

# MASTERING MILS

The Long-Range Shooter's Cheat Sheet

FREE CHEAT SHEET

// 01 - THE BASICS

## What is a MIL?

A MIL = 1/1,000th of a Radian.  
"MIL" is NOT short for Military.  
It stands for Milliradian.

KEY RULE: At any distance, 1 mil spans 1/1,000th of that distance.  
**1,000 yds → 1 mil = 1 yard**

// 1/1,000 PROPORTIONAL RULE

### At 1,000 [unit] distance:

1,000 yds → 1 mil = 1 yard  
1,000 m → 1 mil = 1 meter  
1,000 in → 1 mil = 1 inch

// MIL ↔ MOA CONVERSION

**1 MIL ≈ 3.5 MOA**

Precise: 3.43775 MOA | Use 3.5 in field

// 02 - MIL-DOT RETICLE

## Dot Spacing Reference

MEASUREMENT METHOD	MILS
Center to Center	1.0 mil
Inside to Inside Edge	0.8 mil
Dot Width	0.2 mil
Center to Far Outside	1.1 mil

Combining refs → 0.1 mil accuracy

// 03 - RANGE ESTIMATION

## Range Formulas

FORMULA 1 - YARDS OR METERS

**Distance = (Ht x 1,000) / Mils**  
(all values in same unit)

FORMULA 2 - INCHES TO YARDS

**Dist(yds) = (Ht-in x 27.77) / Mils**  
Most common for US hunting

**EXAMPLE: 57-INCH ELK AT 2.0 MILS**  
(57 x 27.77) / 2.0  
**= 791 YARDS**

// FIELD REFERENCE - BULL ELK

## 57" Elk Range Table

Formula 2 — Dist = (57 x 27.77) / Mils

MILS READ	DISTANCE (YDS)
1.0 Mil	1,583 yds
2.0 Mils	791 yds
3.0 Mils	528 yds
4.0 Mils	396 yds
5.0 Mils	316 yds

Practical hunting range: 2.0 - 4.0 mils (~400 - 800 yds)

// 05 - SCOPE SELECTION

## First vs. Second Focal Plane

### First Focal Plane (FFP) RECOMMENDED

- Reticle scales with magnification
- Mils accurate at ANY power
- Best for mil-based ranging

### Second Focal Plane (SFP) CAUTION

- Reticle fixed size at all powers
- Mils accurate ONLY at max mag
- Verify max power before ranging

SFP at wrong power = WRONG distance calculation

// 06 - BALLISTIC COMPENSATION

## Holdovers & Wind

GRAVITY HOLDOVERS

Use LOWER mil dots for elevation hold.  
No turret dialing required.  
7 MOA drop ≈ 2 mil dots down

WINDAGE HOLD-OFFS

Aim INTO the wind — hold reticle

**NOTE: Move reticle INTO the wind, not away from it. Practice drill.**

// KEY CONSTANTS

1 mil (yards) = 1/1,000 yd at 1,000 yd  
1 mil (meters) = 1/1,000 m at 1,000 m  
Inch conversion factor = 27.77  
1 mil to MOA ≈ 3.5 MOA  
Elk shoulder ht ≈ 57 inches

// QUICK MENTAL MATH

2.0 mils / 57" elk → 791 yds (≈800)  
3.0 mils / 57" elk → 528 yds (≈500)  
4.0 mils / 57" elk → 396 yds (≈400)  
1 mil adjustment → 3.5 MOA click  
Halve the mils → double the range

// FIELD CHECKLIST

- Confirm FFP or SFP (and set to max if SFP)
- Zero turrets confirmed at known distance
- Know target reference height before shot
- Measure target mils — use center-to-center
- Calculate distance before wind correction
- Compensate wind: hold INTO wind direction