Name _____ Class _____ Date _____

Skills Worksheet

Directed Reading A

Section: Stars

1. What is a star?

_____

_____

2. To learn about stars, astronomers study _____.

COLOR OF STARS

_____ **3.** Scientists consider red stars to be
- **a.** hot.
- **b.** cool.
- **c.** large.
- **d.** small.

_____ **4.** When stars are different colors, we can conclude that they have different
- **a.** sizes.
- **b.** layers.
- **c.** temperatures.
- **d.** gases.

COMPOSITION OF STARS

_____ **5.** What is a star made of?
- **a.** gases
- **b.** liquids
- **c.** solids
- **d.** gases and solids

_____ **6.** Which one of the following statements is true about a star?
- **a.** A star's outer layers are hot and thin.
- **b.** A star's outer layers are hot and dense.
- **c.** A star's inner layers are cool and dense.
- **d.** A star's inner layers are hot and dense.

_____ **7.** Some of the light that radiates from a star
- **a.** is absorbed by elements in a star's atmosphere.
- **b.** is absorbed by the star's inner layers.
- **c.** is absorbed by other stars.
- **d.** is emitted through the universe.

_____ **8.** How can scientists identify a star's elements?
- **a.** by its color
- **b.** by its shape
- **c.** by its light
- **d.** by its age

_____ **9.** When white light passes through a prism, it creates a band of color called a(n)
- **a.** wavelength.
- **b.** spectrum.
- **c.** emission line.
- **d.** spectrograph.

Name _____ Class _____ Date _____

Directed Reading A *continued*

_____**10.** A continuous spectrum is a spectrum that shows
- **a.** some of the colors.
- **b.** some of the colors and some black lines.
- **c.** all the colors.
- **d.** all the colors and some black lines.

_____**11.** What instrument breaks a star's light into a spectrum?
- **a.** a continuous spectrum
- **b.** a prism
- **c.** a spectrometer
- **d.** a spectrograph

_____**12.** What can scientists tell about a star from its spectrum?
- **a.** its composition
- **b.** its composition and temperature
- **c.** its age
- **d.** its age and temperature

_____**13.** Hot gases give off certain wavelengths of light, or colors, that create lines called
- **a.** absorption lines.
- **b.** spectrum lines.
- **c.** emission lines.
- **d.** neon lines.

14. Emission lines are like fingerprints of the _____.

15. Electrically charged elements have spectrums made of _____ emission lines, whereas stars have spectrums made of _____ emission lines.

16. A star's _____ absorbs colors of light.

17. The spectrum of a star is called a(n) _____ spectrum.

18. Where colors are absorbed in a star's spectrum, _____ appear.

19. When is an absorption spectrum produced?

_____

_____

_____

Name _____ Class _____ Date _____

Directed Reading A *continued*

CLASSIFYING STARS

_____**20.** Stars are now classified by how
- **a.** hot they are.
- **b.** cold they are.
- **c.** far away they are.
- **d.** close they are.

_____**21.** The hottest stars are
- **a.** yellow.
- **b.** orange.
- **c.** red.
- **d.** blue.

_____**22.** A star's magnitude refers to its
- **a.** temperature.
- **b.** brightness.
- **c.** size.
- **d.** age.

23. Astronomers use numbers to describe a star's brightness. The larger the number, the _____ the star.

Match the correct definition with the correct term. Write the letter in the space provided.

_____**24.** Astronomers use these numbers to represent dimmer stars.

_____**25.** Astronomers use these numbers to represent brighter stars.

_____**26.** Early astronomers called these the brightest stars.

_____**27.** Early astronomers called these the dimmest stars.

- **a.** first-magnitude
- **b.** positive
- **c.** negative
- **d.** sixth-magnitude

HOW BRIGHT IS THAT STAR?

28. How bright a star appears as seen from Earth is called _____.

29. How bright a star actually is at a distance of 32.6 light-years from Earth is called _____.

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Directed Reading A *continued*

30. Why is the sun the brightest object in the sky?

_____

_____

_____

_____

_____

DISTANCE TO THE STARS

_____**31.** What unit of measurement do astronomers use to determine distances from Earth to the stars?

a. mile
b. yard
c. light-year
d. year

32. A star's apparent shift in position is called _____.

MOTIONS OF STARS

33. Explain why you see different constellations in the sky at different times of the year.

_____

_____

_____

_____

_____

_____

Answer Key

Directed Reading A

SECTION: STARS

1. Answers will vary. Sample answer: A star is a huge, hot, bright ball of gas.
2. starlight
3. B
4. C
5. A
6. D
7. A
8. C
9. B
10. C
11. D
12. B
13. C
14. elements
15. bright, dark
16. atmosphere
17. absorption
18. black lines
19. when light from a hot solid or dense gas passes through a cooler gas
20. A
21. D
22. B
23. dimmer
24. B
25. C
26. A
27. D
28. apparent magnitude
29. absolute magnitude
30. Answers will vary. Sample answer: The sun is the brightest object in the sky because it is the closest star to Earth.
31. C
32. parallax
33. Answers will vary. Sample answer: At different times of the year, the night side of the Earth faces a different part of the universe, with different constellations visible in the sky.

SECTION: THE SUN: OUR VERY OWN STAR

1. B
2. E
3. A
4. F
5. D
6. B
7. C
8. D
9. A
10. D
11. B
12. B
13. nuclear fusion
14. A helium nucleus and energy are produced.
15. core
16. radiative zone
17. convective zone
18. photosphere
19. D
20. Answers will vary. Sample answer: The sun's magnetic fields tend to slow down activity in the convective zone. When this activity slows down, areas of the photosphere become cooler than surrounding areas.
21. sunspots
22. 11
23. Answers will vary. Sample answer: Sunspots may affect climate. For example, scientists have linked very low sunspot activity with low temperatures.
24. solar flares
25. Solar flares can interrupt radio communications on Earth.

SECTION: THE LIFE CYCLE OF STARS

1. C
2. nuclear fusion
3. space
4. B
5. D
6. B
7. C
8. A
9. Answers will vary. Sample answer: During the second stage of a star's life cycle, energy is generated in the star's core as hydrogen atoms fuse into helium atoms.
10. Answers will vary. Sample answer: During the third stage of a star's life cycle, a star expands and cools as it uses up all of its hydrogen. Eventually, it loses all of its hydrogen, causing its center to shrink and its atmosphere to grow very large and cool. It becomes a red giant or supergiant.