RouterTeacherMan's Subnetting Formula

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TABLE 1

CIDR NOTATION (PREFIXES)				Subnet Mask	Subnets	Octet 1 Block Size	Octet 2 Block Size	Octet 3 Block Size	Octet 4 Block Size
Octet 1	Octet 2	Octet 3	Octet 4						
/1	/9	/17	/25	128	2	2B	8B	32K	128
/2	/10	/18	/26	192	4	1B	4M	16K	64
/3	/11	/19	/27	224	8	512M	2M	8K	32
/4	/12	/20	/28	240	16	256M	1M	4K	16
/5	/13	/21	/29	248	32	128M	512K	2K	8
/6	/14	/22	/30	252	64	64M	256K	1K	4
/7	/15	/23	/31	254	128	32M	128K	512	2
/8	/16	/24	/32	255	256	16M	64K	256	1
									Step 1

CIDR	Netmask (Dot Notation)	CIDR	Netmask (Dot Notation)
/1	128.0.0.0	/17	255.255.128
/2	192.0.0.0	/18	255.255.192.0
/3	224.0.0.0	/19	255.255.224.0
/4	240.0.0.0	/20	255.255.240.0
/5	248.0.0.0	/21	255.255.248.0
/6	252.0.0.0	/22	255.255.252.0
/7	254.0.0.0	/23	255.255.254.0
/8	255.0.0.0	/24	255.255.255.0
/9	255.128.0.0	/25	255.255.255.128
/10	255.192.0.0	/26	255.255.255.192
/11	255.224.0.0	/27	255.255.255.224
/12	255.240.0.0	/28	255.255.255.240
/13	255.248.0.0	/29	255.255.255.248
/14	255.252.0.0	/30	255.255.255.252
/15	255.254.0.0	/31	255.255.255.254
/16	255.255.0.0	/32	255.255.255.255

To find the number of host addresses in a subnet, subtract 2 from the Block Size.

DOUG'S SUBNETTING FORMULA

1) Identify the ip address & network prefix.

Example: 70.107.23.22 /11

70.107.23.22 = ip
/11 = CIDR (prefix)
/11 = 255.224.0.0 (Subnet Mask)
/11 = 11111111.11100000.00000000.00000000 (Binary)

2) Determine the block size from the far right column (Step 1) in the table above, and lining that value up with the CIDR notation in one of the four columns to the left.

Example: 70.107.23.22 /11 Block size = 32

3) Determine the octet your working in by looking at one of the four columns to the left, i.e. Octet 1, Octet 2, Octet 3, Octet 4. Underline the octet value in the ip address.

Example: 70.107.23.11 /11 /11 falls under the second Octet

4) Divide the octet value obtained in Step 3, by the block size.

Example 107/32 = 3.34

Disregard any remainder value, rounding off to the value of 3

5) Multiply the value obtained from Step 4 by the block size obtained from Step 2.

Example: 3 x 32 = 96

6) Take the value from Step 5 and place it in the 2nd octet position. Everything to the right of the 2nd octet becomes zeroes.

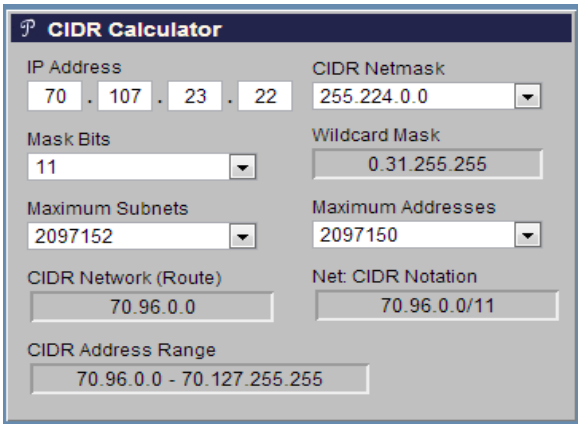
Example: 70.107.23.22 becomes 70.96.0.0

So the network address is 70.96.0.0, with the first available host ip address of 70.96.0.1

7) Add the value obtained from Step 5 to the block size from Step 2 and subtract 1.

Example: 96 + 32 = 128 -1 = 127

So the Broadcast address is 70.127.255.255, with the last available host ip address of 70.127.255.254

Network Address = 70.96.0.0
Broadcast Address = 70.127.255.255
First Starting host ip address = 70.96.0.1
Last host ip address = 70.127.255.254

You can verify your answers by using this Online CIDR Calculator (Click the Picture)