Weather and Seasons
Lesson 4b: Weather in Different Places

Grade: Kindergarten	**Length of lesson:** 42 minutes	**Placement of lesson in unit:** 4b of 5 lessons on weather
Unit central questions: Is weather the same everywhere all of the time? How do you know?		**Lesson focus questions:** How is weather the same or different in different places? How are the January weather patterns for Detroit and Pomona the same or different?
Main learning goal: Different places have different weather patterns at the same time of year.		
Science content storyline: We know that weather can change from morning to afternoon or from month to month, and that graphing and analyzing weather data can help us identify weather patterns in different places. For example, our weather data for Detroit showed a pattern of cool or cold and snowy weather in January. But does Detroit have the same weather pattern in January as Pomona? When we compare weather calendars and graphs for both cities in January, we see different weather patterns. The weather pattern in Detroit was mostly cold and snowy, while the weather pattern in Pomona was mostly cool or warm and sunny, with some rainy days. So weather patterns are different in different places at the same time of year.		
Ideal student response to the focus questions: Weather isn't the same everywhere. The weather is different in different places at the same time of year. When we compared the weather in Detroit in January with the weather in Pomona, we found that the weather patterns are different. The weather pattern in Detroit is mostly cold and snowy, and the weather pattern in Pomona is mostly cool or warm and sunny, with some rainy days.		

Preparation

Materials Needed • Science notebooks • Chart paper and markers • Crayons (1 set per student) • Class weather calendar for Pomona with weather and temperature data students collected in January **Student Handouts** • 2.3 Pomona Temperature Patterns for January (from lesson 2c) • 4.1 Detroit Temperature Patterns for January (from lesson 4a) • 4.2 Detroit Weather Calendar for January (from lesson 4a)	**Ahead of Time** • Review the content background document. • Review and modify the PowerPoint slides as needed. • Set up the January class weather calendar for Pomona at the front of the room but hide it until the end of the activity setup. • The icons on slide 14 remind students to include in their drawings a picture of themselves playing outside in appropriate clothes, a thermometer, and something about the weather conditions (sunny, rainy, snowy). If you think your students will simply copy the icons for their drawings, you might want to delete them from the slide. • **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 in the lesson. Identify vocabulary terms in the lesson plan to review with students in advance, including *weather/temperature pattern*, *data*, *observe*, *predict/prediction, evidence*, *calendar*, *thermometer*, and *graph*.

Lesson 4b General Outline

Time	Phase of Lesson	How the Science Content Storyline Develops
5 min	**Link to previous lesson:** The teacher engages students in reviewing the January weather pattern for Detroit that they identified in the previous lesson. Then students consider whether Detroit weather is always cold and snowy.	• Graphing and analyzing weather data helps us identify weather patterns in different places. For example, our weather calendar and temperature graph for Detroit showed that the weather pattern in January is cool or cold and snowy.
2 min	**Lesson focus questions:** The teacher reviews the focus question from the previous lesson, *How is weather the same or different in different places?* and introduces a new focus question: *How are the January weather patterns for Detroit and Pomona the same or different?*	
6 min	**Setup for activity:** Students share their predictions about whether the January weather patterns for Detroit and Pomona will be the same or different. Then students look at the January weather calendars for both cities and share their observations.	
10 min	**Activity:** Students compare the January weather and temperature data for Detroit and Pomona to help them identify similarities and differences in weather patterns.	• Graphing and analyzing weather data can help us identify weather patterns in different places at the same time of year.
8 min	**Follow-up to activity:** Students decide whether Detroit and Pomona have the same or different weather patterns in January and use evidence from the weather calendars and temperature graphs to support their conclusions.	• Weather patterns are different in different places at the same time of year. For example, some places, like Detroit, are cold and snowy in January, while other places, like Pomona, are mostly cool or warm and sunny, with some rainy days.
10 min	**Synthesize/summarize today's lesson:** The teacher reviews the focus question, and students share their conclusions and evidence. Then students draw pictures to summarize what the weather is like in January in Detroit and Pomona.	
1 min	**Link to next lesson:** The teacher foreshadows the next lesson in which students use what they know about weather patterns to make predictions about a mystery city.	

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5 min	**Link to Previous Lesson** **Synopsis:** The teacher engages students in reviewing the January weather pattern for Detroit that they identified in the previous lesson. Then students consider whether Detroit weather is always cold and snowy. **Main science idea(s):** • Graphing and analyzing weather data helps us identify weather patterns in different places. For example, our weather calendar and temperature graph for Detroit showed that the weather pattern in January is cool or cold and snowy.	Engage students in analyzing and interpreting data and observations. Ask questions to elicit student	**NOTE TO TEACHER:** *Make sure the January class weather calendar for Pomona is covered until the end of the activity setup.* **Show slides 1 and 2.** In our last lesson, we learned a lot about the weather in a faraway place called Detroit, Michigan. We looked at a weather calendar for January, and then we made a temperature graph to help us see weather patterns. Who can tell me about one weather pattern we noticed for Detroit in January? **ELL support:** Remind ELL students to use available language resources (word wall) and weather data in their notebooks to help them during this review. Did you notice any other weather patterns? So we noticed that Detroit has a weather pattern of mostly cool and cold temperatures in January, with snow. Do you think it's always cool or cold and snowy in Detroit?	It snowed! Eight. It was mostly cool and cold in Detroit in January.	Yes, it did! How many snowy days did we count on our weather calendar?

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		ideas and predictions.	**Turn and Talk:** Talk about this with an elbow partner, and be ready to share your ideas and reasons with the class. **Whole-class share-out:** So do you think the weather in Detroit is always cool or cold and snowy? Why or why not?	We don't think it's cold and snowy in Detroit in the summer. I think it's probably hot. Because the weather changes just like our weather changes, and summer is always hot. Yes! I disagree because our family went to Norway for a summer vacation,	What do you think it's like in Detroit during the summer? Why do you think that? Do you think summer is hot everywhere? Does anyone disagree or want to add on?

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			How could we find out if it's always cold and snowy in Detroit or if it gets hot in the summer like it does here?	and it was a lot cooler than it is here! We could go to Detroit in the summertime and see. We could make a graph to show the temperatures and the weather in Detroit in the summer!	
			Those are good ideas!		
		Summarize key science ideas.	So far we've learned that weather patterns change from month to month and even from morning to afternoon. We also learned how to use graphs and calendars to help us see changes in weather patterns, like the changes in Pomona from September to January and from morning to afternoon. In this lesson, we'll think about whether different places have different weather patterns at the same time of year.		
2 min	**Lesson Focus Question** **Synopsis:** The teacher reviews the focus	Set the purpose with a focus	**Show slide 3.** Our focus questions for today are *How is weather the same or different in different places? How are the*		

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	question from the previous lesson, *How is weather the same or different in different places?* and introduces a new focus question: *How are the January weather patterns for Detroit and Pomona the same or different?*	question or goal statement.	*January weather patterns for Detroit and Pomona the same or different?* The first focus question should sound familiar because it's the same question we thought about last time. **NOTE TO TEACHER:** *Write the focus questions on the board and draw a box around them.* To help us answer both of our focus questions, we're going to compare our weather here in Pomona in January with the weather in Detroit in January. **Show slide 4.** Who can tell me what the two red dots represent on this map of the United States? What do you observe about Pomona and Detroit on this map? So Pomona and Detroit are located in different places, but do they have different weather? That's what we'll investigate today.	One dot is for Pomona, and one dot is for Detroit. They're far apart. Detroit is higher up on the map. Pomona is near the Pacific Ocean.	

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6 min	**Setup for Activity** **Synopsis:** Students share their predictions about whether the January weather patterns for Detroit and Pomona will be the same or different. Then students look at the January weather calendars for both cities and share their observations.	Engage students in analyzing and interpreting data and observations. Ask questions to elicit student ideas and predictions.	**Show slide 5.** In our last lesson, we talked about what children who live in Detroit would wear outside in January. Let's look at the pictures on this slide. Which picture shows what children in Detroit would wear in January? **Show slide 6.** What about our weather here in Pomona? Do Pomona and Detroit have the same or different weather in January? Think about this quietly for a few seconds. Then we'll	Kids in Detroit would wear long pants, a warm coat, a hat, a scarf, and mittens like the boy on the slide. Because it's cold and snowy in Detroit in January. That's what it showed on our weather calendar and temperature graph.	And why would they need to wear those clothes outside? How do you know?

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		Engage students in communicating in scientific ways. Engage students in constructing explanations and arguments.	share our ideas. **Individual think time (10 sec).** **Whole-class share-out:** OK. Let's hear your ideas. Do you think that Pomona and Detroit have the same or different weather in January? When you share your ideas, begin with "I think …," "I predict …," or "My idea is …."	My idea is that Pomona and Detroit have different weather in January. Because it doesn't snow here! And I never wore a hat and scarf and mittens to school. I agree that the weather here is different because it's usually warm and sunny. I disagree because I see snow on the mountains here.	Why do you think so? Do you agree or disagree, and why? So you think it's cold and snowy

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					on the mountains near Pomona. But what about right here where our school is?
				It doesn't snow here in Pomona, so I guess the weather here is different from the weather in Detroit in January.	
			So most of us think, or predict, that the weather in Pomona in January is different from the weather in Detroit. **Show slide 7.** Let's look again at the Detroit weather calendar for January and make some predictions. Remember that a prediction is what you think will happen.		
		Ask questions to elicit student ideas and predictions.	So do you predict that our Pomona weather calendar for January will look the same as the Detroit weather calendar or different? Use the sentence starter "I predict that …."	I predict that our Pomona calendar will look different.	Why do you think our calendar will look different?
				Because ours has more yellow and	

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				green stickers for January. Warm and cool temperatures? Because I don't think we have a lot of cold weather here in January. I think the calendars will look different because I don't think we had any snow in January, so there won't be snowflakes on our calendar.	And what do the yellow and green stickers stand for? Why do you think there will be more yellow and green thermometer stickers on the Pomona calendar?
		Make explicit	Do you have any other ideas or predictions about whether the Pomona and Detroit weather calendars will look the same or different? **NOTE TO TEACHER:** *After students share their ideas and predictions, uncover the January weather calendar for Pomona.* Next, we're going to compare our weather calendars for Pomona and Detroit in January and see if we can		

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		links between science ideas and activities **before** the activity.	figure out if the weather patterns are the same or different.		
10 min	**Activity** **Synopsis:** Students compare the January weather and temperature data for Detroit and Pomona to help them identify similarities and differences in weather patterns. **Main science idea(s):** • Graphing and analyzing weather data can help us identify weather patterns in different places at the same time of year.	Make explicit links between science ideas and activities **during** the activity.	**NOTE TO TEACHER:** *Display handout 4.2 (Detroit Weather Calendar for January) on a document reader and place the January weather calendar for Pomona nearby so students can compare the two calendars. Also have students locate their copies of the handout so they can refer to them during the activity.* **Show slide 8.** First, let's look at our January weather calendar for Pomona. Did we have any snowy days like Detroit? **ELL support:** Leave this discussion open ended so that ELL students can build their understandings collectively and engage in their own sensemaking. So right away we found one big difference between our weather and Detroit's weather for January. Who can tell me one way the weather patterns for Pomona and Detroit are different? Now let's look carefully at the temperatures in January for Pomona and Detroit. **NOTE TO TEACHER:** *Give students a minute to*	No! We didn't have any snow in January. Detroit had snow in January, and we didn't.	

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		Select content representations and models matched to the learning goal and engage students in their use. Engage students in analyzing and interpreting data and observations.	*locate handouts 2.3 (Pomona Temperature Patterns for January) and 4.1 (Detroit Temperature Patterns for January). Ask them to place these temperature graphs side by side in front of them, with the graph for Pomona on the left and the graph for Detroit on the right. Make sure they understand that the graph on the left is for Pomona and the graph on the right is for Detroit.* **Show slide 9.** What do our temperature graphs for January show us about cool and cold days in Detroit and Pomona? **Think-Pair-Share:** Compare the cool and cold days on these two graphs and think about whether they're the same or different. Then share your ideas and reasons with an elbow partner. And be ready to share your observations with the class. **Whole-class discussion:** OK. What do you notice about the cool and cold days in Detroit and Pomona? Are they the same or different? **ELL support:** Being explicit about content representations helps ELL students understand the complex ideas the representations are intended to convey. Make sure that students have both temperature graphs in front of them to compare the data. **NOTE TO TEACHER:** *If it helps, have students cover up the hot/warm column on the graph so they*	There were *[10]* cool days in Pomona. Seven.	How many cool days did Detroit have in January? Do you see any other differences between the two cities?

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		Engage students in using and applying new science ideas in a variety of ways and contexts.	*can focus on the cool/cold column. Alternatively, you could compare the cool/cold days as a class and then have students compare the hot/warm days on their own or in pairs.* **Show slide 10.** **Think-Pair-Share:** Now compare the hot and warm days on your two graphs and think about whether they're the same or different. Then share your ideas and reasons with your partner. Be ready to share your observations with the class. **Whole-class discussion:** OK. What do you notice about the hot and warm days in Detroit and Pomona? Are they the same or different? **NOTE TO TEACHER:** *If it helps, have students cover up the cool/cold column on the graph so they can focus on the hot/warm column.*	It wasn't cold at all in Pomona, but it was cold a lot in Detroit. Detroit had 11 cold days in January. There were more hot and warm days in Pomona in January. We had *[five]* warm days and no hot days. Detroit had only *[two]* warm days in	How many cold days did Detroit have? How many hot and warm days did Pomona have in January? How many hot or warm days did Detroit have?

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				January and no hot days.	
8 min	**Follow-Up to Activity** **Synopsis:** Students decide whether Detroit and Pomona have the same or different weather patterns in January and use evidence from the weather calendars and temperature graphs to support their conclusions. **Main science idea(s):** • Weather patterns are different in different places at the same time of year. For example, some places, like Detroit, are cold and snowy in January, while other places, like Pomona, are mostly cool or warm and sunny, with some rainy days.	Make explicit links between science ideas and activities **after** the activity. Engage students in constructing explanations and arguments. Engage students in communicating in scientific	**Show slide 11.** Now that we've compared our weather calendars and temperature graphs for Detroit and Pomona in January, let's talk about the weather patterns we found. **Turn and Talk:** I'd like you to pair up with a partner and work together to answer these questions: *Do Detroit and Pomona have the same or different weather patterns in January? What is your evidence?* Use evidence from our weather calendars and temperature graphs to support your ideas. Make sure to explain why you think the weather patterns are the same or different. And be ready to share your ideas and reasons with the class. **NOTE TO TEACHER:** *Review what data and evidence are and remind students of the different types of evidence they can use to support their ideas (picture/bar graphs, weather calendars, drawings, observations).* **Show slide 12.** **Whole-class share-out:** So do you think that Detroit and Pomona have the same or different weather patterns in January? Let's hear your ideas and		

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		ways.	evidence. When you share, use one of the sentence starters on the slide: *We think that Pomona and Detroit have the **same** weather pattern. Our evidence is …* *We think that Pomona and Detroit have **different** weather patterns. Our evidence is …* **NOTE TO TEACHER:** *Call on pairs of students using an equity stick (or another random method). Challenge students to point out their evidence on the weather calendars or their temperature graphs. Display the graphs on a document viewer and have students use a pointer if that works better. Elicit a variety of ideas from as many pairs as time allows.* *This is a good opportunity for students to practice using descriptive terms (more than, less than, or the same) when thinking about numbers. For example, you could guide students toward the observation that Detroit has more snowy days than Pomona because eight is more than zero.* *Encourage students to respond to others' ideas by presenting an argument. Is their conclusion the same or different as another classmate's? Did they reach the same conclusion for different reasons?*	We think that Pomona and Detroit have *different* weather patterns. Our evidence is that there are more snowy days in Detroit. Because there were eight snowy days in Detroit and no snowy days in Pomona. Eight. We think that Pomona and Detroit have *different* weather patterns too. Our evidence is that it's mostly cool and cold in Detroit in January and mostly	How do you know that Detroit had more snowy days? So which is more—eight or zero?

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			Let's hear from another pair.	cool or warm in Pomona.	Show us your evidence on the graphs or calendars.
10 min	**Synthesize/Summarize Today's Lesson** **Synopsis:** The teacher reviews the focus question, and students share their conclusions and evidence. Then students draw pictures to summarize what the weather is like in January in Detroit and Pomona. **Main science idea(s):** • Weather patterns are different in different places at the same time of year. For example, some places, like Detroit, are cold and snowy in January, while other places, like Pomona, are mostly cool or warm and sunny, with some rainy days.	Highlight key science ideas and focus question throughout. Engage students in making connections by synthesizing and summarizing key science ideas. Engage students in communicating in scientific ways.	**Show slide 13.** Let's revisit our focus questions for today: *How is weather the same or different in different places? How are the January weather patterns for Detroit and Pomona the same or different?* Now that we've compared our calendars and graphs for Pomona and Detroit, what do you think? Do Detroit and Pomona have the same weather patterns in January or different weather patterns?	They have different weather patterns! Because of our graphs! Pomona didn't have any snowy days in January, and Detroit had eight. Pomona has more warm and cool days in January, and	Why do you think that? What do our graphs show? Are their weather patterns different in any other ways?

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		Select content representations and models matched to the learning goal and engage students in their use.	**Show slide 14.** Next, I want you to think about how you could draw pictures to show the weather patterns for Detroit and Pomona. Open your notebooks to a clean page. Then draw a picture of what you'd expect the weather to be like in Detroit in January. Draw yourself playing outside and show the kinds of clothes you'd wear. Be sure to include a thermometer in your picture to show what the temperature is like. Then turn to another clean page and draw a picture of what you'd expect the weather to be like in Pomona in January. Again, draw yourself playing outside and show the kinds of clothes you'd wear. Include a thermometer in that picture, too, and show what the temperature is like. **Individual work time (5 min).** **ELL support:** As needed, use slide 6 as a cue to help ELL students visualize the weather in Detroit as they think about what to draw. **NOTE TO TEACHER:** *The icons on slide 14 remind students to include in their drawings a picture of themselves playing outside in appropriate clothes, a thermometer, and something about the weather*	Detroit has more cool and cold days.	

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			conditions (sunny, rainy, snowy). If you think your students will simply copy the icons for their drawings, you might want to delete them from the slide. **Show slide 15.** **Optional (if time allows):** When you're finished with your drawings, write a sentence at the bottom of each page to describe the weather patterns in Detroit and Pomona in January. You can use the sentence starters on the slide, as well as the word and picture bank, to help you write your sentences. *The January weather pattern in Detroit is _____ and _____.* *The January weather pattern in Pomona is _____ and _____.* **NOTE TO TEACHER:** *Highlight the sentence starters on the slide and have students select a word and/or weather symbol from the word or picture bank to complete the sentences.* **ELL support:** Encourage ELL students to use the language resources available to them (e.g., weather words on the word wall). **Whole-class share-out:** Let's have a few of you share your drawings with the class. I'll display your pictures		

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		Engage students in constructing explanations and arguments. Ask questions to probe student ideas and predictions. Ask questions to challenge student thinking.	on the document reader as you describe them. Make sure to explain why you drew your pictures the way you did. **NOTE TO TEACHER:** *Invite two or three students to share their drawings with the class. Try to select a variety of drawings that illustrate the different weather patterns in Detroit and Pomona in January. Ask probe and challenge questions to make student thinking visible and to help them connect to science ideas about weather patterns.*		
1 min	**Link to Next Lesson** **Synopsis:** The teacher foreshadows the next lesson in which students use what they know about weather patterns to make predictions about a mystery city.	Summarize key science ideas. Link science ideas to other science ideas.	**Show slide 16.** Today we compared the weather in Detroit and Pomona during the month of January, and we discovered that they have different weather patterns. Now we know that weather can be different in different places at the same time of the year. **Show slide 17.** Next time, we'll become weather detectives and use what we've learned about weather patterns to make predictions about a mystery city.		