Chapter Problem Wrap-Up

Student Text Pages
211

Suggested Timing
15–30 min

Tools
- computer with Internet access (optional)

Related Resources
- BLM 3–10 Chapter 3 Problem Wrap-Up Rubric

Summative Assessment
- Use **BLM 3–10 Chapter 3 Problem Wrap-Up Rubric** to assess student achievement.

Using the Chapter Problem Wrap-Up

- The Chapter Problem focuses on the telescope, one familiar instrument used in the study of celestial bodies. Students will be interested to discover that optical, refractor telescopes are just one type of telescope, with radio telescopes, X-ray telescopes, and other types also in use.
- Information concerning the magnification power of modern telescopes can be difficult to find, because many other factors affect the quality of the image produced by a telescope. If students have difficulty finding the information required in part b), suggest that they consider some other measure of telescopic power, such as the focal length of refractor telescopes or the diameter of the objective lens.

Level 3 Sample Response

a) The first known telescope is credited to Hans Lippershey, who invented it in 1608. Its magnifying power was approximately 3X or "3 power," which means that objects viewed through the telescope appear three times as large as they do with the naked eye. The magnifying power of a telescope is measured by dividing the focal length of the telescope by the focal length of the eyepiece. Modern optical telescopes designed to be used at home have magnification factors of 200X or greater. However, optical telescopes are not the only type of telescope currently in use. Radio telescopes, X-ray telescopes, and other types of telescopes also provide information about celestial bodies.

b) Answers will vary.

Level 3 Notes

Look for the following:

- Observations are factually correct
- Information is expressed clearly
- Numerical information is presented graphically
- A reasonable curve of best fit is shown, with an explanation of how it was developed and why that model was chosen
- An equation for the curve of best fit is provided, with an explanation of how it was produced

What Distinguishes Level 2

- Information may have minor historical or factual errors or inconsistencies
- Information lacks clarity at some points
- Numerical information is presented graphically with minor errors
- A curve of best fit is shown, but with little or no explanation of how it was developed or why it was chosen

What Distinguishes Level 4

- Additional background information is provided, such as how focal lengths are determined
- Additional factors affecting telescope power are considered, such as image distortion, effects of Earth's atmosphere (which has been overcome with the advent of space telescopes), and so on