Simple Steps to Subnetting with Class A and B Networks

1. List all subnets in your table from biggest to smallest. Your WAN links will always be at the end.
2. Write the starting IP Address as the network address of your largest subnet.
3. Consult your Subnetting table to find the increment and octet for your largest subnet. You can also fill in your subnet mask at this time. Remember that the subnet mask is used to tell the device how big your subnet is.
4. Add that increment to the octet and write the result as the network address in the second line of your table.
5. Repeat steps 3 and 4 for each subnet until you've filled in your last network address.
6. Calculate increment and octet for your last subnet (typically a WAN link) and add it to get an extra network address.
7. Fill in the broadcast address column by following these steps:
   1. Subtract 1 from the fourth octet of the next subnet's network address. For example, to calculate the broadcast address of your first subnet, you will subtract one from the fourth octet of the second subnet's network address. As long as the value in the fourth octet is not zero, you are done.
   2. If there is a zero in the fourth octet, we cannot subtract 1 as you will never have a negative value in an IP address. When these happens we must change the value of the fourth octet to 255 and subtract 1 from the THIRD octet. If the third octet is also a zero, we change it to 255 and subtract one from the second octet.
   3. Ex# 1: Subnet 2's network address is 155.48.76.224, so subnet # 1's broadcast will be 155.48.76.223
   4. Ex # 2: Subnet 2's network address is 15.48.0.0, so subnet # 1's broadcast will be 15.47.255.255
8. The same rules apply for first usable and last usable IP addresses:
   1. First Usable - Add 1 to the last octet of the network address
   2. Last Usable - Subtract 1 from the last octet of the broadcast address.
9. There is one special case we need to be able to handle. It occurs when we calculating network address and when we add a value to an octet and we hit 256. When this happens, we do the following:
   1. Replace the 256 with 0 and add 1 to the octet to the left. If this cause that octet to become 256, we also zero it out and add 1 to the octet to its left.
   2. Example: Subnet 4's network address is 149.6.13.192 and we have 50 hosts on it. We give it 64 IP addresses and when we add 64 to 192, we end up with 194.6.13.256, which cannot be used. So we zero out the fourth octet and add 1 to the third, giving subnet 5 a network address of 149.6.14.0