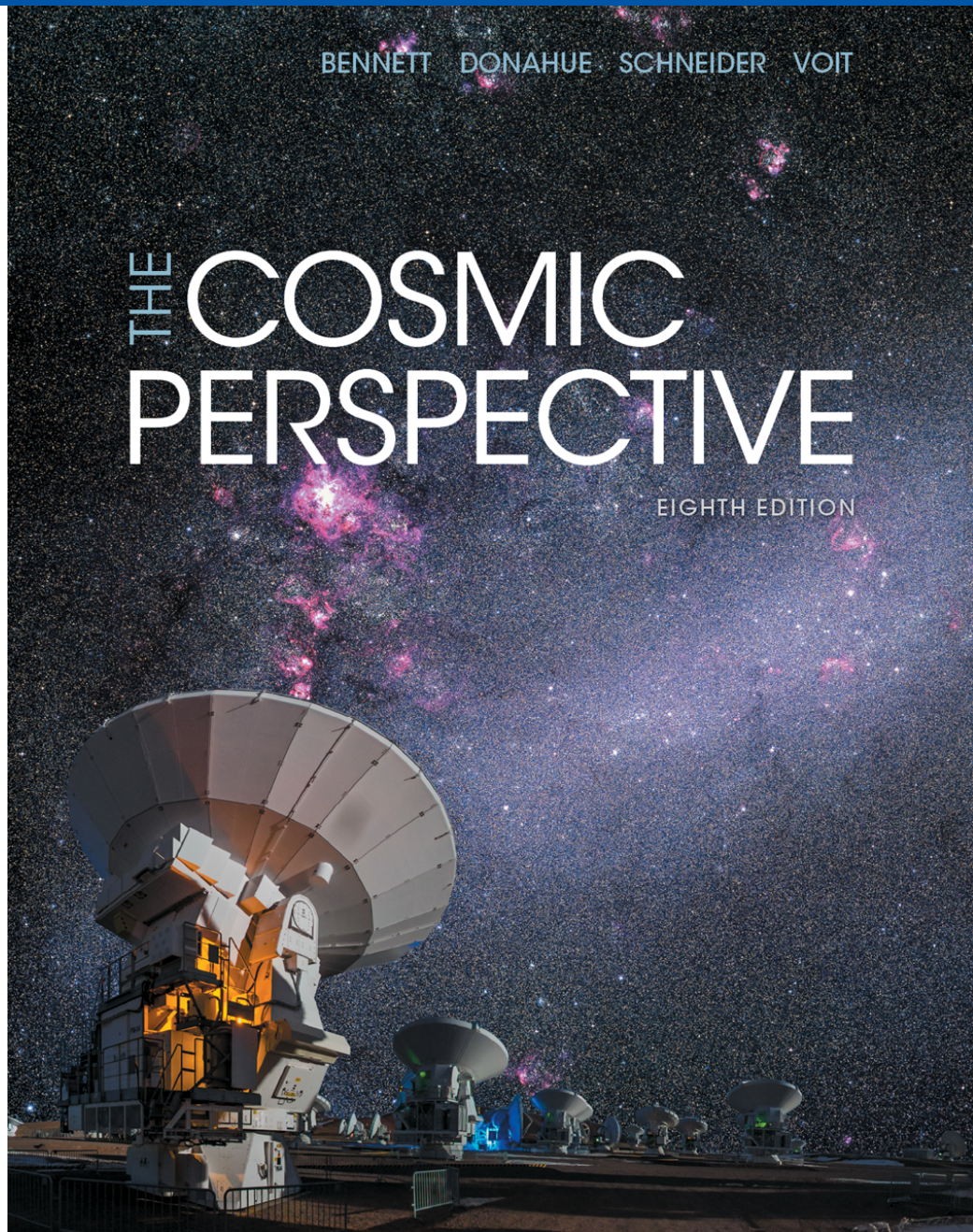
Review Clickers

Chapter S1: Celestial Timekeeping and Navigation



How long does Earth take to make one full rotation, relative to the distant stars?

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b) 24 hours
c) about 23 hours and 56 minutes
d) one year

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Why do we call a day 24 hours, if Earth *rotates* once in 23 hours, 56 min?

a) For simplicity—it is about 24 hours.
b) We measure a day by the position of the Sun, so Earth's *revolution* around the Sun affects the length of day.
c) In order to have an even number of days in each month.
d) Earth's epicycle is about 4 minutes.

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How much do *sidereal* and *solar* clocks differ after one day?

a) 4 minutes
b) about an hour
c) about two hours
d) 24 hours
e) none of the above

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How much do *sidereal* and *solar* clocks differ after one month?

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a) 4 minutes
b) about an hour
c) about two hours
d) 24 hours
e) none of the above

The constellation Orion rises in the early evening December 1. When will it rise on January 1?

a) about the same time
b) depends on where you are in the US
c) about four minutes earlier
d) two hours earlier
e) none of the above

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a) about the same time
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The constellation Orion rises in the early evening December 1. When will it rise in August?

a) about the same time
b) depends on where you are in the United States
c) in the early morning, before dawn
d) It won't rise in August.
e) none of the above

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b) depends on where you are in the United States
c) in the early morning, before dawn
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The time of *apparent noon* varies with longitude. For convenience, we pretend that it doesn't for nearby places by using

a) the equation of time.
b) the analemma.
c) time zones.
d) precession.
e) none of the above

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The English poet Kipling, while in the tropics, wrote, "The sun comes up like thunder over China cross the bay." What astronomical truth inspired this?

a) None; it's just poetry.
b) Sunrise is louder in the tropics.
c) Sunrise is faster in the tropics.
d) Sunrise is earlier in the tropics.

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During the month of March, the Sun's declination

a) is increasing.
b) is decreasing.
c) remains constant.
d) goes up and down over the course of each day.
e) cannot be determined.

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The south celestial pole appears on your meridian at an altitude of 30°. What is your geographic latitude?

a) 30°
b) -30°
c) 60°
d) 90° – you are at the north pole

The south celestial pole appears on your meridian at an altitude of 30°. What is your geographic latitude?

a) 30°

b) - 30° (minus meaning southern hemisphere)

c) 60°

d) 90° – you are at the north pole

The right ascension, extension of the geographic longitude in the celestial sphere is measured in

a) Degrees, their minutes and seconds
b) Hours, their minutes and seconds

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In the northern hemisphere, a star with declination of 30^o crosses your local meridian at an altitude of 80^o. What is your geographic latitude?

a) 60^o
b) 50^o
c) 40^o
d) 30^o

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a) 60^o

b) 50^o

c) 40^o (A: $80^o - 30^o = 50^o$ -- B: $50^o = 90^o$ – latitude)

d) 30^o

To calculate the geographic latitude, you need:

a) A compass
b) A sextant
c) Some almanac or a knowledge of declination of the Sun and / or stars
d) A clock
e) All of the above
f) A, B and C

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b) A sextant
c) Some almanac or a knowledge of declination of the Sun and / or stars
d) A clock
e) All of the above
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A star crosses the central meridian at Greenwich at midnight. What time will it cross the local meridian at some location in the East Coast?

a) 1am
b) 3am
c) 5am
d) 6am

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Your local noon corresponds to 10am local Greenwich time. What is your geographic longitude?

a) 15° East
b) 30° East
c) 45° East
d) 60° East

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To measure the geographic longitude, you need:

a) A compass
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c) Some almanac or a knowledge of declination of the Sun and / or stars
d) One clock, showing Greenwich time
e) A and D
f) D only
g) All of the above

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a) A compass
b) A sextant
c) Some almanac or a knowledge of declination of the Sun and / or stars
d) One clock, showing Greenwich time
e) A and D
f) D only (you need just the time difference between your local noon and Greenwich time)
g) All of the above