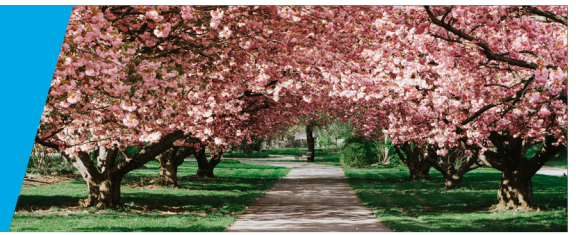# CURIOSITY AT HOME
CHERRY BLOSSOM CLIMATOLOGY

Every spring, people gather to view cherry blossoms and celebrate the beginning of spring. Cherry blossom viewing gatherings, or hanami, started in Japan over 1,200 years ago and has since spread around the world. Because people have been enjoying hanami for so long, there are detailed records of the blooming dates of the flowers going back to the 800s. Have these bloom dates changed much in the past 1,200 years? Analyze the data for yourself to look for patterns.

MATERIALS

· Graph paper (template included)

· Ruler or straight edge

· Science notebook or paper

· Something to write with in at least two colors

PROCEDURE

· Look at the table to the right. It includes an average date at which the flowers were fully in bloom for every 50 years since the year 800.

· Graph these dates, either on your own graph paper or with the template provided.

  – Label the horizontal x-axis Year. Label the vertical y-axis Average Full Bloom Date.

  – Add a title to your graph.

  – Make a dot at the corresponding place on the graph for each pair of year ranges and bloom dates. To add each dot, first find the date range on the x-axis, for example 801-850. Then follow the line upward until you reach the corresponding bloom date, for example April 7th. See the first dot placed on the graph below as an example.

  – Notice that 2000-2022 is only 22 years compared to the other 50-year periods. Because of this, the data point will be closer to the one before it than any other two data points.

  – Use the ruler or straight edge to connect the dots in order from left to right and make a line graph. What do you notice happening to the flower bloom dates over time?

Years	Average Full Bloom Date
801–850	April 7
851–900	April 14
901–950	April 11
951–1000	April 8
1001–1050	April 18
1051–1100	April 13
1101–1150	April 17
1151–1200	April 15
1201–1250	April 12
1251–1300	April 14
1301–1350	April 18
1351–1400	April 12
1401–1450	April 10
1451–1500	April 13
1501–1550	April 20
1551–1600	April 14
1601–1650	April 13
1651–1700	April 17
1701–1750	April 16
1751–1800	April 14
1801–1850	April 17
1851–1900	April 15
1901–1950	April 13
1951–2000	April 9
2001–2022	April 4

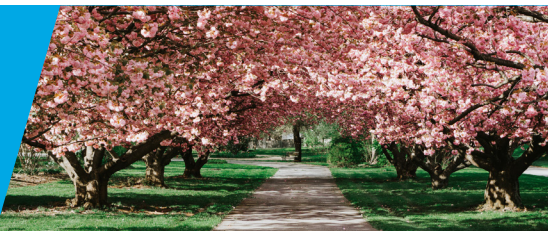*(Aono and Kazui, 2008; Aono and Saito, 2010. 2022 data from Japan Meteorological Agency)*

AVERAGE FULL BLOOM DATE

	March 22	March 23	March 24	March 25	March 26	March 27	March 28	March 29	March 30	March 31	April 1	April 2	April 3	April 4	April 5	April 6	April 7	April 8	April 9	April 10	April 11	April 12	April 13	April 14	April 15	April 16	April 17	April 18	April 19	April 20	April 21	April 22	April 23	April 24	April 25	April 26	April 27	April 28	April 29	April 30
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YEARS

CURIOSITY AT HOME
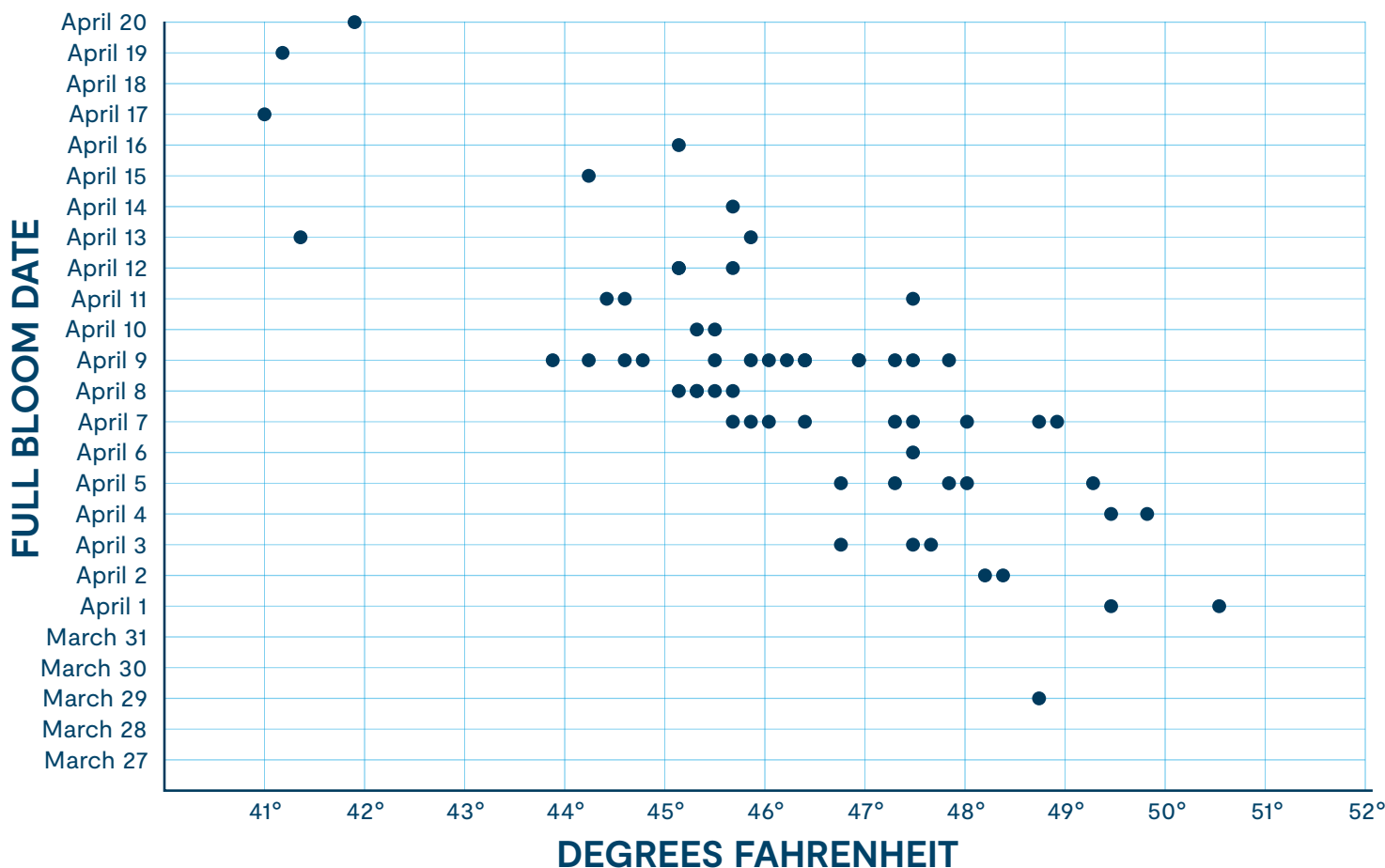## CHERRY BLOSSOM CLIMATOLOGY

EXPLORE MORE

· Look at the graph below.

· What does the horizontal x-axis represent? What does the vertical y-axis represent?

· When the bloom date is earlier, for example April 1st, what is the average temperature? When the bloom date is later, for example April 16th, what is the average temperature?

· In your science notebook, write an explanation of what this graph tells you about how temperature is related to bloom date.

WHAT'S HAPPENING?

You may have noticed that the cherry blossoms in Kyoto are blooming earlier and earlier in recent years. This is because cherry trees depend on the temperature around them to tell them when to bloom. The temperature in Kyoto has been getting warmer earlier in the year for two main reasons, causing the cherries to bloom earlier. The first reason Kyoto is getting warmer earlier is climate change. Human-made greenhouse gases wrap around the earth like a blanket. These gases trap more heat from the sun and the planet slowly gets warmer. The other reason Kyoto is warming up is the urban heat island effect. Artificial materials common in cities like concrete and asphalt trap heat much more than natural materials like plants do. So, cities like Kyoto are warmer than natural areas.
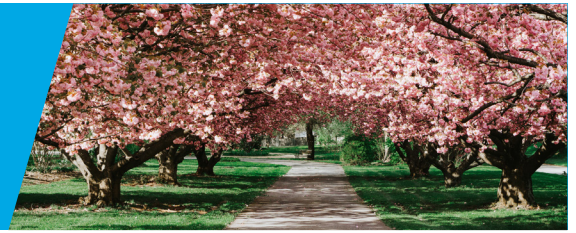
6–8 GRADE EXPLORATION

Explore the following questions and write your responses in your science notebook.

· For the earliest 50-year periods, there were only a few years where researchers could find journals with records of a bloom date. Would the averages for these years be as likely to be an accurate representation of reality? Why or why not?

· Use a ruler or straight edge to draw a line on your two graphs showing the overall pattern of the data.

· What do you expect will happen to the cherry blossoms full blooming date as climate change continues?

· Using the graph you made, what average date would you predict the cherry blossoms to bloom in 2051–2100? In 2101–2150?

· Phenology is the study of annual natural events like the blooming of flowers, trees losing their leaves, or birds laying eggs. Can you think of any other examples of phenological events that might be affected by climate change?

Sources

Aono and Saito (2010; International Journal of Biometeorology, 54, 211–219)

Aono and Kazui (2008; International Journal of Climatology, 28, 905–914)

Aono (2012; Chikyu Kankyo (Global Environment), 17, 21–29)

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