

The Magnitude System

It is useful to be able to describe the brightness of things we see in the sky. Astronomers use the apparent magnitude system for this. A lower case 'm' is used to designate apparent magnitude. We can learn it most quickly by considering some examples:

Apparent Magnitude (m)	Object
- 26	the Sun
- 12	the Full Moon
- 4	Venus
- 1	Sirius
0	Saturn
+ 2	Big Dipper Stars
	Polaris, the North Star
	Faintest stars visible from inner city sites with naked eye*
+ 4	Fainter stars in the Little Dipper
	Faintest stars visible with naked eye from suburban locations
+ 6	Faintest naked eye stars visible from dark rural locations (no moon light interference)
+ 9	Faintest stars visible with 7x50 binoculars from dark site
+ 13 ½	Faintest stars visible with a 6" diameter telescope
+ 14	Pluto
+ 30	Long exposure CCD photograph with a huge telescope

* Warning: If you have your Internet Browser porno block turned on, you will not be able to visit some astronomy web sites which discuss observing with the 'naked' eye (perish the thought!).

Apply some common sense to this table. If it's daytime you won't see any stars. If it's cloudy you won't see stars. If you have just finished staring into a search light (or auto headlights) you won't see much.

The fine print:

Some of you may want to know how to compare the brightness of two objects with some known difference in magnitude. We start with a simple table:

MAGNITUDE DIFFERENCE (Δm)	BRIGHTNESS RATIO
1	2.5
2	6.3
3	16
4	40
5	100

Extra fine print:

The exact formula is:

$$\text{Brightness Ratio} = [(100)^{1/5}]^{\Delta m}$$