Name _____ Class _____ Date _____

Skills Worksheet

Directed Reading 30.2 (EVEN)

Section: Stellar Evolution

_____ 1. Why are astronomers not able to observe the entire life of any star?
   a. because of the movement of stars
   b. because a typical star exists for billions of years
   c. because the light of stars reaches Earth millions of years later
   d. because a star typically does not exist long enough to be observed

CLASSIFYING STARS

2. What is luminosity?

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_____

3. What is the Hertzsprung-Russell diagram?

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4. What is plotted on the horizontal axis and the vertical axis of the H-R diagram?

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5. What is the main sequence?

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STAR FORMATION

_____ 6. What is a nebula?
   a. a cloud of gas and dust where a star begins
   b. an explosion where dust collects
   c. a false image of a star
   d. a group of planets where a star begins

_____ 7. According to Newton's law of universal gravitation, gravitational force increases as the mass of an object
   a. decreases or as the distance between two objects decreases.
   b. increases or as the distance between two objects increases.
   c. increases or as the distance between two objects decreases.
   d. decreases or as the distance between two objects increases.

8. What happens as particles come together in a star-forming nebula?

9. What is a protostar?

10. What happens as more matter is pulled into a protostar?

11. What is important about the onset of fusion?

12. What happens as gravity increases the pressure on the matter within a star?

13. What does the equilibrium between the outward pressures of radiation and the force of gravity do?

14. How long does a main-sequence star maintain a stable size?

THE MAIN-SEQUENCE STAGE

_____ 15. What is the second and longest stage in the life of a star?
- a. the fusion stage
- b. the stellar equilibrium stage
- c. the main-sequence stage
- d. the nebula stage

_____ 16. A star that has the same mass as the sun's mass
- a. stays on the main sequence for about 10 million years.
- b. stays on the main sequence for about 10 billion years.
- c. stays on the main sequence for about 14 billion years.
- d. stays on the main sequence for about 100 billion years.

LEAVING THE MAIN SEQUENCE

17. When does a star enter its third stage?

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18. What does increased temperature from contraction in the core cause the helium core to do?

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_____

19. Describe the stars known as giants and their place on the H-R diagram.

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20. What are supergiants?

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THE FINAL STAGES OF A SUNLIKE STAR

_____ 21. What is a planetary nebula?
- a. a cloud of gas that forms around a dying sunlike star
- b. a cloud of gas that forms as a star is born
- c. a cloud of energy that is hard to identify
- d. a cloud of helium that forms around a star that is starting to fuse

_____ 22. What is a white dwarf?
a. a cool, extremely scattered core of matter leftover from an old star
b. a hot, extremely scattered core of matter leftover from a red giant
c. a hot, extremely dense core of matter leftover from an old star
d. a cool, extremely dense core of matter leftover from a red giant

_____ 23. Where are white dwarfs located on the H-R diagram?
a. in the lower left
b. in the lower right
c. in the upper left
d. in the upper right

_____ 24. An explosion of a white dwarf caused by a pressure buildup is a
a. red giant.
b. black dwarf.
c. super giant.
d. nova.

_____ 25. What effect may a nova have on a star?
a. It may cause it to become many thousands of times brighter.
b. It may destroy the star.
c. It may cause it to turn into a giant.
d. It may cause it to become many thousands of times dimmer.

26. Describe a supernova and how it differs from a nova.

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THE FINAL STAGES OF MASSIVE STARS

_____ 27. Stars that have masses of more than 8 times the sun's mass may produce supernovas
a. with the help of a secondary star.
b. rarely.
c. without needing a secondary star to fuel them.
d. on a regular basis.

_____ 28. After the supergiant stage, massive stars contract with a gravitational force that is
a. much less than that of small-mass stars.
b. much greater than that of large-mass stars.
c. much less than that of white dwarf stars.
d. much greater than that of small-mass stars.

29. What happens when the core uses up its fuel?

30. What is a neutron star?

31. What is a pulsar?

32. Describe how a black hole forms.

33. Why is locating black holes difficult?