

CH 24 STUDYING THE SUN: STUDY GUIDE

Vocabulary

electromagnetic spectrum, photon, spectroscopy, continuous spectrum, absorption spectrum, emission spectrum, Doppler effect, refracting telescope, reflecting telescope, radio telescope, photosphere, chromosphere, corona, solar wind, sunspot, prominence, solar flare, aurora, nuclear fusion

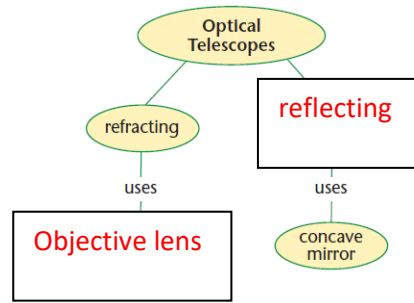
Student Objectives

24.1	Describe the waves that compose the electromagnetic spectrum.
	Describe what the different types of spectra reveal about stars.
	Explain how the Doppler effect is applied to the motion of stars in relation to Earth.
24.2	Explain how refracting, reflecting, and radio telescopes work.
	Describe the advantages and disadvantages of each type of telescope.
	Explain the advantages that a space telescope has over an Earth-based telescope.
24.3	Explain the structure of the sun.
	Describe the physical features on the surface of the sun.
	Explain how the sun produces energy.

Reviewing Content - Choose the letter that best answers the question or completes the statement.

- Which type of radiation has the shortest wavelength?
 - gamma rays
 - X-rays
 - visible light
 - radio waves
- Which type of telescope uses a concave mirror?
 - Refracting
 - Reflecting
 - Ultraviolet
 - Infrared
- Which of the following is not a property of optical telescopes?
 - resolving power
 - magnifying power
 - reflecting power
 - light-gathering power
- The numerous, relatively small bright markings on the sun's photosphere are called
 - Auroras
 - sunspots.
 - granules.
 - prominences.
- The thin, red rim seen around the sun during a total solar eclipse is the
 - chromosphere.
 - corona.
 - solar wind.
 - photosphere.
- Which features of the sun look like huge cloudlike arches?
 - solar flares
 - sunspots
 - auroras
 - prominences
- What is the source of the sun's energy?
 - Magnetism
 - nuclear fission
 - nuclear fusion
 - radiation pressure
- Which of the following is NOT considered a form of electromagnetic radiation?
 - radio waves
 - gravity
 - gamma rays
 - visible light
- The sun produces energy by converting
 - oxygen nuclei to carbon dioxide.
 - oxygen nuclei to nitrogen nuclei.
 - hydrogen nuclei to helium nuclei.
 - helium nuclei to hydrogen nuclei.

Concept Map - Use information from the chapter to complete the concept map below.



Understanding Concepts

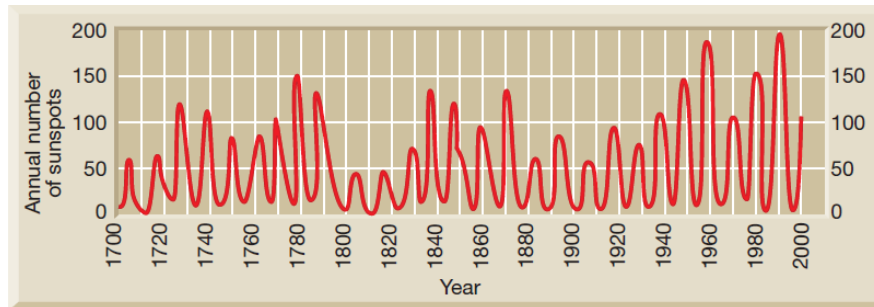
- 1) What “fuel” does the sun consume? **Hydrogen**
- 2) What happens to the matter that is consumed in nuclear fusion? **Hydrogen is converted to helium**

Matching

- | | |
|---|-----------------|
| 3) outermost part of the sun’s atmosphere F | a) solar flare |
| 4) relatively thin red layer of the sun’s atmosphere D | b) sunspot |
| 5) layer that radiates most of the sunlight we can see E | c) prominence |
| 6) dark region on the surface of the photosphere B | d) chromosphere |
| 7) brief outburst associated with sunspot clusters A | e) photosphere |
| 8) huge cloudlike structure of chromospheric gases C | f) corona |
| | g) core |

Analyzing Data

Use the graph to answer Questions 9 - 12.



- 9) **Identifying** - Which years had the lowest number of sunspots? The highest? **Low 1712, 1811 High 1990**
- 10) **Interpreting Data** - Describe any patterns in the data. **11 years cycle (peak to peak)**
- 11) **Predicting** - When will the next period of maximum sunspot activity occur? **2012**
- 12) **Analyzing Data** - Based on the data alone, is it possible to predict how many sunspots will occur during the next peak? Why or why not? **No, no set pattern**

Concepts in Action

Use the diagram above to answer Questions 13 - 15.

- 13) What is the innermost layer of the sun called? **Core**
- 14) What is the outermost layer called? **Corona**
- 15) What letters represent features found on the sun? Identify each feature. **B = sunspot, C = prominence**

