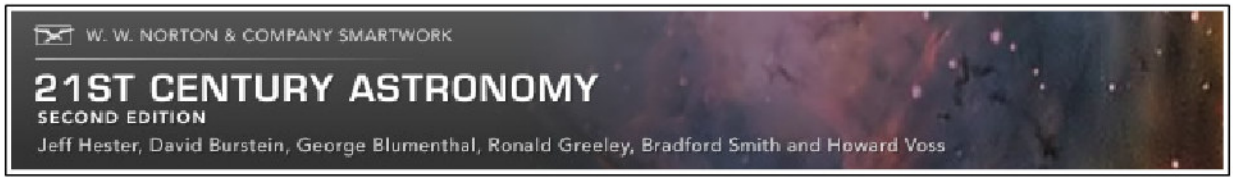
Question 1 of 15



What is the greatest distance (in degrees) that a star can be from Polaris and still be circumpolar as seen from Houston, TX (latitude 30.0°)?

Number

degrees

Question 2 of 15

The daily motion of the Sun across the sky is due to:

- the revolution of Earth around the Sun.
- the expansion of the universe.
- the rotation of Earth on its axis.
- the revolution of the Sun around Earth.

Question 3 of 15

What would happen if Earth no longer revolved around the Sun but rather sat stationary in one spot (all else remaining the same)?

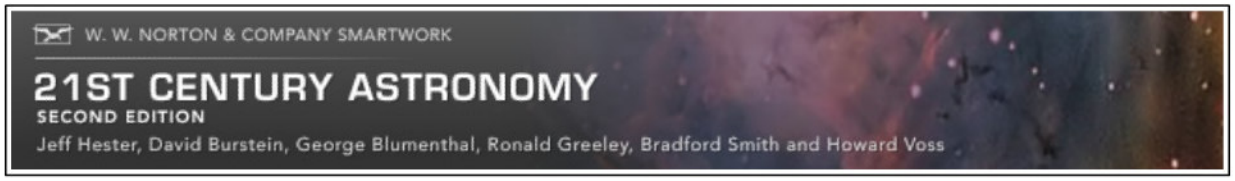
- The stars wouldn't move relative to the Sun.
- We would no longer have night and day.
- We would have very extreme seasons.
- The stars wouldn't rise and set every night.

Question 4 of 15

If Earth's axis were not tilted:

- we would always see the same stars.
- we would not have seasons.
- we would see solar and lunar eclipses every month.
- the Sun would always be overhead at noon.

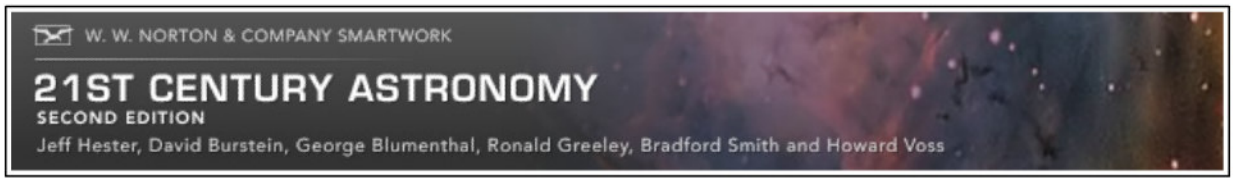
Question 5 of 15



If Earth's axis were tilted by 45 degrees instead of 23.5 degrees:

- we would see more circumpolar stars.
- Polaris wouldn't be the North Star anymore.
- we would have more mild seasons.
- the north celestial pole would be closer to the celestial equator.

Question 6 of 15

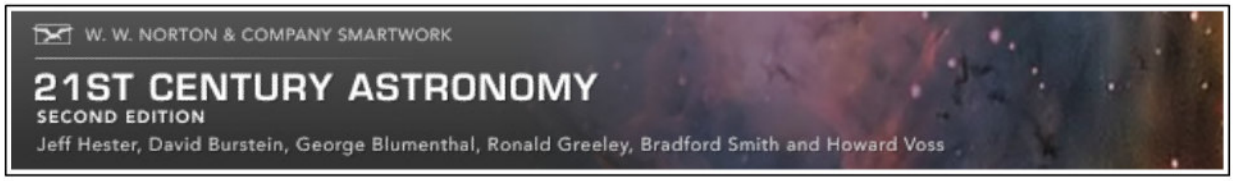


Earth's rotational axis precesses with a period of 26,000 years, tracing out a circle in the sky. Currently Polaris marks the location of the North Celestial Pole. How long until Alderamin, the brightest star in the constellation Cepheus (roughly 70° from Polaris along the circle), becomes the new north star?

Number

years

Question 7 of 15

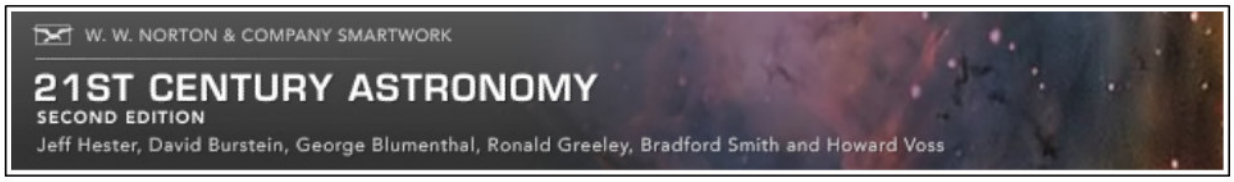


If it takes the Moon roughly 28 days to go once around Earth, how many degrees must the Moon move each night?

Number

degrees

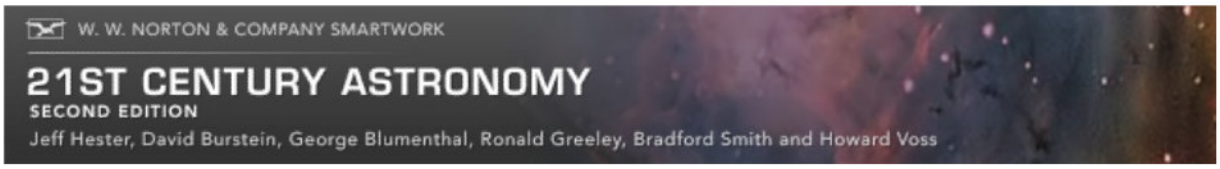
Question 8 of 15



You go outside around 3 pm on a clear day and notice that the Moon isn't in the sky. What does this tell you about the phase of the Moon?

- The Moon cannot be first quarter.
- The Moon is a waning gibbous.
- Nothing. The Moon is not visible in the daytime.
- The Moon is full.

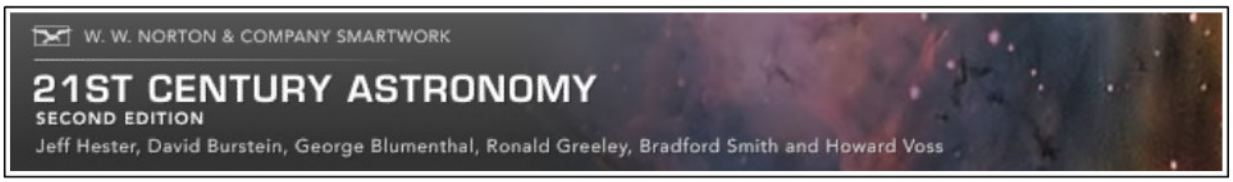
Question 9 of 15



During which phase of the Moon could you see the Moon on your meridian as the Sun sets?

- During a third quarter Moon.
- During a full Moon.
- During a new Moon.
- During a first quarter Moon.

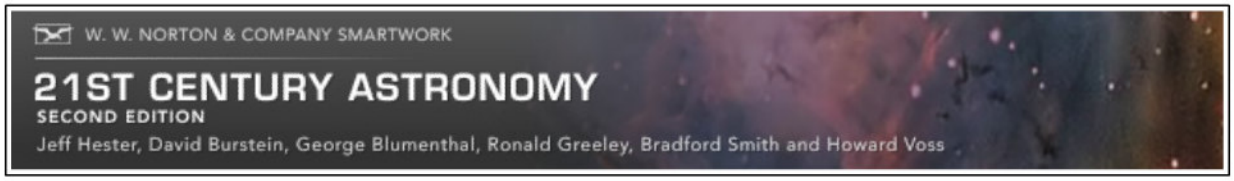
Question 10 of 15



Which phase of the Moon is visible an hour after sunrise?

- the full Moon
- the third quarter Moon
- the new Moon
- the first quarter Moon

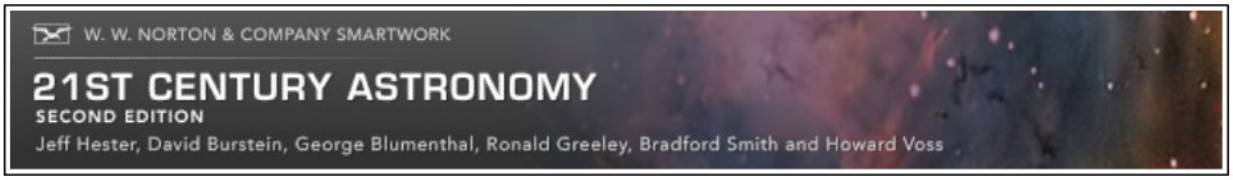
Question 11 of 15



Since the Moon's orbit is not a perfect circle, the Earth-Moon distance varies slightly. When it is closest to Earth, the Moon is 363,104 km away. Its farthest distance from Earth is 405,696 km. This variation in distance is responsible for annular eclipses. How many times larger does the Moon appear in our sky when it is closest to Earth as compared to when it is farthest?

Number
[ ] times greater

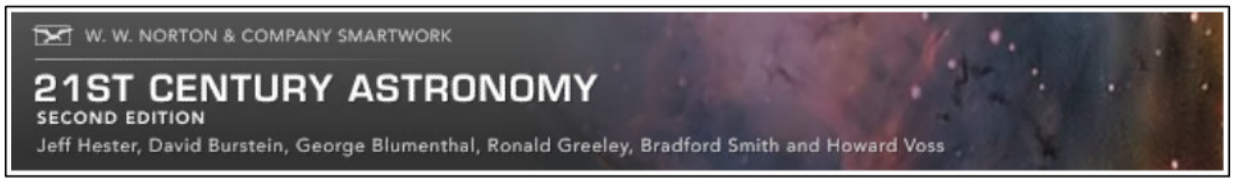
Question 12 of 15



If the Moon were twice its present distance from Earth:

- ○ we would never see a total lunar eclipse.
- ○ we would never see a total solar eclipse.
- ○ the phases of the Moon would be different.
- ○ the path of the Moon in the sky (relative to the background stars) would change.

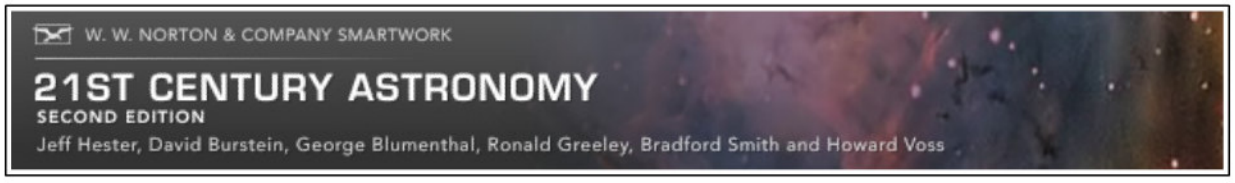
Question 13 of 15



The Moon's orbit is tilted by about 5° relative to Earth's orbit around the Sun. What is the highest altitude in the sky the Moon can reach as seen in Anchorage, AK (latitude 60.0°)?

Number
[ ] degrees

Question 14 of 15



Assume that you and your sister can both throw a baseball at a speed of 80.0 km/h. If you are in an airplane traveling at 850.0 km/h and play catch with your sister who is near the front of the plane (you being toward the rear), how fast would the ball be traveling as seen by an observer on the ground when *you* throw the ball?

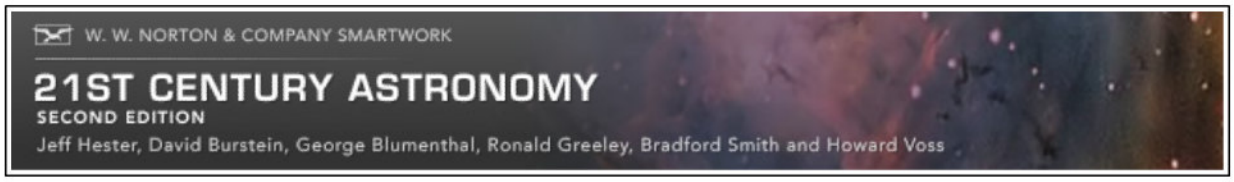
Number
[ ] km/h

How fast would the ball be traveling as seen by an observer on the ground when *your sister* throws the ball?

Number

km/ h

Question 15 of 15



Suppose the tilt of Earth's equator relative to its orbit were 45° instead of 23.5°. At what latitudes would the Arctic and Antarctic Circles be located?

Number

degrees latitude