000000
First available host address (binary)	01111000	10010000	00000000	00000001
Last available host address (binary)	01111000	10011111	11111111	11111110
Broadcast address (binary)	01111000	10011111	11111111	11111111
Available number of addresses for hosts	32-12=20, $2^{\wedge 20}$ - 2 = 1048574			

	1st octet	2nd octet	3rd octet	4th octet
Host Address (decimal)	172	18	54	141
Mask (decimal)	255	255	224	0
Network Address (decimal)	172	18	32	0
First available host address (decimal)	172	18	32	1
Last available host address (decimal)	172	18	63	254
Broadcast address (decimal)	172	18	63	255
Host Address (binary)	10101100	00010010	00110110	10001101
Mask (binary)	11111111	11111111	11100000	00000000
Network Address (binary)	10101100	00010010	00100000	00000000
First available host address (binary)	10101100	00010010	00100000	00000001
Last available host address (binary)	10101100	00010010	00111111	11111110
Broadcast address (binary)	10101100	00010010	00111111	11111111
Available number of addresses for hosts	32-19=13, 2^13 - 2 = 8190			

	1st octet	2nd octet	3rd octet	4th octet
Host Address (decimal)	192	167	43	58
Mask (decimal)	255	255	255	224
Network Address (decimal)	192	167	43	32
First available host address (decimal)	192	167	43	33
Last available host address (decimal)	192	167	43	63
Broadcast address (decimal)	192	167	43	64
Host Address (binary)	11000000	10100111	00101011	00111010
Mask (binary)	11111111	11111111	11111111	11100000
Network Address (binary)	11000000	10100111	00101011	00100000
First available host address (binary)	11000000	10100111	00101011	00100001
Last available host address (binary)	11000000	10100111	00101011	00111111
Broadcast address (binary)	11000000	10100111	00101011	01000000
Available number of addresses for hosts	32-27=5, 2^5 - 2 = 30			

2. Question

2.1. FLSM

	Hosts	Subnet/mask	Unused addresses	% of unused addresses
Net 1	120	172.16.0.0/25	6	5%
Net 2	35	172.16.0.128/25	91	72%
Net 3	50	172.16.1.0/25	76	60%
Net 4	80	172.16.1.128/25	46	37%
Net 5	75	172.16.2.0/25	51	40%
Net 6	40	172.16.2.128/25	86	68%
Net 7	60	172.16.3.0/25	66	52%
Net 8	25	172.16.3.128/25	101	80%
Net 9	2	172.16.4.0/25	124	98%
Net 10	2	172.16.4.128/25	124	98%
Net 11	2	172.16.5.0/25	124	98%
Unused	0	172.16.5.128/25	126	100%

2.3 VLSM

Network	Hosts	Subnet/mask	Unused addresses	% of unused addresses
Net 1	120	172.16.0.0/25	6	5%
Net 4	80	172.16.0.128/25	46	37%
Net 5	75	172.16.1.0/25	51	40%
Net 7	60	172.16.1.128/26	2	3%
Net 3	50	172.16.1.192/26	12	19%
Net 6	40	172.16.2.0/26	22	35%
Net 2	35	172.16.2.64/26	27	44%
Net 8	25	172.16.2.128/27	5	17%
Net 9	2	172.16.2.160/30	0	0%
Net 10	2	172.16.2.164/30	0	0%
Net 11	2	172.16.2.168/30	0	0%
Unused	0			