Follow the Sun

Track one place on Earth through a typical day.

6.1 "Manipulate models to demonstrate the patterns of motion of the sun, Earth, and moon. a. Construct an evidence-based explanation of how the relative positions of the sun and Earth result in observable phenomena..."

NAME _____ DATE _____

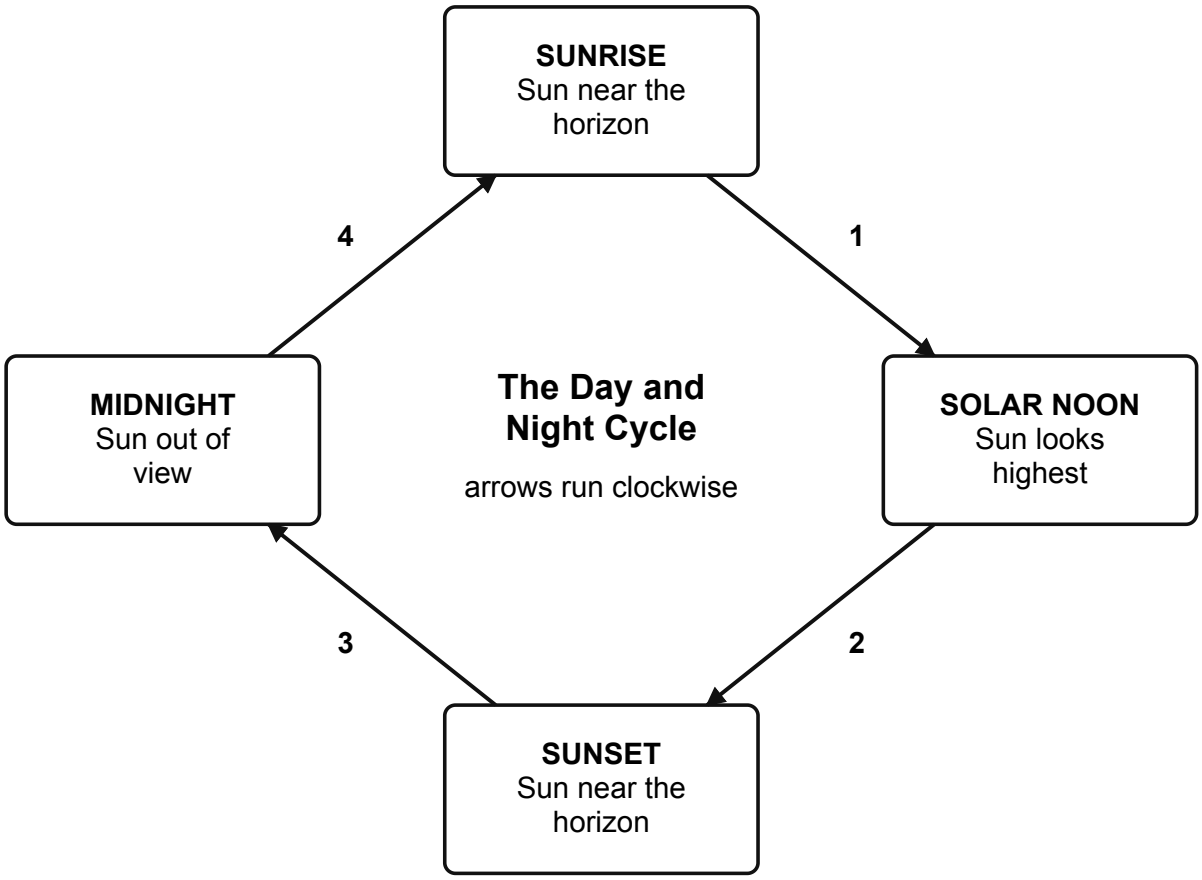
1 LABEL THE MODEL

Word bank below

Pairs need a ball, removable dot and flashlight. Mark a place halfway between the ball's poles. Hold the light steady while rotating the ball about its poles; observe the dot entering and leaving the light. Pause at the four shown stages. Then fill each arrow box from the word bank.

WORD BANK

- Earth turns farther into night
- Earth turns toward sunlight
- Earth turns; Sun looks higher
- Earth turns; Sun looks lower



Arrow numbers match the response boxes on the next student section.

Label the arrows

Use the word bank to write the process for each numbered arrow.

Arrow 1	Arrow 2

Arrow 3	Arrow 4

2 RUN THE MODEL

Use your finished diagram

1. Rotate the ball from sunset to the next shown stage. Name that stage and describe the dot's position relative to the light.

2. Use an observation from your model to explain why one place has daytime and nighttime, even while the light stays still.

3. At which shown stage does the Sun appear highest? Position your ball to model that stage and explain what faces the light.

3 CHECK IT

Before you turn it in

- [ ] I rotated the ball while the light stayed still.
- [ ] I matched all four stages to positions of my dot.
- [ ] I used a model observation as evidence in my explanation.

TEST THE MODEL

Identify one feature of the real Sun-Earth system this model omits. Explain why the model cannot predict daylight length at every place and season.

ANSWER KEY

Follow the Sun

GRADE 6 · 6.1

PART 1 · COMPLETED MODEL

ARROW	FROM	TO	PROCESS
1	SUNRISE Sun near the horizon	SOLAR NOON Sun looks highest	Earth turns; Sun looks higher
2	SOLAR NOON Sun looks highest	SUNSET Sun near the horizon	Earth turns; Sun looks lower
3	SUNSET Sun near the horizon	MIDNIGHT Sun out of view	Earth turns farther into night
4	MIDNIGHT Sun out of view	SUNRISE Sun near the horizon	Earth turns toward sunlight

PART 2 · RUN THE MODEL

1. **The next shown stage is midnight. The dot faces away from the light. Real time passes continuously between these four selected stages.** (Rotate the ball from sunset to the next shown stage. Name that stage and describe the dot's position relative to the light.)
2. **The same dot turns into the light and then away from it. Earth's rotation similarly moves a place into sunlight and then out of direct sunlight.** (Use an observation from your model to explain why one place has daytime and nighttime, even while the light stays still.)
3. **Solar noon. In this simplified equatorial model, the dot faces the light most directly. The apparent daily height of the Sun is greatest at local solar noon.** (At which shown stage does the Sun appear highest? Position your ball to model that stage and explain what faces the light.)

TEST THE MODEL (SAMPLE ANSWERS)

- The fixed equatorial setup omits changing season and latitude; polar regions can have continuous daylight or darkness.
- The light and ball are not to scale, and the simplified setup does not model Earth's yearly orbit and tilted axis together.

Before class, supply a ball, removable dot and flashlight per pair or station. Model a typical day at low latitude; learners must rotate the ball themselves and use observations. This focused day/night task does not assess all the parent standard's year, season, Moon, eclipse or tide expectations. Source: Lunar and Planetary Institute, SkyTellers: Day and Night.