Weather and Seasons
Lesson 2b: Weather Can Change from Month to Month

Grade: Kindergarten	**Length of lesson:** 35 minutes	**Placement of lesson in unit:** lesson 2b of 5 lessons on weather
Unit central questions: Is weather the same everywhere all of the time? How do you know?		**Lesson focus question:** How did our weather change from September to January?
Main learning goal: Weather patterns can change from one month to another month.		
Science content storyline: Making a picture/bar graph to show the weather data we collected can help us identify weather patterns. Our picture graph for January showed that the weather pattern in Pomona was sunny, with almost as many cloudy days. Our graph for September showed that the weather pattern was mostly sunny and hot or warm, with few clouds and very little rain. When we compared our observation charts and picture graphs for both months, we discovered that the weather pattern changed from September to January. September had more sunny days than January, and January had more cloudy days than September. So weather patterns can change from one month to another month, and comparing our weather charts and graphs for September and January provided evidence to support this idea.		
Ideal student response to the focus question: Weather patterns can change from one month to another month. Our picture graphs showed that the weather in September was sunnier than January, and the weather in January was cloudier than September.		

Preparation

Materials Needed
- Science notebooks
- Chart paper and markers
- Large class weather calendars for September and January

Student Handouts
- 1.1 Monthly Weather Observation Chart (from lesson 1b)
- 1.2 Pomona Weather Patterns for September *(*from lesson 1b)
- 2.1 Pomona Weather Patterns for January *(*from lesson 2a)
- 2.2 Pomona Weather Patterns (2 worksheets per page; 1 per student)

Ahead of Time
- Review the content background document.
- Handout 2.2 (Pomona Weather Patterns) has two worksheets per page, so you'll need to cut it in half and give each student one worksheet.
- Display the class weather calendars from September and January side by side. These months should vary as much as possible.
- Review the PowerPoint slides and modify them as needed. *Pay special attention to slides 5 and 6. For slide 5, it would be ideal if you use completed student graphs for September and January. For slide 6, change the visual as needed to match the actual weather patterns your class observed.*
- If this hasn't already been done (and if time allows), have students count and graph windy days and hot days for January.
- **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 *count*, *bar/picture graph*, *weather pattern*, *calendar*, *evidence*, *predict/prediction*, and *compare*.

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Lesson 2b 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 weather patterns they identified on their picture graphs for January.	• 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.
1 min	**Lesson focus question:** The teacher introduces the focus question, *How did our weather change from September to January?*	
4 min	**Setup for activity:** Students consider whether the weather patterns in September and January are the same or different. Then the teacher introduces the idea of comparing their graphs to find out whether weather patterns change from month to month.	• Using our observation charts and picture graphs, we can compare weather data from different months to see if weather patterns change from month to month.
10 min	**Activity:** Working in pairs, students compare their picture graphs from January and September to see whether the weather patterns are the same or different. Then they share their findings in a class discussion.	• Using our observation charts and picture graphs, we can compare weather data from different months to see if weather patterns change from month to month. • Our picture graphs showed that weather patterns can change from month to month. Some months can have more cloudy and rainy days, while other months can have more sunny days. In January, the weather pattern in Pomona is sunny with almost as many cloudy days, and in September, mostly sunny with very few clouds.
8 min	**Follow-up to activity:** Students review their observation charts for September and January. Then they use this evidence to help them decide which month had more sunny, cloudy, and rainy days.	• Weather patterns can change from month to month. Some months can have more cloudy and rainy days, while other months can have more sunny days. We can find evidence of these changes by comparing the weather data on our observation charts and picture/bar graphs.
6 min	**Synthesize/summarize today's lesson:** The teacher reviews the focus question. Then students share their ideas with a partner and write summary statements describing the patterns and evidence they found. Afterward, students share their summary statements with the class.	
1 min	**Link to next lesson:** The teacher announces that in the next lesson, students will use their weather data to look for temperature patterns in January.	

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5 min	**Link to Previous Lesson** **Synopsis:** The teacher engages students in reviewing the weather patterns they identified on their picture graphs for January. **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.		**Show slides 1 and 2.** In our last lesson, we counted the number of sunny, cloudy, and rainy days on our class weather calendar for January, and then we made picture graphs to help us see weather patterns, just like we did for September. Take out your picture graphs for January so we can look at them. **NOTE TO TEACHER:** *Ask students to take out their picture graphs for January (handout 2.1) from lesson 2a. They'll need to keep their graphs handy throughout the lesson so they can compare weather patterns for September and January. They'll also need their September picture graphs (handout 1.2) and the Monthly Weather Observation Chart (handout 1.1) that they pasted in their science notebooks in lesson 1b. But for now, just have them take out their January picture graphs.* How many sunny days did we have in January? What does our graph tell us?		
		Ask questions to elicit student ideas and predictions.		We had *[10]* sunny days in January.	And how do we know there were *[10]* sunny days in January? Where did we find the information on our graphs?

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				We looked at our weather calendar and counted the number of sunny days.	
			That's right! We looked at our calendar and counted the number of sunny days. Then we made a picture graph to show how many sunny days there were in January. Where did we write down the number of sunny days before we made our picture graphs?	We wrote the numbers down on our observation charts.	
			What did we do next to show the number of sunny days on our picture graphs?	We counted out Sun stickers and stacked them on our picture graphs.	
			Now look at the cloudy days on your picture graph. How many cloudy days did we have in January?	We had *[seven]* cloudy days in January.	
			And how many rainy days did we have in January? What does our graph tell us? So what pattern did we find by looking at our picture graphs for January?	We had *[three]* rainy days. There were almost as many cloudy days as sunny days!	
			That's right! In January, the weather was both sunny and cloudy, and the number of cloudy		

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			days was almost the same as the number of sunny days. We call this a *weather pattern* because the sunny days and the cloudy days happened over and over again. Picture graphs help us see these weather patterns more easily.		
1 min	**Lesson Focus Question** **Synopsis:** The teacher introduces the focus question, *How did our weather change from September to January?*	Set the purpose with a <u>focus question</u> or goal statement.	**Show slide 3.** Today we're going to look for more weather patterns, but this time, we'll see if the patterns we identified in September and January are the same or different. Our focus question for today is *How did our weather change from September to January?* **NOTE TO TEACHER:** *Write the focus question on the board and draw a box around it.* **ELL support:** Since there are three months between September and January, you might change the focus question to *How was our weather in September different from our weather in January? How did the weather change?*		
4 min	**Setup for Activity** **Synopsis:** Students consider whether the weather patterns in September and January are the same or different.	Ask questions to elicit student	As we think about our focus question, remember that in September, you were new at being a kindergartner. And in January, we had just come back from the winter holidays. **Show slide 4.**		

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	Then the teacher introduces the idea of comparing their graphs to find out whether weather patterns change from month to month. **Main science idea(s):** • Using our observation charts and picture graphs, we can compare weather data from different months to see if weather patterns change from month to month.	ideas and predictions.	So do you think our weather patterns in September and January are the same or different? **Think-Pair-Share:** Think about this question for a minute and then share your ideas and predictions with an elbow partner. Use the sentence starter on the slide when you share your ideas: *I think the weather patterns in September and January are the same/different because _____.* A *prediction* is simply what you think will happen and why. Or in this case, whether you think the weather patterns are the same or different in September and January and why you think so. Be ready to share your predictions with the class. **NOTE TO TEACHER:** *Give students a minute to think about the question and then share their ideas or predictions with an elbow partner. Challenge pairs to use the sentence starter on the slide as they discuss their ideas.* **ELL support:** During the lesson preview, explain to ELL students that predicting is something that scientists do when they talk about what they think will happen or why they think something happens. This word is in the same group of science words as *observe* and *record*. It might also be useful to post terms like these on a word wall for students to refer to		

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		Engage students in communicating in scientific ways.	during the lesson. **Whole-class share-out:** What are your ideas about weather patterns in September and January? Try to use the sentence starter on the slide: *I think the weather patterns in September and January are [the same/different] because ____.* These are all great ideas about how the weather patterns might be different in September and January! Now let's compare our two picture graphs to see if the weather patterns for September and January are the same or different.	We think the weather patterns in September and January are different because January had more cloudy days. 'Cause we counted a lot of cloudy days on our calendar for January. But both months were mostly sunny. There's snow on the mountains in January, so that's different than September.	How do you know? Does anyone agree or disagree? Any other ideas?

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			You'll need your Monthly Weather Observation Charts and your picture graphs for September and January, so make sure you take them out now. **NOTE TO TEACHER:** *Make sure students have written January at the top of the second column (for Month 2) on their Monthly Weather Observation Charts.*		
10 min	**Activity** **Synopsis:** Working in pairs, students compare their picture graphs from January and September to see whether the weather patterns are the same or different. Then they share their findings in a class discussion. **Main science idea(s):** • Using our observation charts and picture graphs, we can compare weather data from different months to see if weather patterns change from month to month. • Our picture graphs showed that weather patterns can change from month to month.	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.	**Show slide 5.** **NOTE TO TEACHER:** *If possible, replace the graphs on the PPT slide with actual graphs from September and January that reflect student work. Also display the class picture graphs you made during lessons 1b and 2a side by side.* When you look at your picture graphs for September and January, what weather patterns do you see that are the same or different? **Turn and Talk:** Turn to your elbow partner and talk about any weather patterns you see when you look at both graphs side by side. Be ready to share your ideas with the class. **Whole-class discussion:** Now let's hear what you noticed when you compared your graphs for September and January. First, what did you observe about the sunny days for each month?	*Sample dialogue:* Most of the days in September were	

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	Some months can have more cloudy and rainy days, while other months can have more sunny days. In January, the weather pattern in Pomona is sunny with almost as many cloudy days, and in September, mostly sunny with very few clouds.	Engage students in communicating in scientific ways. Ask questions to probe student ideas and predictions. Summarize key science ideas.	**NOTE TO TEACHER:** *As students share their observations, record them on chart paper as a reference point for future discussions.* So what can we say about the sunny days in September and January? What weather pattern do we see on our graphs? OK. So one weather pattern we noticed is that September had more sunny days than January. So which month was sunnier? **ELL support:** This is a good place to highlight comparative suffixes for ELL students. Now let's look at the cloudy days on our picture graphs. What do you observe about the cloudy days for each month? So what can we say about the cloudy days in	sunny. January didn't have as many sunny days as September. September had more sunny days than January! September was sunnier. There were only a few cloudy days in September. There were a lot more cloudy days in January than September. There were almost as many cloudy days as sunny days in January.	Is January the same or different?

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			September and January? What weather pattern do we see on our graphs? So another pattern we notice on our graphs is that January had more cloudy days than September. Who can tell me which month was cloudier? What else can we compare on our picture graphs for September and January? What pattern do we see on our graphs for rainy days in September and January? So which month was rainier? What does this tell us about the weather pattern for these months?	January has more cloudy days than September. January was cloudier than September. Rainy days. September and January have the same number of rainy days. Both months were the same. No month was rainier. They both have the same pattern of rain.	
8 min	**Follow-Up to Activity** **Synopsis:** Students review their observation charts for September and January. Then they use this evidence to help	Select content representations matched to the learning goal and engage	**Show slide 6.** **NOTE TO TEACHER:** *If possible, replace the chart on the PPT slide with actual charts from September and January that reflect student work.*		

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	them decide which month had more sunny, cloudy, and rainy days. **Main science idea(s):** • Weather patterns can change from month to month. Some months can have more cloudy and rainy days, while other months can have more sunny days. We can find evidence of these changes by comparing the weather data on our observation charts and picture/bar graphs.	students in their use. Make explicit links between science ideas and activities **after** the activity.	Now let's look at our Monthly Weather Observation Charts. This was a different way of organizing our weather information to help us look for patterns. One column is labeled "September," and the other column is labeled "January." What did we record on our observation charts to help us see weather patterns for these months? That's right! We recorded the number of sunny, cloudy, and rainy days for September in one column, and we recorded the number of sunny, cloudy, and rainy days for January in the other column. The numbers for each kind of weather are right next to each other so we can compare them. For example, we can look at the number of sunny days in September and the number of sunny days in January to see if they're the same or different. **NOTE TO TEACHER:** *Make sure to point to each column on the chart and show students how to compare the numbers in one column with the numbers in the other column. This will help students as they decide which month has more sunny, cloudy, or rainy days.* We already know from looking at our graphs	We wrote down the number of sunny, cloudy, and rainy days for each month.	

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		Engage students in analyzing and interpreting data and observations.	that September had more sunny days than January, but let's see exactly how many sunny days each month had. Look at the sunny days for both months on your observation charts. How many sunny days did September have? And how many sunny days did January have? What does this tell us about the sunny days in September and January? Which month had more sunny days? Circle the number of sunny days in September on your charts. How many cloudy days were there in September? And how many cloudy days did we have in January?	There were *[13]* sunny days in September. January had *[10]* sunny days. *[13]* is more! September had more sunny days than January. There were *[two]* cloudy days in September. There were *[seven]* cloudy days in January.	So which is more—*[13 or 10]*?

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					Which is more—*[two or seven]*?
				[Seven] is more than *[two]*.	
			So which month had more cloudy days?	January!	
			Circle the number of cloudy days in January on your charts.		
			How many rainy days did we have in September?	*[Three]*.	
			How many rainy days were there in January?	*[Three]*.	
			So which month had more rainy days?	They both had the same number of rainy days.	
			Circle both of those numbers on your charts.		
			NOTE TO TEACHER: *If students already counted and graphed windy days, compare this data as well.*		
			So the weather patterns we see on our observation charts are that September is sunnier, January is cloudier, and both months have the same pattern of rain. Does everyone agree?		
			So are the weather patterns in September and January the same or different?	They're mostly different.	What do you mean by "mostly different"?

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				They're different because September has more sunny days than January, and January has more cloudy days than September. But they're the same because they both have the same number of rainy days.	
6 min	**Synthesize/Summarize Today's Lesson** **Synopsis:** The teacher reviews the focus question. Then students share their ideas with a partner and write summary statements describing the patterns and evidence they found. Afterward, students share their summary statements with the class. **Main science idea(s):** • Weather patterns can change from month to month. Some months can have more cloudy and rainy days, while other months can have	Highlight key science ideas and focus question throughout. Engage students in making connections by synthesizing and summarizing key science ideas.	**Show slide 7.** Today's focus question is *How did our weather change from September to January?* What have we learned about the weather in September and January that can help us answer this question? **NOTE TO TEACHER:** *Distribute handout 2.2 (Pomona Weather Patterns) and direct students to paste it in their science notebook. Then orient students to the handout and explain how to complete it.* **Show slide 8.** **Think-Pair-Share:** I want you to think for a minute or two about the weather patterns we found on our picture graphs and our observation charts for September and January. Are the		

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	more sunny days. We can find evidence of these changes by comparing the weather data on our observation charts and picture/bar graphs.		weather patterns the same or different? Then share your ideas and evidence with an elbow partner. Make sure to use the sentence starters on the handout. Work with your partner to complete your handouts. For each sentence, write the word on the blank line and circle the picture that shows which month had more sunny, rainy, or cloudy days. Then write your evidence in the bottom box. You can draw a picture of your evidence if you'd like. **ELL support:** It might be helpful for ELL students to work with a shared-language partner so they can practice communicating their ideas in their home languages and in English. **NOTE TO TEACHER:** *Make sure students understand that they should each complete their own handouts. Circulate around the room as students work together to provide support as needed.* **Show slide 9.** **Whole-class share-out:** What weather patterns and evidence did you write on your handouts? Let's hear from a few of you. Make sure to use the sentences on the handout when you share.	We said that September had more sunny days than January.	What evidence do
		Engage students in analyzing and interpreting data and observations. Engage students			

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		in constructing explanations and arguments. Engage students in communicating in scientific ways.	What else can you say about the weather in September and January? Use the sentences on the handout. What about rainy days?	Our evidence is that September had *[13]* sunny days, and January had only *[10]* sunny days. We said that January had more cloudy days than September. Our evidence is that January had *[seven]* cloudy days, and September had only *[two]* cloudy days. We didn't write anything on our handouts because September and January had the same number of rainy days. Our evidence is that January and September each had *[three]* raindrops.	you have? What's your evidence? What evidence do you have? What do you mean by "raindrops"? Can you use your picture

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			So do you think our weather in Pomona stays the same from month to month, or do you think it changes?	I think it mostly changes, like from mostly sunny days to more cloudy days.	graphs to explain? Does anyone disagree or want to add on?
			Show slide 10.	But sometimes the weather can be the same. Like the rainy days are the same.	
		Highlight key science ideas and focus question throughout.	So how would you answer today's focus question, *How did our weather change from September to January?* Begin your answer with "The weather changed …."	The weather changed from mostly sunny days in September to more cloudy days in January.	
			Show slide 11.		
		Summarize key science ideas.	So the evidence from our charts and graphs shows that weather patterns can change month to month.		
1 min	**Link to Next Lesson** **Synopsis:** The teacher announces that in the	Link science ideas to other science ideas.	Today we looked at how our weather changed from September to January. The weather pattern in September was mostly sunny with just a few clouds and a little rain, but in January, we had		

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	next lesson, students will use their weather data to look for temperature patterns in January.		more clouds than September, with the same amount of rain. **Show slide 12.** Next time, we'll look for temperature patterns in January. **NOTE TO TEACHER:** *If students haven't counted and graphed windy days and hot days for January yet, make sure they do so before lesson 3.*		