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## Exercise A3: The Local Coordinate System

Student name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

Check the box with the correct answer.

**Question 1:** Zoom in on the star Regulus. What are the approximate coordinates of Regulus as shown in the Main Window for this specific date and at this specific time?

- a. Altitude =  $17^\circ$  Azimuth =  $90^\circ$
- b. Altitude =  $90^\circ$  Azimuth =  $17^\circ$
- c. Altitude =  $18^\circ$  Azimuth =  $270^\circ$
- d. Altitude =  $72^\circ$  Azimuth =  $90^\circ$

**Question 2:** After this time has been advanced by two hours, which of these statements is correct?

- a. Regulus and the coordinate grid have both shifted westward.
- b. The altitude and azimuth of Regulus have changed because the local coordinate grid has shifted westward.
- c. The altitude and azimuth of Regulus have changed while the local coordinate grid has remained fixed.
- d. The constellations have shifted westward but the local coordinates (that is, altitude and azimuth) of Regulus have not changed.

**Question 3:** Select the statement that correctly describes how Minkar's altitude changes over time.

- a. The altitude of Minkar increases continuously right across the sky as time advances.
- b. Minkar reaches its maximum altitude as it crosses the meridian.
- c. The altitude of Minkar is greater to the west of the meridian than it is to the east of the meridian.
- d. The altitude of Minkar is negative to the east of the meridian, and positive to the west of the meridian.

**Question 4:** At what time of the day is the Sun most likely to be at its highest altitude, on the local meridian?

- a. At midnight.
- b. At sunrise.
- c. At noon.
- d. At sunset.

**Question 5:** What effect does changing an observer's latitude have on the altitude of Antares?

- a. The altitude of Antares is always equal to the observer's latitude.
- b. The altitude of Antares increased as the observer's latitude increased.
- c. The altitude of Antares increased as the observer's longitude increased.
- d. The altitude of Antares increased as the observer's latitude decreased.

**Question 6:** What fraction of a circle does the difference in the Sun's altitude as measured from the two cities represent?

- a.  $1/7$
- b.  $7/360$
- c.  $360/7$
- d.  $82/89$

**Question 7:** What is the circumference of the Earth using Eratosthenes' method?

- a.  $925 \text{ km} \times 7$
- b.  $925 \text{ km} \times (82/89)$
- c.  $925 \text{ km} \times (7/360)$
- d.  $925 \text{ km} \times (360/7)$