Eyepiece Chart

Focal Length	Magnification	With 2x Barlow	Field of View	
			Degrees	ArcMin

Telescope Limiting Mags

Ap	Probability of Detection				
"	98%	90%	50%	20%	10%
6	13.6	14.1	14.6	15.1	15.6
8	14.2	14.7	15.2	15.7	16.2
10	14.7	15.2	15.7	16.2	16.7
12.5	15.2	15.7	16.2	16.7	17.2
14	15.5	16.0	16.5	17.0	17.5
16	15.7	16.2	16.7	17.2	17.7
20	16.2	16.7	17.2	17.7	18.2
24	16.6	17.1	17.6	18.1	18.6
30	17.1	17.6	18.1	18.6	19.1
36	17.5	18.0	18.5	19.0	19.5

Things to Look For . . .

General:
- Is this the first time the object has been seen?
- Is the object difficult to identify in the star field?

Galaxy:
- Can it be seen with direct vision?
- What is the overall shape?
- Is the core compact, stellar, or is there an obvious bulge?
- Can any lanes or mottling be seen?
- Are the edges sharp or diffuse?
- What is the orientation and angle?

Globular Cluster:
- Can it be seen with direct vision?
- Is the core bright, compact, or indistinguishable?
- Is the cluster tight or loose?
- Can any part of the cluster be resolved into stars?
- Is any mottling visible?

Multiple Star:
- How many stars are visible?
- What is their general position?
- What are their colors?
- Estimate their magnitudes.

Nebula:
- Can it be seen with direct vision?
- What is the overall shape?
- Is any part of the nebula brighter or more concentrated?
- Are there any dark lanes or patches?
- Can any color be detected?
- Are there any bright streamers or filaments?

Open Cluster:
- Is it easily distinguished from the background stars?
- What is the overall shape?
- How many stars are visible?
- Are the stars more or less concentrated anywhere?
- Fully resolved, does any nebulosity remain?
- Describe the brighter stars.
- Describe the color of the stars.

Planetary Nebula:
- Can it be seen with direct vision?
- What is the overall shape?
- Is it easy or difficult to identify?
- Can any color be detected?
- Are the edges sharp or diffuse?
- Is the center brighter, darker or the same as the edges?
- Is a central star visible?

Seeing Scale

I. Perfectly steady.
II. Steady for several seconds.
III. Average with some fuzzy periods.
IV. Almost constant fuzzing out.
V. Bad – No detail at all.

Transparency Scale

0. **Did not Observe** -- Completely cloudy or precipitating.
1. **Very Poor** – Mostly cloudy.
2. **Poor** – Partly cloudy or heavy haze. 1 or 2 Little Dipper stars visible.
3. **Somewhat Clear** – Cirrus or moderate haze. 3 or 4 Little Dipper stars visible.
4. **Partly Clear** – Slight haze. 4 or 5 Little Dipper stars visible.
5. **Clear** – No clouds. Cygnus Milky Way visible with averted vision. 6 Little Dipper stars visible.
6. **Very Clear** – Milky Way and M31 visible. 7 Little Dipper stars visible.
7. **Extremely Clear** – M33 and/or M81 are visible with naked eye.

The Greek Alphabet

Alpha	A	α	Nu	N	ν
Beta	B	β	Xi	Ξ	ξ
Gamma	Γ	γ	Omicron	O	o
Delta	Δ	δ	Pi	Π	π
Epsilon	E	ϵ	Rho	P	ρ
Zeta	Z	ζ	Sigma	Σ	σ
Eta	H	η	Tau	T	τ
Theta	Θ	θ	Upsilon	Y	υ
Iota	I	ι	Phi	Φ	ϕ
Kappa	K	κ	Chi	X	χ
Lambda	Λ	λ	Psi	Ψ	ψ
Mu	M	μ	Omega	Ω	ω

Basic Formulas

Focal Length = Objective Size (mm) x F number

$$\text{Magnification} = \frac{\text{Focal Length Telescope (mm)}}{\text{Focal Length Eyepiece (mm)}}$$

$$\text{Field of View} = \frac{\text{Field of View (apparent)}}{\text{Magnification}}$$