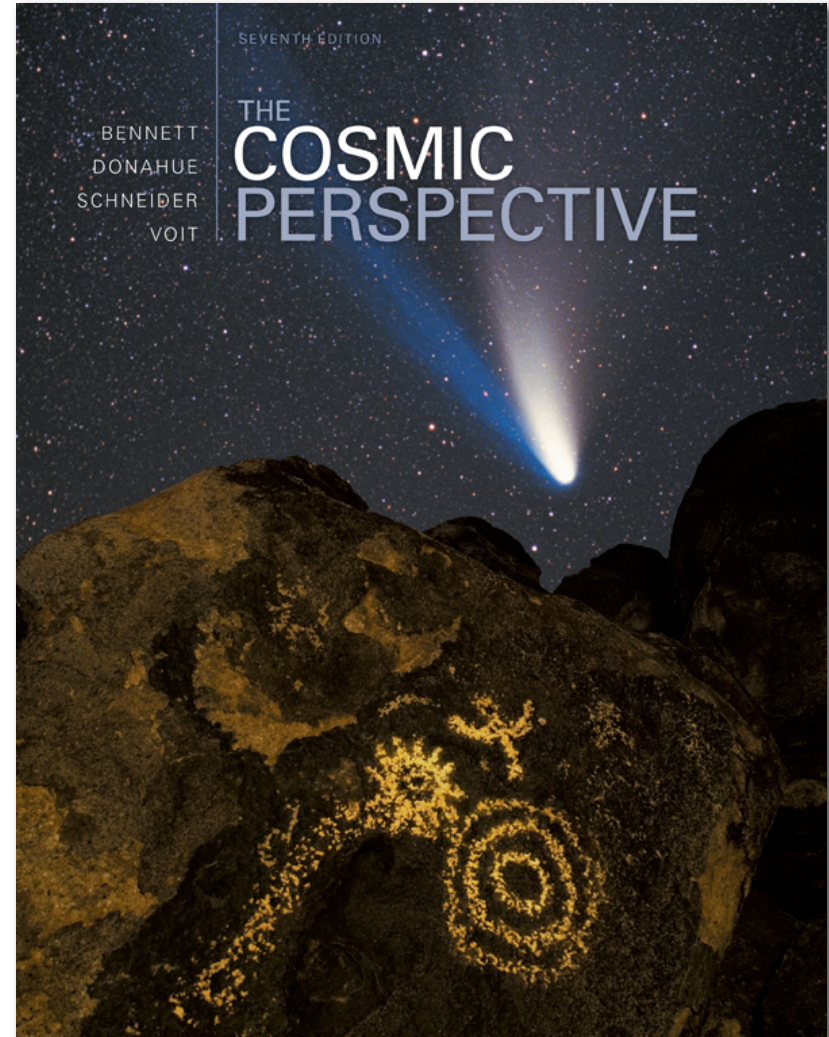


## The Cosmic Perspective

Seventh Edition

### Asteroids, Comets, and Dwarf Planets: Their Natures, Orbits, and Impacts



## Asteroids

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- b) are rocky, with a wide range of sizes, up to hundreds of miles in diameter.
- c) have only thin atmospheres.
- d) are made mostly of metals.
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# Chapter 12

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## Orbits of asteroids in the asteroid belt

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What is the best way to find the density of an asteroid?

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- b) Study a sample of its matter.
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## A typical meteorite is

- a) about the size of a house, and makes a crater when it impacts Earth's surface.
- b) about the size of a pea or grain of rice, and is invisible when it lands.
- c) about the size of a pea or grain of rice, and makes a bright streak in the sky as it burns up.
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## *Processed* meteorites

- a) are meteorites that have been altered in a lab for study.
- b) come from a parent body that was large enough to develop a core and mantle.
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## Comets

- a) formed from planetesimals in the inner part of the early solar system.
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## The *nucleus* of a comet

- a) is made of rock.
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If Earth passed through the tail of a comet, what would happen?

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- b) Earth would be bombarded by large impactors.
- c) Earth might be knocked out of its orbit or its axis might get tilted.
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Why is there a meteor shower *every year* on Aug. 10, 11, and 12?

- a) Meteorites only enter the solar system on certain dates.
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# Chapter 12

Every time a comet gets near the Sun, some of its material streams away in the tail. Shouldn't all comets be gone?

- a) yes
- b) no, not that much material vaporizes
- c) yes, but there are more comets stored in "deep freeze" beyond Pluto
- d) not yet, but they will all be gone sometime in the near future



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Why do some comets come from far out in space and from all different directions (i.e., not in the plane of the solar system)?

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About how often is it estimated that an asteroid or comet impacts Earth with sufficient energy to cause mass extinction?

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- b) once every million years
- c) once every hundred million years
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Surprising discovery? - A small asteroid that orbits within the asteroid belt has an active volcano.

- a) Plausible. Several small objects in the solar system have active volcanoes.
- b) Plausible. Several asteroids are known to be composed of basaltic material (lava).
- c) Implausible. Only planets, not moons or asteroids, have volcanoes.
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- a) Plausible. Other icy bodies at great distances from the Sun may also have liquid water on their surfaces.
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