Chapter 15 Reading Quiz Clickers

The Cosmic Perspective
Seventh Edition

Surveying the Stars
15.1 Properties of Stars

• How do we measure stellar luminosities?
• How do we measure stellar temperatures?
• How do we measure stellar masses?
The total amount of power that a star radiates is called its

a) absolute brightness
b) apparent brightness
c) luminosity
d) absolute magnitude
The total amount of power that a star radiates is called its

a) absolute brightness
b) apparent brightness
c) **luminosity**
d) absolute magnitude
How does the apparent brightness of a star depend on its distance from Earth?

a) The apparent brightness is independent of distance from Earth.
b) The apparent brightness is inversely proportional to distance.
c) The apparent brightness is proportional to distance.
d) The apparent brightness is inversely proportional to the square of the distance.
e) The apparent brightness is proportional to the distance squared.
How does the apparent brightness of a star depend on its distance from Earth?

a) The apparent brightness is independent of distance from Earth.

b) The apparent brightness is inversely proportional to distance.

c) The apparent brightness is proportional to distance.

d) **The apparent brightness is inversely proportional to the square of the distance.**

e) The apparent brightness is proportional to the distance squared.
What is the distance to a star with a parallax angle of 0.1 arcseconds?

a) 0.01 parsecs  
b) 0.1 parsecs  
c) 10 parsecs  
d) 100 parsecs  
e) none of the above
What is the distance to a star with a parallax angle of 0.1 arcseconds?

a) 0.01 parsecs  
b) 0.1 parsecs  
c) **10 parsecs**  
d) 100 parsecs  
e) none of the above
How does the Sun's luminosity compare to that of other stars in the Milky Way?

a) The Sun's luminosity is greater than most stars in the Milky Way.
b) The Sun's luminosity is greater than about half the stars in the Milky Way.
c) The Sun's luminosity is less than most stars in the Milky Way.
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a) The Sun's luminosity is greater than most stars in the Milky Way.
b) The Sun's luminosity is greater than about half the stars in the Milky Way.
c) The Sun's luminosity is less than most stars in the Milky Way.
Which of the following spectral type is the hottest type of star?

a) A  
b) B  
c) F  
d) G  
e) M
Which of the following spectral type is the hottest type of star?

a) A  
b) B  
c) F  
d) G  
e) M
Who discovered the natural sequence of spectral types (OBAFGKM)?

a) Annie Jump Cannon
b) Edward Pickering
c) Cecilia Payne-Gaposchkin
d) Williamina Fleming
e) Edwin Hubble
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a) Annie Jump Cannon  
b) Edward Pickering  
c) Cecilia Payne-Gaposchkin  
d) Williamina Fleming  
e) Edwin Hubble
Which type of binary star system provides the most accurate determination of the stars' masses?

a) spectroscopic binary
b) visual binary
c) eclipsing binary
d) All of the above are equally accurate.
e) A and C
Which type of binary star system provides the most accurate determination of the stars' masses?

a) spectroscopic binary
b) visual binary
c) eclipsing binary
d) All of the above are equally accurate.
e) A and C
Which type of binary star system provides both the masses and radii of its constituent stars?

a) spectroscopic binary  
b) visual binary  
c) eclipsing binary  
d) All of the above.  
e) None of the above.
Which type of binary star system provides both the masses and radii of its constituent stars?

a) spectroscopic binary
b) visual binary
c) **eclipsing binary**
d) All of the above.
e) None of the above.
What properties of a binary star system are needed to determine the masses of the stars?

a) stellar size and orbit size
b) orbit size and spectral type
c) stellar size and spectral type
d) orbit size and orbit period
e) orbit period and stellar size
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a) stellar size and orbit size  
b) orbit size and spectral type  
c) stellar size and spectral type  
d) **orbit size and orbit period**  
e) orbit period and stellar size
15.2 Patterns Among Stars

- What is a Hertzsprung-Russell diagram?
- What is the significance of the main sequence?
- What are giants, supergiants, and white dwarfs?
- Why do the properties of some stars vary?
On the Hertzsprung-Russell diagram, where are large cool stars located?

a) lower left
b) upper left
c) lower right
d) upper right
e) along the main sequence
On the Hertzsprung-Russell diagram, where are large cool stars located?

a) lower left  
b) upper left  
c) lower right  
d) upper right  
e) along the main sequence
Where is star located on the Hertzsprung-Russell diagram if it is burning hydrogen into helium in its core?

a) along the main sequence
b) upper right
c) lower left
d) A and B
e) anywhere
Where is star located on the Hertzsprung-Russell diagram if it is burning hydrogen into helium in its core?

a) along the main sequence
b) upper right
c) lower left
d) A and B
e) anywhere
What is the luminosity class of a main-sequence star?

a) I
b) III
c) V
d) G
e) M
What is the luminosity class of a main-sequence star?

a) I
b) III
c) V
d) G
e) M
Based on spectral type, we can estimate the masses of

a) all stars.
b) main-sequence stars.
c) white dwarfs.
d) giants.
e) giants and supergiants.
Based on spectral type, we can estimate the masses of:

a) all stars.

b) main-sequence stars.

c) white dwarfs.

d) giants.

e) giants and supergiants.
What is the most fundamental property of a star in determining its evolution?

a) composition  
b) size  
c) temperature  
d) luminosity  
e) mass
What is the most fundamental property of a star in determining its evolution?

a) composition  
b) size  
c) temperature  
d) luminosity  
e) mass
Which type of star is no longer undergoing nuclear fusion?

a) supergiants
b) subgiants
c) main-sequence stars
d) white dwarfs
e) none of the above (all have nuclear fusion)
Which type of star is no longer undergoing nuclear fusion?

a) supergiants  
b) subgiants  
c) main-sequence stars  
d) **white dwarfs**  
e) none of the above (all have nuclear fusion)
What is special about Cepheid variable stars?

a) They are useful in measuring the distances of other galaxies.
b) Their variability enables us to determine their masses.
c) Their variability enables us to determine their rotation rates.
d) They are useful in studying sunspots on other stars.
e) They are useful in understanding stellar flares.
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e) They are useful in understanding stellar flares.
15.3 Star Clusters

- What are the two types of star clusters?
- How do we measure the age of a star cluster?
What is unusual about globular clusters?

a) They are located only near the center of the galaxy.
b) Their stars are among the oldest in the universe.
c) They are located only in the disk of the galaxy.
d) Their stars are among the youngest in the universe.
e) B and C
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a) They are located only near the center of the galaxy.  
b) Their stars are among the oldest in the universe.  
c) They are located only in the disk of the galaxy.  
d) Their stars are among the youngest in the universe.  
e) B and C
The main-sequence turnoff of a star cluster tells us the cluster's:

a) age.
b) mass.
c) distance.
d) composition.
The main-sequence turnoff of a star cluster tells us the cluster's

a) age.
b) mass.
c) distance.
d) composition.
Which of the following main-sequence turnoffs indicates the oldest globular cluster?

a) O5  
b) O9  
c) B7  
d) B2  
e) G2
Which of the following main-sequence turnoffs indicates the oldest globular cluster?

a) O5  
b) O9  
c) B7  
d) B2  
e) G2