Weather and Seasons
Lesson 2c: January Temperatures

Grade: Kindergarten	**Length of lesson:** 40 minutes	**Placement of lesson in unit:** 2c of 5 lessons on weather
Unit central questions: Is weather the same everywhere all of the time? How do you know?		**Lesson focus question:** What was the temperature pattern in Pomona in January?

Main learning goal: Graphing temperature data reveals temperature patterns at a given time of year in a specific place.

Science content storyline: Using weather data, we can create graphs to help us identify weather patterns at a given time in a specific place. Our picture graphs for January showed that the weather pattern in Pomona was both sunny and cloudy. We can also create graphs to help us identify temperature patterns in Pomona during the month of January. Our bar graph showed a pattern of mostly cool temperatures in Pomona during January.

Ideal student response to the focus question: We can use the temperatures we recorded on our weather calendar to make graphs that can help us see temperature patterns in Pomona during January. When we made a bar graph using the temperatures we recorded on our calendar, we found a pattern of mostly cool temperatures in Pomona during January.

Preparation

Materials Needed	**Ahead of Time**
• Science notebooks • Chart paper and markers • Large class weather calendar with temperature data collected for January **Student Handouts** • 1.1 Monthly Weather Observation Chart (from lesson 1b) • 1.5 Blue, Green, Red, and Yellow Temperature Stickers, 1/2" size (1 set per student) • 2.1 Pomona Weather Patterns for January *(*from lesson 2a) • 2.3 Pomona Temperature Patterns for January, 8.5 × 14" (1 per student)	• Review the content background document. • Display the class weather calendar for January. • Review the PowerPoint slides and make any needed modifications. • Make sure that students have plenty of temperature stickers on their tables or desks for the graphing activity. • **ELL support:** Meet with ELL students in advance and introduce them to the lesson content, structure, materials, and activities so they know what's expected and can participate more fully. Identify vocabulary terms in the lesson plan to review with students in advance, including *temperature, thermometer*, *bar/picture graph*, *pattern*, *calendar*, *count*, *evidence*, and *compare*. • **Students will need their completed bar graphs (handout 2.3) for use in lessons 2d and 4b.** In lesson 2d, students will compare their bar graphs of September and January temperatures, and in lesson 4b, they'll compare temperatures in Pomona and Detroit in January.

Lesson 2c General Outline

Time	Phase of Lesson	How the Science Content Storyline Develops
5 min	**Link to previous lessons:** The teacher engages students in reviewing the weather patterns they identified on their picture graphs for January and the drawings they made to illustrate these patterns.	• Using our weather data to make a picture/bar graph can help us identify weather patterns more easily and provides us with more accurate evidence. • Our picture graphs for January showed that the weather pattern in Pomona was both sunny and cloudy.
5 min	**Lesson focus question:** The teacher introduces the focus question, *What was the temperature pattern in Pomona in January?* Then students pair up and share what they think the temperatures were mostly like in January.	
8 min	**Setup for activity:** To help them identify temperature patterns, students count the number of hot or warm and cool or cold days on the class weather calendar for January. Then they record this data on the weather calendar and on their Monthly Weather Observation Charts.	• By studying weather over time, we can identify temperature patterns. • One way to identify temperature patterns is to count the number of hot or warm days and cool or cold days there were in Pomona during January and then represent this data on a picture or bar graph.
8 min	**Activity:** Using their counting data, students make bar graphs to show the number of hot, warm, cool and cold days in January.	
6 min	**Follow-up to activity:** Students use their bar graphs to help them identify temperature patterns in Pomona during the month of January.	• Graphing temperature data helps us see patterns more easily and provides us with more accurate evidence. In Pomona during January, the temperature pattern was mostly cool.
5 min	**Synthesize/summarize today's lesson:** The teacher reviews the focus question. Then students summarize what they learned about temperature patterns in Pomona during January.	
3 min	**Link to next lesson:** The teacher foreshadows the next lesson in which students compare the temperature patterns in September with the temperature patterns in January to find out if temperature patterns change from month to month.	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
6 min	**Link to Previous Lessons** **Synopsis:** The teacher engages students in reviewing the weather patterns they identified on their picture graphs for January and the drawings they made to illustrate these patterns. **Main science idea(s):** • Using our weather data to make a picture/bar graph can help us identify weather patterns more easily and provides us with more accurate evidence. • Our picture graphs for January showed that the weather pattern in Pomona was both sunny and cloudy.	Summarize key science ideas. Ask questions to elicit student ideas and predictions. Engage students in	**Show slide 1.** In January, we went outside every day to observe the weather and measure the temperature with a thermometer. Then we recorded our weather observations and temperature readings on our class weather calendar to help us look for patterns in the weather. When was January? **Show slide 2.** Let's look at our picture graphs for January. **NOTE TO TEACHER:** *Have students locate their picture graphs from lesson 2a (handout 2.1, Pomona Weather Patterns for January). You might also have them refer to their Monthly Weather Observation Charts (handout 1.1) for this discussion. In addition, students will need to refer to the pictures they drew in lesson 2a to show weather patterns in January.* Who can tell me one weather pattern we found on our picture graphs for January. What was our weather mostly like? Did we have a lot of rainy days?	It was when we came back to school after the holidays. No. We had almost as many cloudy days as sunny days.	And what about

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
		analyzing and interpreting data and observations.	What picture did you draw to show what the weather is like in January?	There were only a few rainy days. I drew the Sun and lots of clouds because there were almost as many cloudy days as sunny days.	rainy days?
			Did you draw any people? What were they wearing?	I drew children playing outside with jackets and long pants on. Because I remember wearing a jacket in January. Because it was cloudier in January than it was in September, so it was	Why didn't you draw them wearing T- shirts and shorts? Any other ideas about why children might wear jackets and long pants in January?

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
			So we know from our picture graphs that there were more cloudy days in January than there were in September. But what do we know about the *temperatures* in January? Let's look at our class weather calendar again. What do you see that tells you what the temperatures were like each day? What could we do to help us see if there are any temperature patterns in January?	probably cooler. I can see green and yellow stickers for January. There are a few blue thermometers, too. We could make a picture graph of our temperatures in January.	
		Summarize key science ideas.	Good idea! Making a picture graph or bar graph of our temperatures in January can help us look for temperature patterns. That's what we'll do today!		
5 min	**Lesson Focus Question** **Synopsis:** The teacher introduces the focus question, *What was the temperature pattern in Pomona in January?* Then students pair up and share	Set the purpose with a <u>focus question</u> or goal statement.	**Show slide 3.** Our focus question for this lesson is *What was the temperature pattern in Pomona in January?* **NOTE TO TEACHER:** *Write the focus question on the board and draw a box around it.*		

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
	what they think the temperatures were mostly like in January.	Ask questions to elicit student ideas and predictions.	**Show slide 4.** What do you think the temperature pattern was like in January? **Think-Pair-Share:** Think about this question for a moment and then share your ideas and predictions with an elbow partner using the sentence starter on the slide: *I think the temperature pattern in January was mostly _____.* Be prepared to share your predictions and reasons with the class. And remember that January is a winter month right after our long holiday vacation. **NOTE TO TEACHER:** *Give students a few moments to think about the question before sharing their ideas with a partner.* **Whole-class discussion:** What do you think the temperature pattern was mostly like in January? When you share your ideas, use the sentence starter on the slide: *I think the temperature pattern in January was mostly _____.* **NOTE TO TEACHER:** *As students share their predictions and reasons, record them on chart paper.*	I think the temperature pattern in January was mostly cold.	What makes you think that?

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
				Because I remember wearing a jacket and long pants in January.	Who else has an idea about the temperature pattern in January?
				I think it was cool and cold in January because there were more clouds.	What do you mean by "it"?
				The temperature pattern.	Does anyone have a different idea about the temperature pattern in January?
				I think the temperatures in January were yellow, green, and blue.	Can you use the thermometer with the color labels to tell us what those colors stand for?

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
				Yellow is warm, green is cool, and blue is cold.	Do you think we had any hot days in January?
				I don't see any red stickers on our weather calendar for January, so I don't think so.	
			You've shared some interesting ideas! Most of us think that the temperature pattern in January is mostly *[warm or cool]*. Let's use the temperatures we recorded on our weather calendar to see whether our ideas are right.		
8 min	**Setup for Activity** **Synopsis:** To help them identify temperature patterns, students count the number of hot or warm and cool or cold days on the class weather calendar for January. Then they record this data on the weather calendar and on their Monthly Weather Observation Charts. **Main science idea(s):**	Select content representations and models matched to the learning goal and engage students in their use.	**Show slide 5.** To help us find any temperature patterns for January, we're going to make bar graphs just like we did with our temperatures for September. What do we need to make bar graphs?	We need stickers. So we can stick them on our graphs to show which days were hot or cold.	Why do we need stickers?

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
	• By studying weather over time, we can identify temperature patterns. • One way to identify temperature patterns is to count the number of hot or warm days and cool or cold days there were in Pomona during January and then represent this data on a picture or bar graph.		How did we make our bar graphs to show temperature for September? What was the first thing we did before we made our graphs? And after we stacked our yellow and red stickers on our bar graphs, what did we do next?	We need graph paper. We counted the number of hot and warm days on our weather calendar. We wrote the numbers down. We counted out the right number of thermometer stickers for the hot and warm days. We used red stickers for hot days and yellow stickers for warm days. We stacked them on our bar graphs for warm and hot days. We counted the number of cool and	What did we do next? And then what did we do? What color stickers did we use for hot and warm days? What did we do with our stickers?

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
				cold days on our calendar.	Yes. And then what did we do?
				We wrote the numbers down and then counted out our green and blue thermometer stickers.	
					And what did we do with the stickers?
				We stacked them on our graphs for cool and cold days, only there weren't any cold days for September, so we didn't put any blue stickers on our graph!	
					That's right!
			Good job remembering, everyone! So first we need to count the number of hot, warm, cool, and cold days on our class weather calendar for January. The stickers with the red thermometers show how many hot days we had in January. Yellow thermometers show the warm days, green thermometers show the cool days, and blue thermometers show cold days.		

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
		Make explicit links between science ideas and activities **before** the activity. Engage students in using and applying new science ideas in a variety of ways and contexts.	**NOTE TO TEACHER:** *Refer to the thermometer weather card (handout 0.3) to review the color scale. Point to each color label as you describe the different temperatures.* After we count the number of hot, warm, cool, and cold days, I'll record those numbers on our weather calendar. Then we'll make bar graphs to help us find temperature patterns. So let's count the number of hot and warm days in January. Who can come up and help us count all of the hot and warm days on our weather calendar? **NOTE TO TEACHER:** *Ask a volunteer to come up and count aloud the number of red and yellow thermometer stickers on the weather calendar. Have the rest of the class count along.* So who can tell us how many hot and warm days there were in January? OK. I'll write the number of warm days on our weather calendar. How many hot days should I write down? Now let's count the cool and cold days in January on our weather calendar. Can someone else count for us?	There were *[five]* warm days, and there weren't any hot days. *[Zero!]*	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
			NOTE TO TEACHER: *Have another volunteer come up and count the green and blue stickers on the calendar.* So how many cool days did we have in January? OK. I'll write that number on our calendar. And how many cold days did we have? I'll write that number down too. **NOTE TO TEACHER:** *Have students locate their Monthly Weather Observation Charts (handout 1.1) in their notebooks and record the number of hot days for January.* Before we make our bar graphs, I want you to open your notebooks and find your Monthly Weather Observation Charts. Let's look at our weather calendar again. Who can tell me how many hot days we had in January? OK. Please write that number on your observation charts under the column that says "Month 2: January" and on the row at the bottom that says "Hot Days." **NOTE TO TEACHER:** *If students haven't already counted and recorded the number of windy days for January on their observation charts, this might be a*	There were *[10]* cool days. We had *[five]* cold days. *[Zero!]*	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
			good time to do so.		
		Engage students in constructing explanations and arguments.	So now that we've counted the number hot, warm, cool, and cold days we had in January, we're ready to make our bar graphs. Can someone tell me why we're making bar graphs? That's right! We're making bar graphs to help us see temperature patterns in January, and that will help us answer our focus question for today **NOTE TO TEACHER:** *Point to the focus question on the board.*	To show how the temperatures in January. So it's easier to see patterns in the temperatures.	
8 min	**Activity** **Synopsis:** Using their counting data, students make bar graphs to show the number of hot, warm, cool and cold days in January. **Main science idea(s):** • By studying weather over time, we can		**NOTE TO TEACHER:** *Distribute handout 2.3 (Pomona Temperature Patterns for January) and use it as a model for the class bar graph. If your students aren't quite ready to work on this activity independently, guide them through the process and model each step for them on the class bar graph. Alternatively, have students work in pairs to count out the stickers they need for their graphs and then work independently to make their bar graphs. The goal is for students to become more independent over time.*		

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
	identify temperature patterns. • One way to identify temperature patterns is to count the number of hot or warm days and cool or cold days there were in Pomona during January and then represent this data on a picture or bar graph.	Select activities that are matched to the learning goal. Select content representations and models matched to the learning goal and engage students in their use.	Next, you're going to count out the stickers you need for the hot and warm days and stack them on your graphs. Who can tell us how we should stack our stickers on the graph? Where do we start? Right! We always start at the bottom of the graph and place the stickers one above the other. We'll put all the hot and warm days together in one column on our graph and all the cool and cold days together in another column. So let's look at our weather calendar to see how many hot days we counted for January. What color stickers will we need? And how many red stickers do we need to show the number of hot days? So we don't need to put any red stickers on our graphs. How many yellow stickers do we need? Look at the number of warm days on our calendar. OK. So count out your yellow stickers for the warm days. Then put them on your graph in the column that shows the red and yellow thermometers at the bottom.	We start at the bottom of the graph and put one sticker above the other. The red ones. [Zero!] We need [five] yellow stickers.	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
			Make sure to start at the bottom and stack your yellow stickers one above the other. **NOTE TO TEACHER:** *Model on the class bar graph how to stack the stickers in the column for hot/warm days.* Now let's put our cool and cold stickers in the column with the blue and green thermometers at the bottom that says "Cool/Cold Days." How many cool days did we have in January? Look at the number we wrote on our weather calendar. So count out your green stickers for the cool days in January and stack them on your graphs in the column that shows the green and blue thermometers at the bottom. Remember to start your stack at the bottom of the graph. Now let's see many blue stickers we need. How many cold days did we have in January? Look at our weather calendar. OK. Count out your blue stickers for cold days and stack them above the green stickers on your graphs. **NOTE TO TEACHER:** *After students have completed their graphs, have them pair up again and check each other's work. You may want to check their work as well to make sure they counted*	We had *[10]* cool days. There were *[five]* cold days.	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
			correctly.		
6 min	**Follow-Up to Activity** **Synopsis:** Students use their bar graphs to help them identify temperature patterns in Pomona during the month of January. **Main science idea(s):** • Graphing temperature data helps us see patterns more easily and provides us with more accurate evidence. In Pomona during January, the temperature pattern was mostly cool.	Make explicit links between science ideas and activities **after** the activity. Engage students in analyzing and interpreting data and observations.	**Show slide 6.** We have all kinds of temperature stickers on our bar graphs, don't we? Let's study our graphs like scientists do and see if we can find any temperature patterns for January. **Turn and Talk:** Share your observations with an elbow partner and work together to come up with one or more sentences to describe what you see on your bar graphs. Use one of the sentence starters on the slide: *The temperature pattern is _____.* Or *The bar graph shows _____.* **NOTE TO TEACHER:** *Circulate around the room as pairs talk about their observations and construct their sentences. Remind students to look for temperature patterns on the graph and use the sentence starters to construct their sentences. You may also need to remind students that a pattern is something that happens again and again.* **Whole-class share-out:** Who would like to share the sentence you wrote about a temperature pattern		

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
			you found on your bar graph?	The temperature pattern is mostly cool.	And what evidence do you have from the graph?
			What else did you notice on your bar graphs?	The graph shows *[10]* cool days, and that's more than the other days.	
				The number of cold and warm days is the same.	Can you use the word *pattern* or *graph* in your sentence?
				The graph shows the same number of cold and warm days.	How many cold and warm days were there in January?
				[Five.]	
			What about hot days?	There aren't any on our graph.	Why do you think there aren't any hot days on our graph?
				Because January is	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
			So our graphs showed that there were *[10]* cool days in January and *[no hot days at all]*. And we had the same number of warm and cold days. Do you think that's a temperature pattern? **NOTE TO TEACHER:** *Use temperature data that reflects the data your students collected in January.*	in the winter, and winter is cold. Yes!	
5 min	**Synthesize/Summarize Today's Lesson** **Synopsis:** The teacher reviews the focus question. Then students summarize what they learned about temperature patterns in Pomona during January. **Main science idea(s):** • Graphing temperature data helps us see patterns more easily and provides us with more accurate evidence. In Pomona during January, the temperature pattern was mostly [warm/cool].	Highlight key science ideas and focus question throughout. Engage students in making connections by synthesizing and summarizing key science ideas. Engage	**Show slide 7.** Let's revisit our focus question for today: *What was the temperature pattern in Pomona in January?* Can you answer that question now? **Think-Pair-Share:** Think about the patterns we found on our bar graphs for January. Then share your ideas with your elbow partner and make sure to include your evidence. **Show slide 8.** **Whole-class share-out:** So what can we say about our temperature pattern in January? What evidence do we have from our bar graphs? When you share your answer, start your sentence with "The temperature pattern in January is …."	The temperature pattern in January is mostly cool and cold.	What is your

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
		students in communicating in scientific ways.		Because it's cold in the wintertime.	evidence? Does anyone agree or disagree?
			What else do you notice about our temperature pattern in January?	We don't think it was mostly cold, because there were only *[five]* cold days. We were surprised that there weren't any hot days! There weren't very many warm days either.	Yes, that's interesting, isn't it?
			Does anyone have an idea about why it was cooler here in January?	Maybe it's because it was cloudier and not as sunny.	That's an interesting idea.
			So do we all agree that our temperature pattern in January is mostly cool?	Yes!	What's our evidence? What did our graph show?
				There were *[10]* cool days and only *[five]*	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
				warm days and *[five]* cold days, with no hot days.	
		Summarize key science ideas	**Show slide 9.** So by counting and graphing our hot or warm and cool or cold days for January, we found evidence that the temperature pattern in Pomona during January is mostly cool, with a few warm and cold days.		
3 min	**Link to Next Lesson** **Synopsis:** The teacher foreshadows the next lesson in which students compare the temperature patterns in September with the temperature patterns in January to find out if temperature patterns change from month to month.	Link science ideas to other science ideas. Summarize key science ideas. Ask questions to elicit student ideas and predictions.	**Show slide 10.** In our next lesson, we'll think some more about how weather patterns can change from month to month. Last time, we compared our picture graphs for sunny, cloudy and rainy days in September with our picture graphs for January. We found out that September had more sunny days, and January had more cloudy days. Now we have bar graphs of temperatures in January that we can compare with our bar graphs for September. If we put our temperature graphs from January and September side by side, what patterns do you think we'll see?	 I think that September had more warm days than January.	

Time	Phase of Lesson and How the Science Content Storyline Develops	STeLLA Strategy	Teacher Talk and Questions	Anticipated Student Responses	Possible Probe/Challenge Questions
				I think September was mostly hot, but we didn't have any hot days in January. I think we had more cool days in January than we did in September. I don't think September had any cold days.	
			Those are all good ideas. We'll find out next time if our ideas are right. **NOTE TO TEACHER:** *Be sure to save students' completed temperature bar graphs (handout 2.3), since students will use them again in lessons 2d and 4b.*		