Phenomenon: A pole is wet on one side but not on the other side.

Students figure out: Weather is a combination of elements. Wind and rain combined to cause the pole to be wet on one side.

How they figure it out:

Lesson 1: Mysterious Moisture
Students use prior knowledge and observations to develop an initial explanation of the phenomenon and develop a question that, when investigated, will support or refute their initial explanations.

Lesson 2: What is Weather?
Students obtain information as evidence to identify weather elements that combined to cause the pole to be wet on one side. Students use their evidence to revise their initial explanations.

Lesson 3: Making Sense with Models
Students develop a model to investigate the combination of weather elements that caused the phenomenon.

Phenomenon: The snowman melts at some times but not at other times.

Students figure out: Sunlight warms Earth's surface, causing the temperature to change throughout the day and night.

How they figure it out:

Lesson 4: Snow, Snow, Go Away
Students use observations as evidence to determine that the snowman melts more during the day than at night.

Lesson 5: What are you Wearing?
Students obtain information from the text about how people dress to prepare for different types of weather conditions, including temperatures.

Lesson 6: Outfits as Evidence
Combining information from lesson 5 and new observations, students determine that it gets warmer during the day and cooler at night. They plan an investigation to determine if the temperature change is caused by sunlight.

Lesson 7: Here Comes the Sun!
Students use a model to investigate the difference in the rate of melting and temperature change with sunlight, as opposed to without sunlight. They observe the difference in melting rate and use it as evidence to explain that when the sun is out the temperature increases and the snowman melts, but that at night it does not melt because it gets colder after the sun has set.

Problem: Ada needs to prepare for severe weather so she and her friends can be safe playing in her tree house.

Students figure out: Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.

How they figure it out:

Lesson 8: Stormy Weather
Students ask questions to find out what types of weather hazards are likely based on where they and Ada live. Students obtain information about how to prepare for those hazards through the simulation Storm Smart.

Lesson 9: Planning a Visit
Students use historical weather data as evidence to decide the best month for Ada to have a friend visit her tree house.

Science Challenge

Problem: Ada's class is taking an all-day hike at SERC and needs help planning the hike so everyone is ready for the weather.

Students figure out: The class should be prepared for temperatures increasing throughout the morning and possible storms in the afternoon.

How they figure it out:

Lesson 10: Let's Hit the Trail!
Students make observations from weather forecasts and obtain information from Storm Smart to choose what Ada needs to pack on the trip and which direction they should hike to stay safe and comfortable with the weather that is predicted for the day.

Source: Smithsonian Science Education Center, How Can We Be Ready for the Weather? in Smithsonian Science for the Classroom. Carolina Biological, Burlington, NC, 2021.