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Exercise 1

Now that you understand subnetting, put this knowledge to use. In this example, you are given two address / mask combinations, written with the prefix/length notation, which have been assigned to two devices. Your task is to determine if these devices are on the same subnet or different subnets. You can do this by using the address and mask of each device to determine to which subnet each address belongs.

Device A: 172.16.17.30/20

Device B: 172.16.28.15/20

Device A: 172.16.17.30/20
Device A binary: 10101100.00010000.00010001.00011110

Device A: 172.16.28.15/20
Device A binary: 10101100.00010000.00011100.00001111

Subnet Mask /20: 255.255.240.0
Subnet Mask Binary: 11111111.11111111.11110000.00000000

A:

        10101100.00010000.00010001.00011110
AND 11111111.11111111.11110000.00000000…
        10101100.00010000.00010000.00000000 ← **172.16.16.0**

B:

        10101100.00010000.00011100.00001111
AND 11111111.11111111.11110000.00000000…
        10101100.00010000.00010000.00000000 ← **172.16.16.0**

172.16.16.0 = 172.16.16.0 — They are on the same subnet.

Exercise 2

Given the Class C network of 204.15.5.0/24, subnet the network to create the network in *Figure 3* with the host requirements shown.

Figure 3

netA: 14 hosts   netD: 7 hosts

netC: 2 hosts

netB: 28 hosts   netE: 28 hosts
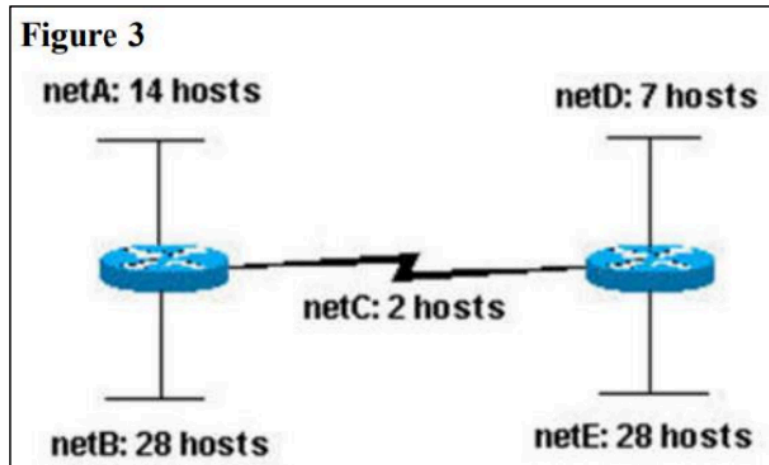
Net A: 204.15.5.14/24 —   **Range:** 204.15.5.0 host address range 1 to 30
Net B: 204.15.5.28/24 —   **Range:** 204.15.5.32 host address range 33 to 62
Net C: 205.15.5.2/24   —   **Range:** 204.15.5.64 host address range 65 to 94
Net D: 205.15.5.7/24 —   **Range:** 204.15.5.96 host address range 97 to 126
Net E. 205.15.5.28/24 —   **Range:** 204.15.5.128 host address range 129 to 158

Subnet /24: 255.255.255.0

204.15.5.0/24   204.15.5.96/24

.1   .97

.65   .65
204.15.5.64/24

.33   .129

204.15.5.32/24   204.15.5.128/24