Weather and Seasons
Lesson 2a: Weather in Pomona in January

Grade: Kindergarten	**Length of lesson:** 42 minutes	**Placement of lesson in unit:** 2a 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 our weather mostly like in January? *[Alternative: What was Pomona's weather pattern in January?]*

Main learning goal: Counting and graphing weather data helps reveal weather patterns over time.

Science content storyline: Using weather data, we can create graphs to help us find weather patterns at a given time for a specific place. In January, the weather pattern in Pomona was both sunny and cloudy.

Ideal student response to the focus question: Weather can change over time. One month it might be warm and sunny, and another month it might be cloudy and rainy. We can see these changes in weather by collecting data and looking for patterns.

Preparation

Materials Needed
- Science notebooks
- Chart paper and markers
- Crayons (1 set per student for drawing activity)
- Large class weather calendar with weather data collected in January

Student Handouts
- 1.1 Monthly Weather Observation Chart (from lesson 1b)
- 1.2 Pomona Weather Patterns for September (from lesson 1b)
- 1.3 Weather Stickers, 1/2" size (from lesson 1b) (Students should have plenty of these on their tables or desks.)
- 2.1 Pomona Weather Patterns for January, 8.5 × 14" (1 per student)

Ahead of Time
- Review the content background document.
- If students haven't counted and graphed windy days for September yet, they'll need to do so before starting this lesson. They should record the number of windy days on handout 1.1 (Monthly Weather Observation Chart). Make sure that students have completed the entire column for September on the handout.
- Display the class weather calendar from January, but keep it covered until after you've elicited ideas from students about the focus question.
- Decide which version of the lesson focus question you want to use. If you feel your students understand the idea of weather patterns, use the alternative question. If you feel your students need more work on understanding weather patterns, use the question, *What was our weather mostly like in January?*
- Review the PowerPoint slides and modify them as needed.
- In addition to their Monthly Weather Observation Charts (handout 1.1) and picture graphs (handout 1.2) from lesson 1b, students will need a copy of handout 2.1 (Pomona Weather Patterns for January) to understand the concept of weather patterns.
- **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*, and *compare*.

Lesson 2a General Outline

Time	Phase of Lesson	How the Science Content Storyline Develops
4 min	**Link to previous lesson:** After reviewing the unit central question, the teacher engages students in summarizing the September weather patterns they identified on their picture graphs in lesson 1b.	• Graphing weather data can help us identify weather patterns more easily, especially when we use picture graphs.
4 min	**Lesson focus question:** The teacher introduces the focus question, *What was our weather mostly like in January?* Then students pair up and share what they think their weather was mostly like in January.	
10 min	**Setup for activity:** Students count the number of sunny, cloudy, and rainy days on their class January weather calendar and then record the data on their observation charts from lesson 1b.	• Weather patterns tell us what the weather is mostly like at a given time of year in a specific place. • Counting the number of sunny, cloudy, and rainy days in Pomona during January and then using this data to make a picture graph (bar graph) can help us see weather patterns more easily.
10 min	**Activity:** Students use their counting data to create picture graphs that will help them identify weather patterns in Pomona during the month of January.	• Counting the number of sunny, cloudy, and rainy days in January and then using this data to make a picture graph (bar graph) can help us see weather patterns more easily.
6 min	**Follow-up to activity:** Students use their picture graphs to help them identify weather patterns in January for sunny, cloudy, and rainy days.	• Graphing weather data helps us see weather patterns more easily and provides us with more accurate evidence. Our graphs showed that the weather pattern in Pomona during the month of January was mostly sunny with almost as many cloudy days.
7 min	**Synthesize/summarize today's lesson:** The teacher reviews the focus question. Then students draw a picture to summarize what the weather was mostly like in Pomona during the month of January. After students share their drawings, the teacher summarizes key science ideas from the lesson.	• Weather patterns tell us what the weather is mostly like at given time of year in a specific place. • Graphing weather data can help us identify weather patterns in a specific time during a certain time period. Our graphs showed that the weather pattern in Pomona during the month of January was mostly sunny with almost as many cloudy days.
1 min	**Link to next lesson:** The teacher foreshadows the next lesson in which students compare the weather patterns in September with the weather patterns in January to find out if weather 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
4 min	**Link to Previous Lesson** **Synopsis:** After reviewing the unit central question, the teacher engages students in reviewing the September weather patterns they identified on their picture graphs in lesson 1b. **Main science idea(s):** • Graphing weather data can help us identify weather patterns more easily, especially when we use picture graphs.	Make explicit links between science ideas and activities.	**Show slides 1 and 2.** In this unit, we're thinking about two big questions: *Is weather the same everywhere all of the time? How do you know?* What we're learning in each lesson will help us answer these questions. **NOTE TO TEACHER:** *Ask students to take out the picture graphs they made in lesson 1b (handout 1.2) to show weather patterns in Pomona during September. Display one of the graphs on a document reader.* **Show slide 3.** Let's look at the picture graphs you made to help us see weather patterns in Pomona during September. Who can tell me what we learned from our graphs about the weather in September?	I learned that September was really sunny. We counted the sunny days, the rainy days, and the	How do you know that September was really sunny? What was our evidence?

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				cloudy days, and then we made picture graphs.	What did our graphs show us about the sunny, rainy, and cloudy days?
				There were lots more sunny days than cloudy days on the picture graph.	
					What did we learn about rainy days in September?
				There were only a few rainy days.	
		Summarize key science ideas.	Our picture graphs showed us that we had sunny days most of the time in September. That's called a *weather pattern* because the sunny days happened over and over again. We can see patterns in our weather when we observe and record the weather over time, just like we did in September. So who can tell me what our weather pattern was in September. Look at your picture graphs to help you remember.		
				The weather pattern in September was mostly sunny, with only a few clouds and hardly any rain.	

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			That's right! Our weather pattern in September was mostly sunny, with just a few clouds and hardly any rain.		
4 min	**Lesson Focus Question** **Synopsis:** The teacher introduces the focus question, *What was our weather mostly like in January?* Then students pair up and make predictions about what their weather was mostly like in January.		**Show slide 4.** **NOTE TO TEACHER:** *Keep the January weather calendar covered until after the following discussion so that students can't see the weather data they recorded.* Today we're going to look for more weather patterns, but this time, we'll use the observations we recorded on our weather calendar for January.		
		Set the purpose with a <u>focus question</u> or goal statement.	For this lesson, we'll think about the focus question *What was our weather mostly like in January?* **NOTE TO TEACHER:** *Write the focus question on the board and draw a box around it.* **Show slide 5.** January was last month. It's a winter month after our long holiday vacation.		
		Ask questions to elicit student ideas and predictions.	So what do you think our weather was mostly like in January? **Think-Pair-Share:** Think about this question for a moment and then share your ideas with an elbow partner using the sentence starter on the slide: *I think the weather in January was mostly _____.*		

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			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 our weather was mostly like in January? Use the sentence starter on the slide when you share your ideas. **NOTE TO TEACHER:** *As students share their ideas, record them on chart paper.*	We think the weather in January was mostly cooler with some rain. Because it's always cooler in the winter. And we can see snow on the mountains, so we must have had some rain here. We think it was mostly cloudy in January. The weather. Because the Sun isn't out as much in the winter.	Why do you think that? What do you mean by "it"? Why do you think that?
			So we think the weather pattern in January might have been *[cool and mostly cloudy, with some rain]*. We'll find out whether we're right by looking for		

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			evidence on our weather calendar for January. Who remembers what evidence is? **Show slide 6.** That's right! Evidence is something that helps us answer a question about the world around us or explain why certain things happen. Evidence can also help us figure out whether our ideas about something are correct.	It's a clue that helps us answer a question or explain why something happens.	
10 min	**Setup for Activity** **Synopsis:** Students count the number of sunny, cloudy, and rainy days on their class January weather calendar and then record the data on their observation charts from lesson 1b. **Main science idea(s):** • Weather patterns tell us what the weather is mostly like at a given time of year in a specific place. • Counting the number of sunny, cloudy, and rainy days in Pomona	Make explicit links between science ideas and activities **before** the activity.	How can we find evidence to show what the weather was mostly like in January?	We can count the number of days on our calendar for January, just like we did for September. If we count the number of sunny days and cloudy days and rainy days, we can make a graph like we did before. It will show us what	How will counting days help us know what our weather was like in January? And how will a graph help us?

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	during January and then using this data to make a picture graph (bar graph) can help us see weather patterns more easily.	Highlight key science ideas and focus question throughout.	Those are good ideas for how we can find the evidence we need! First, we'll count the different kinds of weather on our January weather calendar and record the number of days on our observations charts just like we did for September. Then we'll make picture graphs and look for weather patterns. The numbers we record on our observation charts and the picture graphs we make will give us evidence we can use to answer our focus question, *What was the weather mostly like in January?* Who can tell us again what words scientists use to describe what the weather is mostly like, or what happens again and again? **NOTE TO TEACHER**: *Uncover the January weather calendar now.* Now let's look at our class weather calendar. In January, we went outside to observe the weather, and then we put stickers on our calendar to show the sunny, cloudy, and rainy days we had. **Show slide 7.** Open your science notebooks and find the page where you pasted your Monthly Weather Observation Charts.	the weather was mostly like in January. A weather pattern.	

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			NOTE TO TEACHER: *Give students time to find the Monthly Weather Observation Chart (handout 1.1) that they pasted in the notebooks in lesson 1b.* At the top of the column on your charts that says "Month 2," I want you to write January on the blank line. What are we going to do with this chart? And where can we find this information? That's right! So let's have a volunteer come up and count the sunny days on our January weather calendar, and we'll count aloud with you. **NOTE TO TEACHER:** *Choose a volunteer to count the number of Sun stickers on the weather calendar. Have the rest of the class count along.* Who can tell me how many sunny days we had in January? I'll write that number on our weather calendar to help us remember when we make our graphs. I also want you to write this number on your Monthly Weather Observation Charts under the column that says "Month 2: January" and on the row that says	We're going to write down the number of days that were sunny and cloudy and rainy in January. On our weather calendar. There were *[10]* sunny days in January.	

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			"Sunny Days." **NOTE TO TEACHER:** *Show students where to record each number on their observation charts.* Now let's help our volunteer count the number of cloudy days on our calendar. How many cloudy days did we have in January?		
				[Seven.]	
			As I write that number on our weather calendar, I want you to write it on your observation charts on the row that says "Cloudy Days." What else do we need to count?	Rainy days!	
			Yes. Let's count the number of rainy days on our calendar together. Who can tell me how many rainy days we counted?	*[Three.]*	
			As I write that number on our calendar, I want you to write it on your observation charts on the row that says "Rainy Days." **NOTE TO TEACHER:** *If time allows, have students count the number of windy days and record this number on their observation charts as well.*		
10 min	**Activity** **Synopsis:** Students use their counting data to create picture graphs that	Select content representations matched to the	**Show slide 8.** Now that we've recorded the number of sunny, cloudy, and rainy days on our observation charts for January, we're going to make picture graphs like we		

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	will help them identify weather patterns in Pomona during the month of January. **Main science idea(s):** • Counting the number of sunny, cloudy, and rainy days in January and then using this data to make a picture graph (bar graph) can help us see weather patterns more easily.	learning goal and engage students in their use. Make explicit links between science ideas and activities **during** the activity.	did for September. What will our picture graphs help us do? What will they show us? Right! Our picture graphs will help us identify weather patterns in January. **NOTE TO TEACHER:** *Distribute handout 2.1 (Pomona Weather Patterns for January) and orient students to the graph. Use the handout as a model for the class picture graph (pictograph).* Can someone remind us how we made our picture graphs for September? Yes. So how many Sun stickers do we need to count out for our graphs? Look at the number on your observation charts under the column that says "Month 2: January." I also wrote that number on our weather calendar. So count out your Sun stickers and then place the first sticker on row number 1 of your picture graphs, right above the words "Sunny Days." Then put the	They'll help us find weather patterns in January. We looked on our observation charts to find the number of sunny days. Then we counted out that number of Sun stickers and stacked them above each other on the graph. We need *[10]* Sun stickers.	

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			other stickers in a stack one above the other just like we did last time. **NOTE TO TEACHER:** *Give students time to count out their Sun stickers. Model for students how to place the first Sun on the first row at the bottom of the graph and then place the remaining Sun stickers one above the other. As students are working, circulate around the room and make sure they've written the correct numbers on their observation charts and have counted the correct number of stickers for their picture graphs. Also make sure that students are applying stickers to their January graphs (handout 2.1), not their September graphs.* *After all of the stickers are stacked one above the other in the "Sunny Days" row for column 2, make sure the number of stickers and the number of rows match up. For example, if students have 15 Sun stickers, they should fill 15 rows on the chart.* *Your students probably won't stack their Sun stickers as neatly on their own graphs, but you can model this process for them so they can be as accurate as possible.* Now look at the number of cloudy days you recorded on your observation charts for January. How many cloud stickers will we need for our graphs? That's right. Count out your cloud stickers and put	 We need *[seven]* cloud stickers.	

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			them on your picture graphs in the column that says "Cloudy Days." Start at the bottom and place the stickers one above the other just like I showed you. If you need help, raise your hand. **NOTE TO TEACHER:** *Give students time to count their cloud stickers and place them on their picture graphs. Circulate around the room and make sure they've written the correct numbers on their observation charts and have counted the correct number of stickers for their picture graphs.* Now that our graphs show how many sunny days and cloudy days we had in January, let's put the rainy days on our graph. How many rainy days did we count on our weather calendar? So count out the rain stickers you need and stack them on your picture graphs in the column that says "Rainy Days." **NOTE TO TEACHER:** *Again, make sure that students count out the correct number of rain stickers and stack them in the correct column on the graph. If time allows, you could have students count and graph the number of windy days as well. After students complete their graphs, check their work. You might also consider having students pair up with an elbow partner and check each other's work.*	*[Three.]*	
6 min	**Follow-Up to Activity**		**Show slide 9.**		

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	Synopsis: Students use their picture graphs to help them identify weather patterns in January for sunny, cloudy, and rainy days. **Main science idea(s):** • Graphing weather data helps us see weather patterns more easily and provides us with more accurate evidence. Our graphs showed that the weather pattern in Pomona during the month of January was mostly sunny with almost as many cloudy days.	Make explicit links between science ideas and activities **after** the activity. Engage students in analyzing and interpreting data and observations. Ask questions to probe student ideas and predictions Ask questions to challenge student thinking.	Now that we've finished our graphs, let's see if we can find any weather patterns for January. Who can tell me one pattern you see on the graph? Remember, a *pattern* is something that happens again and again. **NOTE TO TEACHER:** *During this discussion, it might be helpful to project an accurately completed picture graph on a document reader or Elmo projector so that everyone is looking at the same graph.* Do you see any another patterns on your graph?	I see almost the same number of cloudy days as sunny days. The clouds are almost as tall as the Suns. There are *[10]* Sun stickers and *[seven]* cloud stickers, so they're almost the same. The stack of rainy days is really short! Yes! Yes. It's shorter	And how do you know that by looking at your graph? What do you mean by "tall"? Use your graph to show us. Is it shorter than the stack of sunny days? Is it shorter than the stack of cloudy days?

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			So when we look at our picture graphs, what can we say our weather in Pomona was mostly like in January? What is the weather pattern?	than both stacks. It was sunny and cloudy in January. The weather pattern in January was mostly sunny and cloudy. No. There were more sunny days, but there were almost as many cloudy days.	Can you use the words *weather pattern* in your sentence? Were there more cloudy days than sunny days? Does everyone agree?
			What else can we say about the weather in January? So our picture graphs helped us see that the weather pattern for January in Pomona is mostly sunny and almost as cloudy, with very little rain.	There weren't many rainy days.	
7 min	**Synthesize/Summarize Today's Lesson** **Synopsis:** The teacher	Highlight key science ideas	**Show slide 10.** Let's think about our focus question for today: *What was our weather mostly like in January?*		

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	reviews the focus question. Then students draw a picture to summarize what the weather was mostly like in Pomona during the month of January. After students share their drawings, the teacher summarizes key science ideas from the lesson. **Main science idea(s):** • Weather patterns tell us what the weather is mostly like at given time of year in a specific place. • Graphing weather data can help us identify weather patterns in a specific time during a certain time period. Our graphs showed that the weather pattern in Pomona during the month of January was mostly sunny with almost as many cloudy days.	and focus question throughout. Engage students in making connections by synthesizing and summarizing key science ideas. Select content representations and models matched to the learning goal and engage students in their use. Ask questions to elicit student ideas and predictions.	What did we learn from our picture graphs that can help us answer this question? **Show slide 11.** If you were going to draw a picture in your science notebooks to show what the weather in Pomona is mostly like in January, what would you draw? What would you include in your pictures to show the weather patterns? Do you think you'd draw the Sun? Do you think you'd draw clouds? Would you draw a lot of rain in your picture? If there are almost as many cloudy days as sunny days in January, what would the children in your drawing be wearing?	We learned that the weather in January is mostly sunny and almost as cloudy, and there's hardly any rain. Yes. Because there were lots of sunny days in January. Yes, because there were almost as many cloudy days as sunny days. No, because it hardly rained at all in January. Maybe they'd be wearing jackets	Why would you draw the Sun?

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				because the Sun isn't out as much.	
		Ask questions to probe student ideas and predictions. Ask questions to challenge student thinking.	Now open your notebooks to a new page and draw a picture that shows what the weather patterns are like in Pomona during January. Remember, a *weather pattern* is what the weather is *mostly like* in a place at a certain time of year. **Individual work time.** **NOTE TO TEACHER:** *As students work on their drawings, circulate around the room and ask probe and challenge questions to find out more about what they're thinking.*		*Probe and challenge questions to ask while students work on their drawings:* • Why are you drawing *[the Sun, clouds, rain, wind, etc.]*? • What did we say the weather was mostly like in January? • Can you add some people to your picture? What clothes will they be wearing? Why? • What was the pattern for sunny and

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					cloudy days in January? • What do we mean by a *weather pattern*?
		Engage students in constructing explanations and arguments. Ask questions to probe student ideas and predictions. Ask questions to challenge student thinking. Engage students in communicating in scientific ways.	**Show slide 12.** **Whole-class share-out:** Let's have a few of you come up one at a time and show us your pictures. I'll project your pictures on the document reader, and then I'd like you to tell us about *one* weather pattern in your drawings. You can use the sentence starter "My picture shows …." **NOTE TO TEACHER:** *Display students' pictures on a document reader or Elmo projector. Try to include drawings that show different weather patterns. For instance, if it rained one day, some students might include a little bit of rain. Have them explain why they did that.* Does anyone have any questions, comments, or suggestions for this drawing?	My picture shows a cloudy day with children wearing jackets outside. Because if it's cloudy out, it might not be very warm. This picture doesn't show any Sun. I think it should show the Sun with some clouds because there were more sunny days than cloudy days.	Why did you draw children wearing jackets? Does anyone agree, disagree, or have

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					something to add?
			Let's look at another picture. Tell us how your picture shows what the weather is mostly like in January.	My picture shows lots of Sun and just a few clouds because we had more sunny days than cloudy days.	
			Does anyone have any questions, comments, or suggestions?	Why is your person wearing a T-shirt?	
			NOTE TO TEACHER: *Wait until a later lesson to address the misconception that it's always hot when the Sun is out or always cool when it's cloudy. By then, students will have temperature data for January to show that it isn't always hot on sunny days or cool on cloudy days.*	Because I thought it would be hot because of all the Sun.	
			Show slide 13.	I think there should be more clouds.	
		Summarize key science ideas.	So today we counted the number of sunny, cloudy, and rainy days in January on our weather calendar. Then we used these numbers to make picture graphs that would help us see the weather patterns in January.		
			Show slide 14.		
			What weather pattern did we find? Remember, *weather patterns* are what the weather is like most of the time.		

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			When you give your answer, use the sentence starter on the slide: *In January, the weather pattern in Pomona was mostly _____.*	In January, the weather pattern in Pomona is mostly sunny with a lot of clouds, too, and hardly any rain.	
1 min	**Link to Next Lesson** **Synopsis:** The teacher foreshadows the next lesson in which students compare the weather patterns in September with the weather patterns in January to find out if weather patterns change from month to month.	Make explicit links between science ideas and activities.	**Show slide 15.** Do you think that weather patterns can change from one month to the next? We'll explore this question in our next lesson. To help us figure this out, we'll compare the weather patterns in September with the weather patterns in January.		