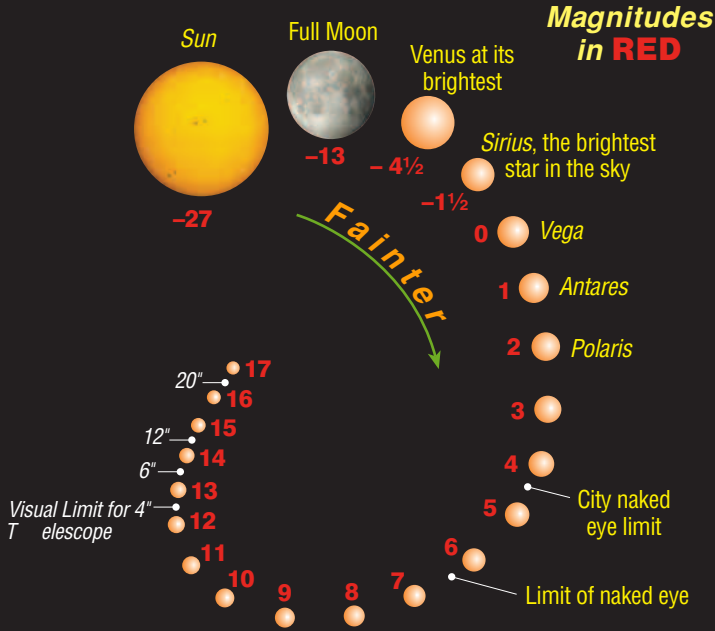


# Star Magnitude ★ Scale of Brightness

Long ago, when the ancients looked up and studied the stars, they classified them by their brightness. We still use this same system of **magnitudes** today, however, we now have instruments to accurately measure a star's brightness. This scale ranges, at its brightest, from  $-27$  (spoken as "minus twenty-seven" or "negative twenty-seven") for the Sun to over  $+30$  (spoken as "thirty") for the faintest galaxies.



## Number of stars visible to magnitude...

|           |              |
|-----------|--------------|
| <b>5</b>  | is 2,800     |
| <b>6</b>  | is 8,700     |
| <b>7</b>  | is 27,000    |
| <b>8</b>  | is 78,000    |
| <b>9</b>  | is 218,000   |
| <b>10</b> | is 586,000   |
| <b>11</b> | is 1,000,000 |

## MAGNITUDE INFO

- Each magnitude is about  $2\frac{1}{2}$  times brighter or fainter than the next magnitude.
- The limiting magnitude of telescopes can be greatly increased by time-exposures using film or digital cameras.
- The *Hubble Space Telescope*, in orbit about Earth, can record to magnitudes fainter than  $+30$ .

**Apparent Magnitude vs. Absolute Magnitude.** Apparent magnitude refers to the brightness of the stars as we see them in the night sky and does not provide any information about their true brightness in relation to one another. For example, a star in the sky can appear bright simply because it is closer to us than other stars. However, Absolute Magnitude provides true comparative information on the brightness of stars. It is a scale of magnitude based on all stars placed at the "standard" distance of 10 parsecs (32.6 light years). At this distance (from us), our Sun diminished to the faint magnitude of  $+4.8$ .