

IP Addressing and Subnetting Exercises

1. Fill in the table below:

Prefix	Decimal Mask	Total Hosts	Usable Hosts
/24			
	255.255.255.252		
		1,024	
			62
		8	
	255.255.0.0		
/21			
			30
/25			
	255.255.224.0		

2. Compare the two IP Addresses using the given mask. Are they in the same subnet?

First IP Address	Second IP Address	Mask	Same Subnet?
192.168.0.5	192.168.0.100	255.255.255.192	
192.168.0.5	192.168.0.100	/25	
172.16.35.7	172.16.34.120	255.255.254.0	
10.5.20.217	10.6.20.200	255.255.224.0	
192.168.0.255	192.168.1.0	/23	
175.25.197.13	175.25.190.49	255.255.224.0	
175.25.197.13	175.25.190.49	/17	
115.11.58.13	115.11.58.11	255.255.255.252	
137.85.67.111	137.85.76.94	/18	
206.195.18.35	206.195.18.22	/28	

3. Determine the subnet and broadcast addresses of the subnet that contains the given IP address and mask.

IP Address	Mask	Subnet Address	Subnet Broadcast
192.168.1.45	255.255.255.0		
192.168.1.45	255.255.0.0		
192.168.1.45	/27		
10.0.11.12	255.255.254.0		
10.0.12.12	255.255.254.0		
10.0.13.12	255.255.254.0		
172.16.35.22	/30		
222.11.33.115	255.255.255.128		
126.84.76.211	<default mask>		
126.84.76.211	0.0.0.0		

4. You've been given a block of IP addresses as defined by the mask in the first column. You decide to subdivide that block into multiple smaller blocks as defined by the mask in the second column. Fill in the table with the missing information. Assume you can use all subnets defined by RFC 1878.

Mask Given	Mask Giving Out	# of Subnets	Usable Hosts Each
/24	/27		
/24	255.255.255.252		
/15		1,024	
255.255.240.0			62
		8	126
	255.255.0.0	256	
/21		64	
255.255.254.0			30
/25	255.255.255.248		
	255.255.252.0	2	