

# DAN MILL

TRAINING

## SUBNETTING CHEAT SHEET

### KEY FORMULAS

**Subnets =  $2^n$  (n = borrowed bits)**

**Hosts =  $2^h - 2$  (h = host bits)**

**Increment =  $2^h$**

**Magic # = 256 - mask value**

### 5-STEP PROCESS

1. Count subnets & hosts needed
2. Find bits to borrow:  $2^n \geq \text{subnets}$
3. Check host bits:  $2^h - 2 \geq \text{hosts}$
4. New mask = original + borrowed
5. Calculate ranges with increment

### IP CLASSES

Class	Range	Default
A	1-126	/8
B	128-191	/16
C	192-223	/24

### SUBNET MASK REFERENCE TABLE

CIDR	Subnet Mask	Hosts	Increment	Binary (Last Octet)	Subnets from /24
/24	255.255.255.0	254	256	00000000	1
/25	255.255.255.128	126	128	10000000	2
/26	255.255.255.192	62	64	11000000	4
/27	255.255.255.224	30	32	11100000	8
/28	255.255.255.240	14	16	11110000	16
/29	255.255.255.248	6	8	11111000	32
/30	255.255.255.252	2	4	11111100	64

### QUICK EXAMPLE

#### 192.168.1.0/24 → 4 subnets

- Need 2 bits ( $2^2 = 4$ )
- New mask: /26
- Increment: 64
- Subnets:
  - 192.168.1.0/26
  - 192.168.1.64/26
  - 192.168.1.128/26
  - 192.168.1.192/26

### BINARY VALUES

Bit Position	8	7	6	5	4	3	2	1
Decimal Value	128	64	32	16	8	4	2	1

#### Examples:

/25 = 128 | /26 = 192 | /27 = 224

### PRACTICE

Remember, the more you practice, the better and faster you become at subnetting!

### COMMON MISTAKES

- Forgetting to subtract 2 for hosts
- Using wrong increment value
- Mixing up network vs host bits
- Overlapping subnet ranges

### MEMORY AIDS

#### Powers of 2:

$2^1=2$ ,  $2^2=4$ ,  $2^3=8$ ,  $2^4=16$

$2^5=32$ ,  $2^6=64$ ,  $2^7=128$ ,  $2^8=256$

#### Subnet Masks:

Add from left: 128,64,32,16,8,4,2,1

### VERIFICATION

#### Always Check:

- Subnets  $\geq$  required?
- Hosts  $\geq$  required?
- No range overlaps?
- Network + broadcast correct?