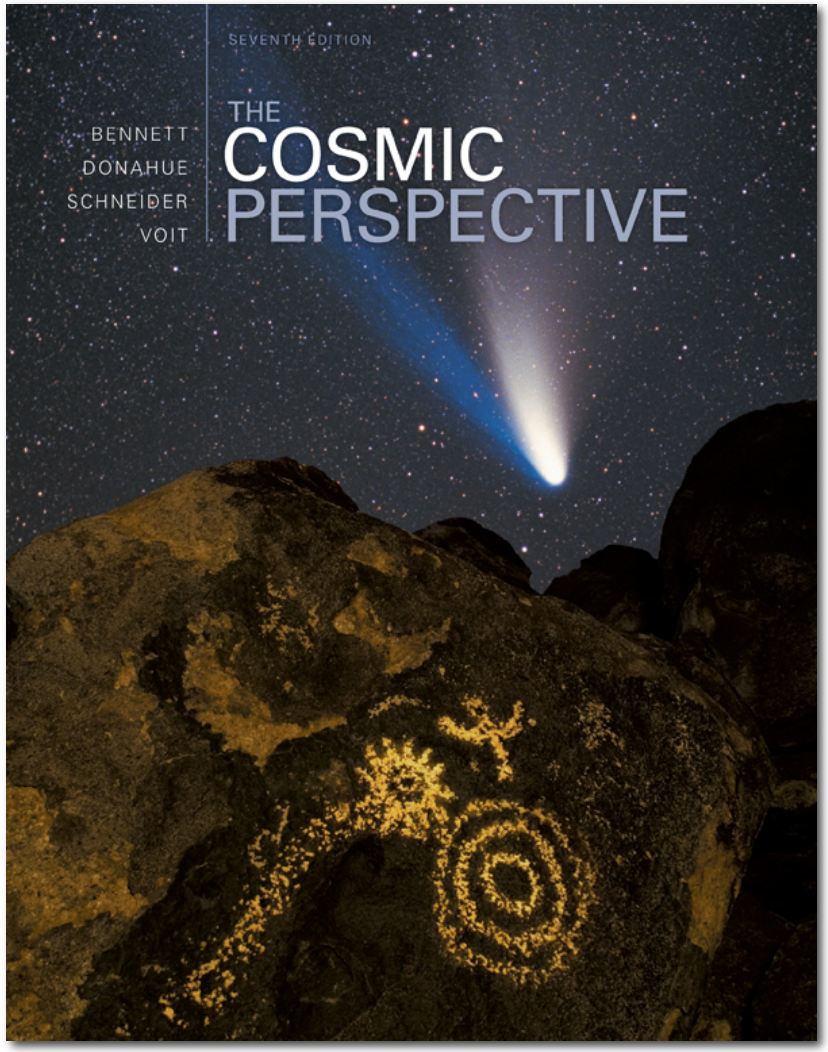
Chapter 15 Review Clickers

The Cosmic Perspective

Seventh Edition



Surveying the Stars

If a star was moved twice as far away, what would happen to it?

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b) It would get four times as faint.
c) It would get eight times as faint.
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e) It would get fainter and bluer.

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How do we determine the distances to nearby stars?

a) radar
b) parallax
c) measuring luminosity, radius, and temperature, and inferring the distance
d) comparing observed brightness to the Sun, and inferring the distance

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a) color–the hottest stars are "red hot"
b) color–the hottest stars are "bluish white"
c) spectral type
d) A and C
e) B and C

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Why do the hottest spectra (types O and B) show few absorption lines?

a) Many elements have been used up in these stars.
b) These stars are old and were formed before there were heavy elements in the galaxy.
c) Many atoms in these stars are ionized–have lost electrons–and can't absorb photons.

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In binary stars, the orbital period depends on the masses of the stars and the sizes of their orbits. Why is this so valuable to know?

a) We can predict how long an orbit will take.
b) This is the main way we determine the masses of stars.
c) This lets us know if two stars that look close together in the sky really orbit one another.

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c) spectral type
d) all of the above

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c) Spectral type
d) Luminosity

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To measure a star's luminosity, you need to know

a) its temperature and distance.
b) its temperature and color.
c) its apparent brightness and distance.
d) its apparent brightness and color.
e) its distance, apparent brightness, and color.

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What is the fundamental way of measuring the distance to the stars?

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b) the H-R diagram
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Which of the following in an example of parallax?

a) Hold your thumb out and blink one eye at a time. Your thumb moves more than the background.
b) Driving down a road, a nearby fence appears to shift more than distance scenery.
c) Planets shift their position in the sky partly because Earth moves, shifting *our* position.
d) Stars shift their position at different times of the year as Earth orbits the Sun.
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A star near the top of the main sequence has a mass about

a) twice the Sun's mass.
b) five times the Sun's mass.
c) 60 times the Sun's mass.
d) 10,000 times the Sun's mass.

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A star near the top of the main sequence has a luminosity about

a) twice the Sun's luminosity.
b) five times the Sun's luminosity.
c) 20 to 30 times the Sun's luminosity.
d) 10,000 times the Sun's luminosity.

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How would you expect the lifetime of a massive star near the top of the main sequence to compare to the Sun's?

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Why do photographs of a star field show some stars to be larger than others?

a) Some stars are larger than others and therefore appear larger.
b) Some stars are nearer than others and therefore appear larger.
c) Photographs make brighter stars appear larger than fainter stars, although they should all be points of light.
d) Sometimes what looks like a single star is actually a small group of stars and therefore appears larger.

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What do the colors of stars in the Hertzsprung-Russell diagram tell us?

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True or False?: Two stars that look very different must be made of different kinds of elements.

a) True, stars have a wide range of compositions.
b) True, stars appear different because of their different composition.
c) False, stars appear different due to their different ages and masses, not composition.
d) False, stars appear different because of their varying distances from us.

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True or False?: Stars that begin their lives with the most mass live longer than less massive stars because it takes them a lot longer to use up their hydrogen fuel.

a) True, with more hydrogen to burn, massive stars can live for billions of years.
b) True, low mass stars run out of hydrogen very quickly and have very short lifetimes.
c) False, stars have similar lifetimes despite their different masses.
d) False, more massive stars are much more luminous than low mass stars and use up their hydrogen faster, even though they have more of it.

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