

## **Activity – Determine the Network Address**

### ***Exercise - 1***

Host Address	192	168	238	249
Subnet Mask	255	255	255	224
Host Address in binary	11000000	10101000	11101110	11111001
Subnet Mask in binary	11111111	11111111	11111111	11100000
Network Address in binary				
Network Address in decimal				

### ***Exercise - 2***

Host Address	192	168	131	94
Subnet Mask	255	255	255	192
Host Address in binary	11000000	10101000	10000011	01011110
Subnet Mask in binary	11111111	11111111	11111111	11000000
Network Address in binary				
Network Address in decimal				

### ***Exercise - 3***

Host Address	192	168	35	236
Subnet Mask	255	255	255	128
Host Address in binary	11000000	10101000	00100011	11101100
Subnet Mask in binary	11111111	11111111	11111111	10000000
Network Address in binary				
Network Address in decimal				

## **Activity – Calculate the number of valid hosts**

### ***Exercise - 1***

Network Address	192	168	214	24
Subnet Mask	255	255	255	252
Network Address in binary	11000000	10101000	11010110	00011000
Subnet Mask in binary	11111111	11111111	11111111	11111100
Number of Valid Hosts				

### ***Exercise - 2***

Network Address	192	168	83	105
Subnet Mask	255	255	255	240
Network Address in binary	11000000	10101000	01010011	01101001
Subnet Mask in binary	11111111	11111111	11111111	11110000
Number of Valid Hosts				

### ***Exercise - 3***

Network Address	192	168	31	95
Subnet Mask	255	255	255	224
Network Address in binary	11000000	10101000	00011111	01011111
Subnet Mask in binary	11111111	11111111	11111111	11100000
Number of Valid Hosts				

## Activity – Determining the Valid Addresses for Hosts

### **Exercise - 1**

Network Address in decimal	192	168	64	128
Subnet Mask in decimal	255	255	255	128
Network address in binary	11000000	10101000	01000000	10000000
Subnet Mask in binary	11111111	11111111	11111111	10000000
First Usable Host IP Address in decimal				
Last Usable Host IP Address in decimal				
Broadcast Address in decimal				
Next Network Address in decimal				

### **Exercise - 2**

Network Address in decimal	192	168	17	224
Subnet Mask in decimal	255	255	255	224
Network address in binary	11000000	10101000	00010001	11100000
Subnet Mask in binary	11111111	11111111	11111111	11100000
First Usable Host IP Address in decimal				
Last Usable Host IP Address in decimal				
Broadcast Address in decimal				
Next Network Address in decimal				

### **Exercise - 3**

Network Address in decimal	192	168	13	16
Subnet Mask in decimal	255	255	255	248
Network address in binary	11000000	10101000	00001101	00010000
Subnet Mask in binary	11111111	11111111	11111111	11111000
First Usable Host IP Address in decimal				
Last Usable Host IP Address in decimal				
Broadcast Address in decimal				
Next Network Address in decimal				

#### Exercise - 4

Network Address in decimal	192	168	45	196
Subnet Mask in decimal	255	255	255	252
Network address in binary	11000000	10101000	00101101	11000100
Subnet Mask in binary	11111111	11111111	11111111	11111100
First Usable Host IP Address in decimal				
Last Usable Host IP Address in decimal				
Broadcast Address in decimal				
Next Network Address in decimal				

#### Exercise - 5

Network Address in decimal	192	168	18	128
Subnet Mask in decimal	255	255	255	192
Network address in binary	11000000	10101000	00010010	10000000
Subnet Mask in binary	11111111	11111111	11111111	11000000
First Usable Host IP Address in decimal				
Last Usable Host IP Address in decimal				
Broadcast Address in decimal				
Next Network Address in decimal				

#### Exercise - 6

Network Address in decimal	192	168	103	96
Subnet Mask in decimal	255	255	255	240
Network address in binary	11000000	10101000	01100111	01100000
Subnet Mask in binary	11111111	11111111	11111111	11110000
First Usable Host IP Address in decimal				
Last Usable Host IP Address in decimal				
Broadcast Address in decimal				
Next Network Address in decimal				

## **Activity – Determining the Network Address (Advanced)**

### ***Exercise - 1***

Host Address	172	27	0	179
Subnet Mask	255	255	254	0
Host Address in binary	10101100	00011011	00000000	10110011
Subnet Mask in binary	11111111	11111111	11111110	00000000
Network Address in binary				
Network Address in decimal				

### ***Exercise - 2***

Host Address	10	42	33	16
Subnet Mask	255	255	128	0
Host Address in binary	00001010	00101010	00100001	00010000
Subnet Mask in binary	11111111	11111111	10000000	00000000
Network Address in binary				
Network Address in decimal				

### ***Exercise - 3***

Host Address	10	237	111	224
Subnet Mask	255	255	252	0
Host Address in binary	00001010	11101101	01101111	11100000
Subnet Mask in binary	11111111	11111111	11111100	00000000
Network Address in binary				
Network Address in decimal				

## **Activity – Calculating the Number of Hosts (Advanced)**

### ***Exercise - 1***

Network Address	172	31	0	0
Subnet Mask	255	255	255	128
Network Address in binary	10101100	00011111	00000000	00000000
Subnet Mask in binary	11111111	11111111	11111111	10000000
Number of Valid Hosts				

### ***Exercise - 2***

Network Address	10	0	0	0
Subnet Mask	255	255	255	128
Network Address in binary	00001010	00000000	00000000	00000000
Subnet Mask in binary	11111111	11111111	11111111	10000000
Number of Valid Hosts				

### ***Exercise - 3***

Network Address	172	21	0	0
Subnet Mask	255	255	255	224
Network Address in binary	10101100	00010101	00000000	00000000
Subnet Mask in binary	11111111	11111111	11111111	11100000
Number of Valid Hosts				

### ***Exercise - 4***

Network Address	10	0	0	0
Subnet Mask	255	255	248	0
Network Address in binary	00001010	00000000	00000000	00000000
Subnet Mask in binary	11111111	11111111	11111000	00000000
Number of Valid Hosts				

## **Activity – Determining the Valid Addresses for Hosts (Advanced)**

### ***Exercise - 1***

Network Address in decimal	172	24	216	0
Subnet Mask in decimal	255	255	248	0
Network address in binary	10101100	00011000	11011000	00000000
Subnet Mask in binary	11111111	11111111	11111000	00000000
First Usable Host IP Address in decimal				
Last Usable Host IP Address in decimal				
Broadcast Address in decimal				
Next Network Address in decimal				

### ***Exercise - 2***

Network Address in decimal	10	236	56	0
Subnet Mask in decimal	255	255	248	0
Network address in binary	00001010	11101100	00111000	00000000
Subnet Mask in binary	11111111	11111111	11111000	00000000
First Usable Host IP Address in decimal				
Last Usable Host IP Address in decimal				
Broadcast Address in decimal				
Next Network Address in decimal				

**Activity – Determining the Number of Bits to Borrow**

Hosts Needed	Subnet Mask (binary)	Subnet Mask (decimal)	Prefix Notation (/x)
250	11111111.11111111.11111111.00000000	255.255.255.0	/24
25			
1000			
75			
10			
500			