

Name \_\_\_\_\_

Date \_\_\_\_\_

## Calculate the Sun's Rotation

Follow steps 1-6 to calculate the sun's rotation based on the data you collected in the worksheet Sunspot Mapping Grid.

- 1 Use the completed Sunspot Mapping Grid worksheet to determine the longitude for the major sunspot group on days 1-4. Each vertical and horizontal line equals 15° latitude and longitude, respectively. Enter the longitudes of the sunspot group in column 1 of the table below.
- 2 Estimate how far the sunspot group moved between day 1 and day 2 by subtracting the smaller longitude from the larger longitude. Record this change in longitude in column 2 of the table below. Estimate this number to the nearest whole degree.
- 3 Repeat the same process for subsequent days up to day four and record your results.
- 4 The Earth revolves around the sun at a rate of 360 degrees in one year (365 days) or an average motion of about 1° per day. Since Earth revolves around the sun in the same direction as the sun rotates, our motion seems to chase after the sunspots. The apparent movement of sunspots is less than the real rotation by about 1° per day. You'll need to compensate for the orbital motion of Earth by adding 1° to your computed apparent daily motion. Add 1° to each change in longitude and enter it in column 3.
- 5 Assume that sunspots are features whose position on the Sun does not change very much over the course of a solar rotation. Use the formula below to calculate the sun's period of rotation (in days). Record your answers in column 4.

$$\frac{\text{corrected longitude change}}{1 \text{ day}} = \frac{360 \text{ degrees}}{x \text{ days}}$$

- 6 Find the average rotational period and record it in the last row of the table. Calculate to the nearest tenth of a day.

	Longitude of Sunspot Group	Change in Longitude (Day 2–Day 1=x)	Corrected Longitude Change (add 1°)	Period of Rotation in Days (solve for x)
Day 1				
Day 2				
Day 3				
Day 4				
Average Rotational Period (in days)				