

Chapter 23

Use with Section 1

ENRICHMENT

● Stars

Comparing Apparent Magnitudes

Study the following tables and then answer the questions. Table 1 identifies the apparent magnitudes of objects that can be seen in the sky. The naked-eye limit and the telescope limit indicate the minimum magnitude of sky objects that can be seen. Table 2 identifies the differences in apparent magnitude and the ratio of light that is emitted based on the differences.

Table 1

Object	Apparent magnitude
Sun	-26.5
Full moon	-12.5
Venus (at its brightest)	-4.0
Jupiter, Mars (at their brightest)	-2.0
Sirius	-1.5
Naked-eye limit	6.5
15-cm telescope limit	13.0

Table 2

Difference in apparent magnitude	Ratio of light
0.0	1:1
1.0	2.5:1
2.0	6.3:1
3.0	16:1
4.0	40:1
5.0	100:1
10.0	10 000:1
15.0	1 000 000:1
20.0	100 000 000:1
25.0	10 000 000 000:1
30.0	1 000 000 000 000:1

- What is the apparent magnitude of the sun?

- What is the apparent magnitude of Sirius?

- What is the difference in the magnitudes of the sun and Sirius? _____
- How much more light does the sun provide than Sirius? _____
- What is the difference in the sun's apparent magnitude from that of the full moon? _____
- About how much more light does the sun provide than the full moon?

- What is the greatest apparent magnitude that can be viewed by the naked eye? _____
- What is the difference in the apparent magnitude of the sun and an object with the greatest apparent magnitude that can be viewed by the naked eye? _____
- How much more light does the sun give off than an object with the least apparent magnitude that can be viewed by the naked eye? _____
- If a star has an apparent magnitude of 7.5, would you be able to see it with the aid of a 15-cm telescope? _____
- What is the difference in magnitudes between Venus and Mars at their brightest? _____
- What is the ratio of light of Venus and Mars at their brightest? _____