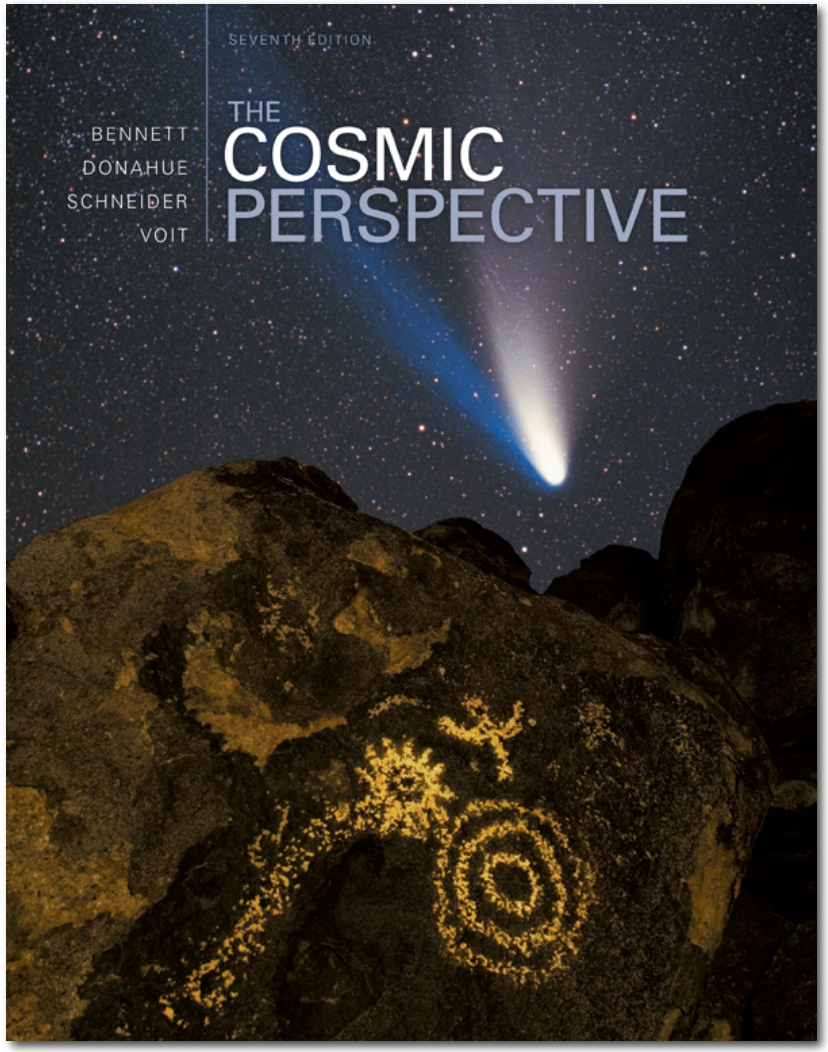
Chapter 16 Review Clickers

The Cosmic Perspective

Seventh Edition



Star Birth

What is the first step in the formation of a protostar?

a) Conservation of angular momentum causes galactic material to collapse into a disk.
b) Gravity causes planetesimals to begin to accumulate.
c) Gravity causes a cloud of gas and dust to begin to contract.
d) Nuclear fusion heats material and causes it to glow.

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True or False?: A protostellar cloud spins faster as it contracts, even though its angular momentum stays the same.

a) True, angular momentum is conserved and if the cloud contracts, it must spin faster.
b) True, clouds spin faster as they contract but their angular momentum must also increase.
c) False, if the angular momentum stays the same, the cloud must spin at the same rate.
d) False, if the angular momentum stays the same, the cloud cannot contract.

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Why do we think that clouds of gas and dust form stars?

a) We see young star clusters with gas and dust around them.
b) Infrared and microwave telescopes let us see protostars inside dust clouds.
c) Computer models predict that if a cloud has enough mass, it will contract, heat up, and form a star.
d) The Hubble Telescope lets us watch stars form before our eyes.
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If gas and dust are dark, how do we know they exist in space?

a) We sometimes see absorption lines from interstellar gas.
b) Infrared telescopes can see cool dust.
c) Radio telescopes can detect interstellar gas.
d) All of the above.

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When starlight passes through interstellar dust,

a) it gets fainter.
b) the blue light tends to scatter while the red continues toward us.
c) wavelengths all get longer (redder).
d) all of the above
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b) pressure
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Why do protostars rotate rather fast and end up surrounded by disks of material?

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b) If a cloud spins even a little bit, the spin increases as it contracts.
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Why can't a cloud with less than 0.08 solar masses become a star?

a) There won't be enough time for a star to form before gas is blown away by neighboring stars.
b) Gravity will be too weak to make the cloud collapse into a star.
c) It will never get hot enough for fusion to start.
d) The cloud will form planets instead of a star.

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Why can't a cloud with more than about 150 solar masses become a star?

a) There's rarely enough material to make a star so massive.
b) A larger star would be so bright that radiation pressure would blow it apart.
c) Gravity would be so strong that it would become a black hole.
d) The star's energy would be so great that it would explode as a supernova.

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If a protostar doesn't have enough mass to become a star, it becomes a

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What stops the contraction of a protostar?

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Compared to stars like the Sun, how common are massive (10, 20, 30 solar mass) stars?

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b) more common
c) less common
d) much less common
e) equally common

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