

Ten Things a Student Must Know to Subnet

Seven Formulas:

1. **# of subnets created** = $2^{(\text{\# host bits borrowed})}$
2. **# of usable subnets** = $[2^{(\text{\# host bits borrowed})}] - 2$
3. **# of hosts per subnet** = $2^{(\text{\# host bits remaining}^*)}$
*bits remaining = total bits in host field - host bits borrowed
4. **# of usable hosts per subnet** = $[2^{(\text{\# host bits remaining})}] - 2$
5. **Incremental Value per Octet** = $[2^{(\text{\# host bits in that octet})}]$
6. **To find the network ID of a host** logically AND the host address with the subnet mask
7. **To find the broadcast address of a host** mathematically add the network ID and the (incremental value per octet - 1)

Three Definitions:

8. **Network* address/identifier** = network bits match the license number and host bits are all zeroes (0).
9. **Network* broadcast** = network bits match the license number and the host bits are all ones (1).
10. **Subnet Mask** = network and subnet bits are all ones (1) and host bits are all zeroes (0).

*For subnet addresses and broadcasts, the subnet bits are treated as network bits. Remember: we “borrowed” them to be part of the network field.