

Class C Subnetting Practice Exercises (with answers)

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Description:

Perform the following exercises to help you become a pro at subnetting class C default networks!

i *Tip: Don't forget to write out your binary doubling chart!*

Given a network or subnet ID and IP address requirements create subnets without wasting any space. Be sure to fill in all blanks which include the starting mask and all created subnet information. You will not be given anything larger than a Class C default or /24 CIDR. However, some of the given networks may have a starting CIDR notation longer than 24 bits. If you are given a /25 or /26 for example you must start your subnetting from there and write out the starting mask accordingly. The example below begins with a given CIDR of /25 so that you have an example of this for reference.

Given: 192.168.1.128/25Starting Mask: 255.255.255.128

Requirements: Create 1 subnet with 62 usable IP addresses and 1 subnet with 30 usable IP addresses.

Subnet #1 CIDR: 192.168.1.128/26Subnet Mask: 255.255.255.192Usable IP Range: 192.168.1.129 - 190Broadcast: 192.168.1.191Subnet #2 CIDR: 192.168.1.192/27Subnet Mask: 255.255.255.224Usable IP Range: 192.168.1.193 - 222Broadcast: 192.168.1.223

1. Given: 201.33.21.0/24

Starting Mask: 255.255.255.0

Requirements: Create 4 subnets supporting exactly 2 usable IP addresses each.

Subnet #1: 201.33.21.0 /30Subnet Mask: 255.255.255.252Usable IP Range: 201.33.21.1 - 2Broadcast: 201.33.21.3Subnet #2: 201.33.21.4 /30Subnet Mask: 255.255.255.252Usable IP Range: 201.33.21.5 - 6Broadcast: 201.33.21.7Subnet #3: 201.33.21.8 /30Subnet Mask: 255.255.255.252Usable IP Range: 201.33.21.9 - 10Broadcast: 201.33.21.11Subnet #4: 201.33.21.12 /30Subnet Mask: 255.255.255.252Usable IP Range: 201.33.21.13 - 14Broadcast: 201.33.21.15

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2. Given: 223.100.2.0/24 Starting Mask: 255.255.255.0

Requirements: Create 2 subnets supporting exactly 126 usable IP addresses each.

Subnet #1: 223.100.2.0 /25 Subnet Mask: 255.255.255.128
Usable IP Range: 223.100.2.1 - 126 Broadcast: 223.100.2.127Subnet #2: 223.100.2.128 /25 Subnet Mask: 255.255.255.128
Usable IP Range: 223.100.2.129 - 254 Broadcast: 223.100.2.255**3. Given: 194.201.135.192/26** Starting Mask: 255.255.255.192

Requirements: Create 3 subnets supporting exactly 14 usable IP addresses each.

Subnet #1: 194.201.135.192 /28 Subnet Mask: 255.255.255.240
Usable IP Range: 194.201.135.193 - 206 Broadcast: 194.201.135.207Subnet #2: 194.201.135.208 /28 Subnet Mask: 255.255.255.240
Usable IP Range: 194.201.135.209 - 222 Broadcast: 194.201.135.223Subnet #3: 194.201.135.224 /28 Subnet Mask: 255.255.255.240
Usable IP Range: 194.201.135.225 - 238 Broadcast: 194.201.135.239**4. Given: 200.200.3.0/24** Starting Mask: 255.255.255.0

Requirements: Create 3 subnets with at least 25 usable IPs and 1 subnet with exactly 2 usable IPs.

Subnet #1: 200.200.3.0 /27 Subnet Mask: 255.255.255.224
Usable IP Range: 200.200.3.1 - 30 Broadcast: 200.200.3.31Subnet #2: 200.200.3.32 /27 Subnet Mask: 255.255.255.224
Usable IP Range: 200.200.3.33 - 62 Broadcast: 200.200.3.63Subnet #3: 200.200.3.64 /27 Subnet Mask: 255.255.255.224
Usable IP Range: 200.200.3.65 - 94 Broadcast: 200.200.3.95Subnet #4: 200.200.3.96 /30 Subnet Mask: 255.255.255.252
Usable IP Range: 200.200.3.97 - 98 Broadcast: 200.200.3.99

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5. Given: 192.168.50.0/24Starting Mask: 255.255.255.0

Requirements: Create 1 subnet with at least 120 usable IPs, 1 subnet with at least 50 usable IPs, 2 subnets with at least 10 usable IPs, and 2 subnets with exactly 2 usable IPs.

Subnet #1: 192.168.50.0 /25 Subnet Mask: 255.255.255.128
Usable IP Range: 192.168.50.1 - 126 Broadcast: 192.168.50.127

Subnet #2: 192.168.50.128 /26 Subnet Mask: 255.255.255.192
Usable IP Range: 192.168.50.129 - 190 Broadcast: 192.168.50.191

Subnet #3: 192.168.50.192 /28 Subnet Mask: 255.255.255.240
Usable IP Range: 192.168.50.193 - 206 Broadcast: 192.168.50.207

Subnet #4: 192.168.50.208 /28 Subnet Mask: 255.255.255.240
Usable IP Range: 192.168.50.209 - 222 Broadcast: 192.168.50.223

Subnet #5: 192.168.50.224 /30 Subnet Mask: 255.255.255.252
Usable IP Range: 192.168.50.225 - 226 Broadcast: 192.168.50.227

Subnet #6: 192.168.50.228 /30 Subnet Mask: 255.255.255.252
Usable IP Range: 192.168.50.229 - 230 Broadcast: 192.168.50.231

6. Given: 12.188.52.0/24Starting Mask: 255.255.255.0

Requirements: Create 4 subnets supporting exactly 62 usable IP addresses each.

Subnet #1: 12.188.52.0 /26 Subnet Mask: 255.255.255.192
Usable IP Range: 12.188.52.1 - 62 Broadcast: 12.188.52.63

Subnet #2: 12.188.52.64 /26 Subnet Mask: 255.255.255.192
Usable IP Range: 12.188.52.65 - 126 Broadcast: 12.188.52.127

Subnet #3: 12.188.52.128 /26 Subnet Mask: 255.255.255.192
Usable IP Range: 12.188.52.129 - 190 Broadcast: 12.188.52.191

Subnet #4: 12.188.52.192 /26 Subnet Mask: 255.255.255.192
Usable IP Range: 12.188.52.193 - 254 Broadcast: 12.188.52.255

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Continued from page 3**7. Given: 115.92.30.0/24**Starting Mask: 255.255.255.0

Requirements: Create 3 subnets with 30 usable IPs, 3 subnets with at least 10 usable IPs, 1 subnet with 6 usable IPs, and 2 subnets with exactly 2 usable IP addresses.

Subnet #1: 115.92.30.0 /27 Subnet Mask: 255.255.255.224
Usable IP Range: 115.92.30.1 - 30 Broadcast: 115.92.30.31

Subnet #2: 115.92.30.32 /27 Subnet Mask: 255.255.255.224
Usable IP Range: 115.92.30.33 - 62 Broadcast: 115.92.30.63

Subnet #3: 115.92.30.64 /27 Subnet Mask: 255.255.255.224
Usable IP Range: 115.92.30.65 - 94 Broadcast: 115.92.30.95

Subnet #4: 115.92.30.96 /28 Subnet Mask: 255.255.255.240
Usable IP Range: 115.92.30.97 - 110 Broadcast: 115.92.30.111

Subnet #5: 115.92.30.112 /28 Subnet Mask: 255.255.255.240
Usable IP Range: 115.92.30.113 - 126 Broadcast: 115.92.30.127

Subnet #6: 115.92.30.128 /28 Subnet Mask: 255.255.255.240
Usable IP Range: 115.92.30.129 - 142 Broadcast: 115.92.30.143

Subnet #7: 115.92.30.144 /29 Subnet Mask: 255.255.255.248
Usable IP Range: 115.92.30.145 - 150 Broadcast: 115.92.30.151

Subnet #8: 115.92.30.152 /30 Subnet Mask: 255.255.255.252
Usable IP Range: 115.92.30.153 - 154 Broadcast: 115.92.30.155

Subnet #9: 115.92.30.156 /30 Subnet Mask: 255.255.255.252
Usable IP Range: 115.92.30.157 - 158 Broadcast: 115.92.30.159

8. Given: 8.8.8.0/24Starting Mask: 255.255.255.0

Requirements: Create 1 subnet supporting exactly 62 usable IP addresses.

Subnet #1: 8.8.8.0 /26 Subnet Mask: 255.255.255.192
Usable IP Range: 8.8.8.1 - 62 Broadcast: 8.8.8.63