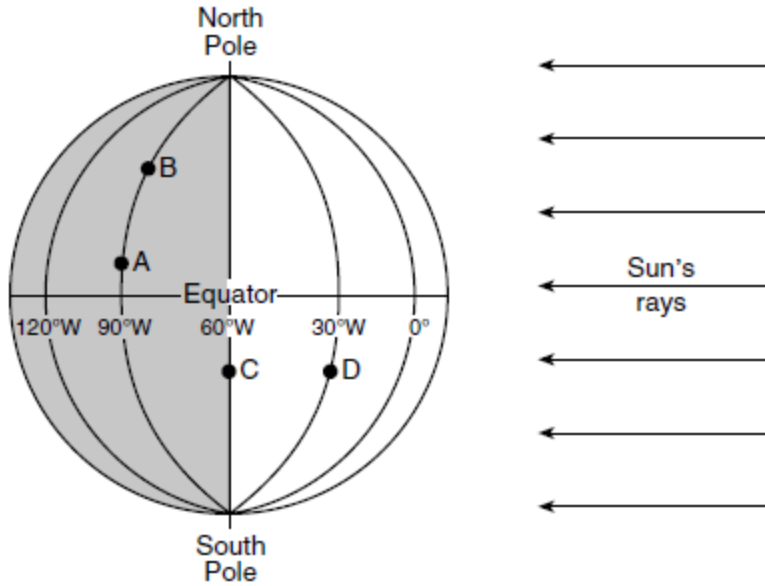


Base your answers to questions 1 through 3 on the diagram below and on your knowledge of Earth Science. The diagram represents Earth on the first day of a season. The equator, several lines of longitude, and the North and South Poles have been labeled. Letters *A* through *D* represent locations on Earth's surface.



1. State the solar time at location *D* if the solar time at location *C* is 6:00 a.m. Indicate a.m. or p.m. in your answer.
2. State whether the relative altitude of *Polaris* at location *A* is lower or higher than at location *B*. Explain why this difference is observed.
3. Identify *one* possible date that is represented by the position of Earth in this diagram

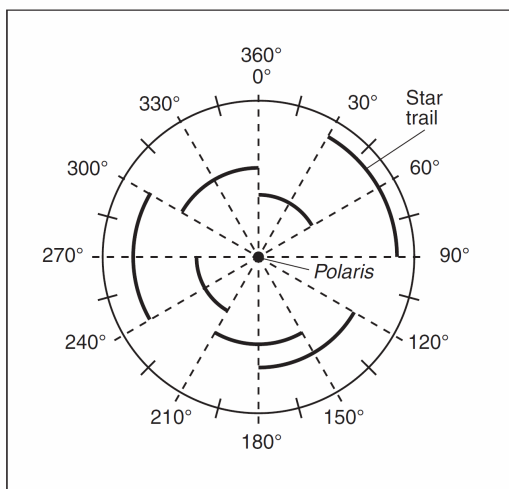
Base your answers to questions 4 through 6 on the data table below, which shows the length of a shadow, in centimeters, made by an object at different times during the day in New York State.

Shadow Lengths

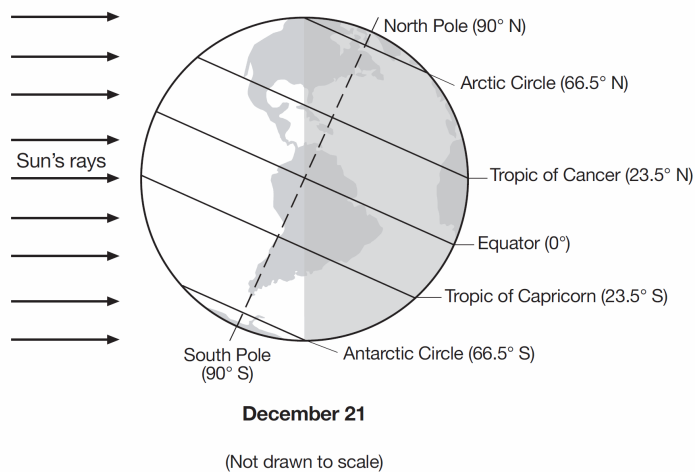
Time	Length of Shadow (cm)
9 : 00 a.m.	185
10 : 00 a.m.	129
11 : 00 a.m.	100
12 : 00 noon	89
1 : 00 p.m.	101
2 : 00pm	124

4. Toward which compass direction from the object does the shadow point at solar noon?
5. Explain what causes the length of the shadow to change during the day.
6. Predict the length of the object's shadow at 2:30 p.m.

Base your answers to questions 7 through 10 on the diagram below and on your knowledge of Earth science. The diagram represents a time-exposure photograph taken by aiming a camera at *Polaris* in the night sky and leaving the shutter open for a period of time to record star trails. The angular arcs (star trails) show the apparent motions of some stars.



7. Record, to the *nearest whole degree*, the altitude of *Polaris* when it is viewed from the top of New York State's Mt. Marcy.
8. The diagram below represents Earth as viewed from space. The dashed line indicates Earth's axis. Some latitudes are labeled. On the diagram, draw an arrow that points from the North Pole toward *Polaris*.



9. Determine the number of hours it took to record the star trails labeled on the diagram.
10. Identify the motion of Earth that causes these stars to appear to move in a circular path.