

Seasons in a Loop

Track Northern Hemisphere daylight and temperature patterns.

4.9.A "collect and analyze data to identify sequences and predict patterns of change in seasons such as change in temperature and length of daylight; and"

NAME _____

DATE _____

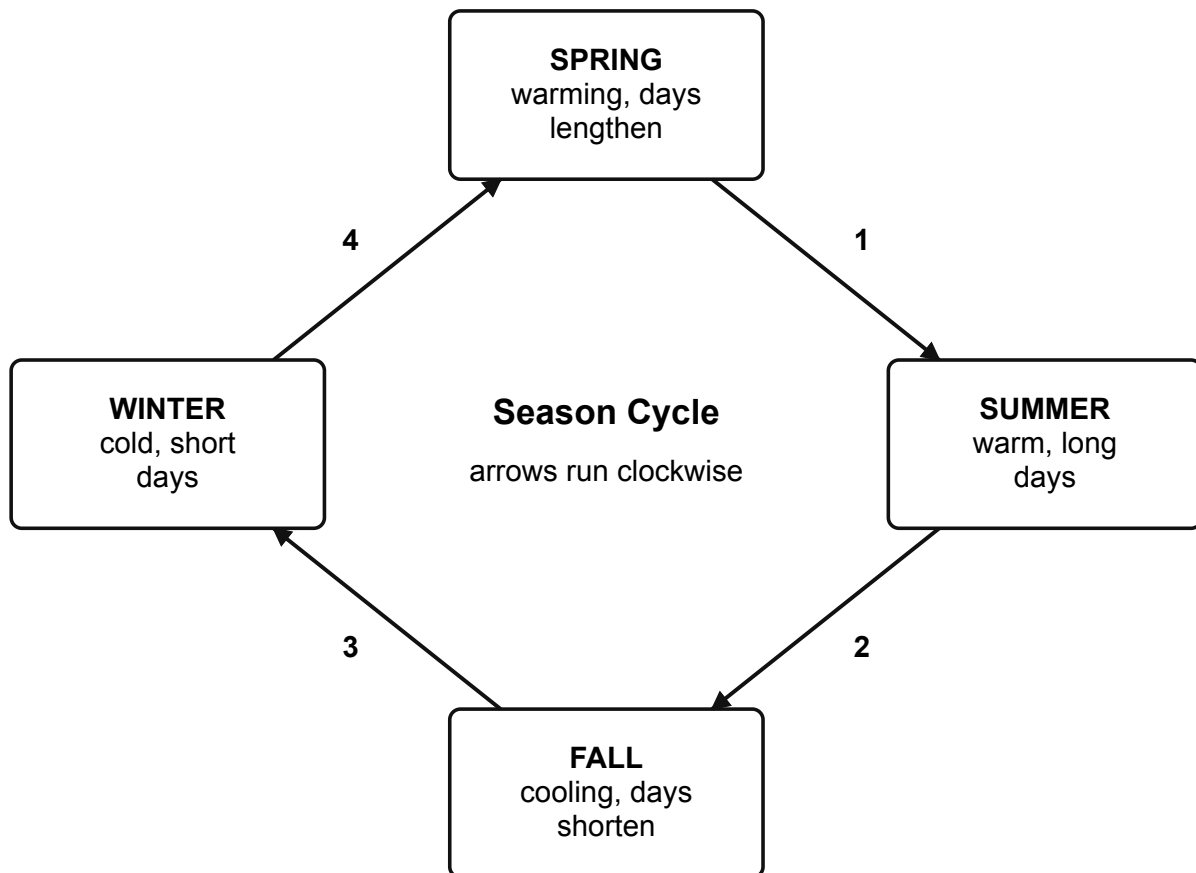
1 LABEL THE MODEL _____ Word bank below

Use the word bank. Write one process in each numbered box on the arrows. Some processes are used more than once.

WORD BANK

less direct sunlight

more direct sunlight



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 After FALL, which stage comes next in the cycle?

2 Which process belongs on the arrow from SUMMER to FALL?

3 How do daylight and temperature change from WINTER to SPRING?



CHECK IT

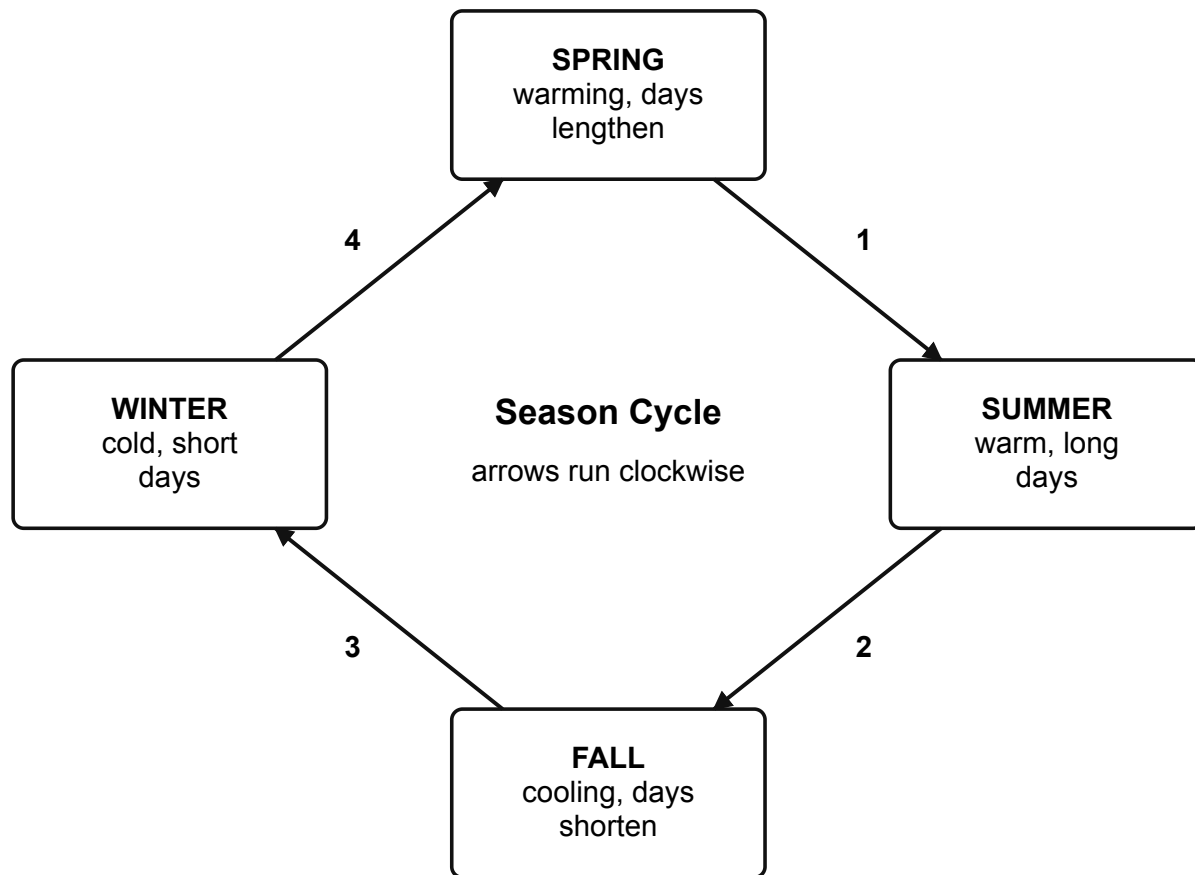
Before you turn it in

- ☐ I filled every arrow box.
- ☐ I checked the cycle order.
- ☐ I collected six dated records and supported a seasonal prediction.

TEST THE MODEL

What is one thing this model leaves out that could affect the temperature on a particular day? Then collect seasonal data. Teacher: supply a printed sunrise/sunset calendar for one named midlatitude Northern Hemisphere city and one full year, showing its source. On extra paper collect the date, sunrise and sunset for January 15, March 15, May 15, July 15, September 15 and November 15. Calculate each daylight length by subtracting sunrise from sunset. Record city, year and source; order the six records by date. Describe where daylight increases and decreases, and use that sequence to predict whether daylight in the following January will be longer or shorter than in July. Support your prediction with two collected records.

PART 1 • COMPLETED MODEL

**Arrow 1**

more direct sunlight

Arrow 2

less direct sunlight

Arrow 3

less direct sunlight

Arrow 4

more direct sunlight

PART 2 • RUN THE MODEL

1. **WINTER** (After FALL, which stage comes next in the cycle?)
2. **less direct sunlight** (Which process belongs on the arrow from SUMMER to FALL?)
3. **Days grow longer and temperatures warm.** (How do daylight and temperature change from WINTER to SPRING?)

TEST THE MODEL (SAMPLE ANSWERS)

- Clouds or storms can make a day cooler.
- Nearby water or mountains can affect local temperatures.

Boxes 1 through 4 are: more direct sunlight, less direct sunlight, less direct sunlight, more direct sunlight. The model shows general Northern Hemisphere patterns. Local weather and location can cause temperatures to vary. Before use, provide the actual printed city/year/source calendar and support time subtraction. Require six copied sunrise/sunset pairs, calculated daylight lengths and an ordered trend, not invented data. Daylight generally increases toward summer and decreases toward winter in the specified midlatitude Northern Hemisphere setting; January is shorter than July. Check the two cited records and all calculations against the provided source; local times vary. Example calculation only: 7:00 a.m. to 5:00 p.m. is 10 hours, not a claimed calendar record. Temperature/weather limitation answers remain valid.