

The Apparent Magnitude Scale - Must be typed.

The apparent magnitude of stars was first recorded by the Greek astronomer Hipparchus about 160 B.C. Hipparchus grouped stars according to their brightness or *magnitude*. He called the twenty brightest stars *first magnitude* stars. Stars half that bright were *second magnitude*. *Third magnitude* stars were half as bright as second magnitude stars, and so on.

Modern astronomers have changed Hipparchus's system a little. In the modern system, an object of magnitude 1 appears 100 times as bright as one of magnitude 6. This means that if two objects are separated by one unit of magnitude, the brighter object appears about 2.5 times as bright as the dimmer one. A star of magnitude 1 is about 2.5 times as bright as a star of magnitude 2. Using this scale, the *dimmer* the object, the *larger* the magnitude number.

What about very bright objects? Remember, the brighter an object appears, the lower its magnitude number. Very bright objects have negative magnitudes. Sirius, the brightest star in the sky (except for the sun), has a magnitude of -1.5 . Venus is the brightest planet. Its brightness varies, but at its brightest, its magnitude is -4 . The sun's magnitude is -26.5 .

Object	Apparent Magnitude
Sun	-26.50
Venus (maximum brightness)	-4.00
Mars (maximum brightness)	-2.00
Procyon	0.36
Regulus	1.36
Dimmest visible to the naked eye	6.00
Dimmest visible with binoculars	10.00

Refer to the table above to answer the questions below on a separate sheet of paper. *Must be typed.*

1. What is the difference between the magnitudes of the bright stars Regulus and Procyon? Which is brighter? How much brighter is it than the dimmer one?
2. How much brighter is Venus than Mars?
3. What is the difference between the magnitude of the dimmest star that is visible with the naked eye and the magnitude of the dimmest that can be seen with binoculars? How much brighter is the former than the latter?