Big Idea:
There are patterns and differences in local weather that can be predicted.
How does weather forecasting help to keep people safe?

Guiding Questions:
What types of patterns can be observed in local weather conditions?
How does weather forecasting help us to prepare for and respond to severe weather?
21st Century Themes/Skills:

DCI (Disciplinary Core Ideas)	*Science and Engineering Practices*	*Cross Cutting Concepts*	*Student Learning Objectives*	*Differentiated Activities (Consider the 5 Es)*	*Resources/Technology*	*Formative Assessmnet*	*Benchmark Assessment*
ESS2.D: Weather and Climate Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)	Analyzing and Interpreting Data Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1) 	Patterns Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (K-ESS2-1) Cause and Effect Events have causes that generate observable patterns. (K-ESS3-2 Science Knowledge is Based on Empirical Evidence Scientists look for patterns and order when making observations about the world. (K-ESS2-1) Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering, and Technology People encounter questions about the natural world every day. (K-ESS3-2) Influence of Engineering,	SWBAT name and identify the four se SWBAT describe different types of we SWBAT describe and compare weath SWBAT explain what the weather is li GUIDING LESSON QUESTIONS: How can we describe the weather? How can the four seasons be describe How is the weather similar and differ What is the weather like in each seasc	Engage 1: Go outside with your class or have students look outside the window. Ask them to tell you what kind of day it is. If students need help, guide them with questions: What's the weather like? Is it hot? Is it cold? What does the sky look like? What do you see in the sky? Did you wear a jacket today? Why? What do the trees look like? Are there leaves? Are there flowers? Use students' responses to judge what they already know about the sky and weather and to identify any misconceptions they may have. Engage 2: Tell students that they are going to watch a video about the four seasons. Say: In this video, you will learn that the seasons repeat in the same order every year. You'll also find out about special tools that measure the weather. Engage 3: Show the video The Seasons. Ask students questions about the video, such as: Where do rain and snow come from? Predict the temperature in the summer. What will the temperature be like in the winter? What is the cycle of seasons? What are the names of the seasons in order? How do clouds tell us what weather might come? What tools help us predict how the weather will change? Engage 4: Ask students what questions they have about the weather and seasons. Write a list of student- and teacher-generated questions on the board or chart paper for reference throughout the lesson.	*Engage Support*	Instruct students to complete the Constructed Response (CR) and Selected Response (SR) items for Sky and Weather: Constructed Response Selected Response You may also wish to make your own concept assessment using the tool located at the bottom of the Evaluate section of the Core Interactive Text.	

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		Technology, and Science on Society and the Natural World People depend on various technologies in their lives; human life would be very different without technology. (K-2-ETS1-1)		Explore 1: Present students with the Lesson Questions and have them complete the first section of the Scientific Explanation: Sky and Weather Student Sheet using these questions. Students may type their responses directly into the digital resource or they may write or draw their responses on a printed copy of the resource. The digital resource includes a link to a PDF Version of the Student Sheet. Guide students to think about what they already know about each question and record their prior knowledge in the "Prior Knowledge" section. Encourage students to think about and record how they know what they do (evidence and reasoning). Introduce the "Evidence" section, explaining to students that they will fill this in as they go through the rest of the lesson. Have students begin the "Evidence" section with information gathered during Engage. Explore 2:Tell students that they will watch a short movie about a windy day. Tell them to look for what the wind does to the things and the people who are in the wind. Show the video Autumn. Discuss the video to find out what the students know about autumn, and what changes occur. Ask: Can you describe autumn weather? How is autumn different from summer? Why does the girl like fall weather? What do you like best about weather in the fall? What is your favorite season? Use this video as a transition to talking about different kinds of weather. Say: Now we will think more about how to describe different seasons. Have the students read the sections of Explore in the Core Interactive Text titled How Can We Describe the Weather and How Can the Four Seasons Be Described. Students should also read the passage Weather and Seasons. As a class, discuss each picture in the reading passage and ask students to relate the information to their own experiences. Ask: Is it cold and snowy in the winter here? Is it rainy in the spring here? What is summer like here? Write the following vocabulary words on the board or chart paper: weather, season, winter, spring, summer, fall. Tell students: The weather is what gives you an idea of what it's like outside. It's a way to describe the outdoors at a specific place and time. A season is a period of time in the year when Earth is in a different position to the Sun. There are four seasons: winter, spring, summer, and fall or autumn. Winter is the season when it is usually the coolest. It is from December to March. Spring is the season after winter. It is from March to June. Summer is the season after spring. It is usually the hottest. It is from June to September. Fall/Autumn is the season after summer. It is from September to December. Explore 3: Tell students that they are going to learn more about different types of weather—including bad, or severe, weather—in the different seasons. To begin, have students read the section of Explore in the Core Interactive Text titled How Is the Weather Similar and Different in Different Seasons? and view the video segment Weather Patterns. As a class, discuss the weather mentioned in the resources. Make a list of "weather" words, both from the resources as well as elicited from students. You may want to watch the video again and pause it to look at screenshots of specific weather conditions, asking questions such as: When do we usually see this type of weather? What's the weather like in the spring? When does it snow? When is it the hottest? Ask students which "weather" words in the class list describe bad weather. (Students might have listed words such as "thunderstorm," "tornado," and "hail.") For each word that students identify, ask them how people can stay safe during this type of weather. Students should record their ideas in a two-column graphic organizer such as a T-Chart. Have students read the section of the Core Interactive Text titled How Can I Stay Safe During Severe Weather and the passage Being Ready! Students should also watch the video segment Tornados and Severe Thunderstorms. As students explore these resources, they should continue to add notes to their graphic organizers. Finally, have students read the section of the Core Interactive Text titled What Is the Weather Like in Each Season Where You Live? Tell students they are going to make drawings to answer this Lesson Question. Distribute to each student prepared copies of a drawing of a scene with the same basic elements: a bare ground, empty sky, and bare trees. Distribute crayons or colored pencils. Assign each student a season. Have the students draw the weather and the seasonal changes for their assigned season by adding to the drawing (e.g., drawing snow, coloring the sky, adding clouds, rain, flowers, falling leaves, etc.). When students have finished, bring the entire class back together to confirm their understanding of the Lesson Questions by having students identify the seasons that their classmates drew. Explore 4: Remind students of the information they learned in the CIT section How Can I Stay Safe During Severe Weather? and the reading passage Being Ready!. Ask students to brainstorm a list of items that would make a good storm preparation kit. Have students work in groups to complete the Hands-On Activity: Bad Weather. In this activity, students will use a KWL chart to ask questions and obtain information about the purpose of weather forecasting to prepare for and respond to severe weather. Consult the Teacher's Guide for more information about the activity. Help students complete their Student Activity Sheets as they work	Model Lesson		

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ESS3.B: Natural Hazards 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. (K-ESS3-2)	Asking Questions and Defining Problems Ask questions based on observations to find more information about the designed world. (K-ESS3-2) Ask questions based on observations to find more information about the natural and/or designed world(s). Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)			Explain: Put students into pairs. Ask each student to choose their favorite and least favorite season and explain to a partner why they like and dislike the seasons they chose. Make sure that they include weather changes and seasonal changes in their explanations. For example, if a student says they like the summer because they can go swimming, encourage the student to expand on the answer by saying that they can go swimming because it is hot. Then bring in a box of clothes and accessories for all types of weather. Also bring in a box, bag, or other container holding scraps of paper with the name of each season. Have the same pairs of students draw out the name of a season from the container. Have the students put on the appropriate clothes for that season. Ask the rest of the class to guess the season and explain why that person needs the clothing that he or she chose by describing the weather for that season. Now have students use the evidence that they collected here and in the Explore sessions to complete the sections of the Scientific Explanation: Sky and Weather Student Sheet titled “My Claim” and “My claim is true because ...” Students may type their responses directly into the digital resource or they may write or draw their responses on a printed copy of the resource. The digital resource includes a link to a PDF version of the Student Sheet. Have groups of two to four students share their explanations with each other. Students should then revise or enhance their explanations based on group discussion.			
ETS1.A: Defining and Delimiting an Engineering Problem A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2-ETS1-1) Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1)	Obtaining, Evaluating, and Communicating Information Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. (K-ESS3-2)			Elaborate 1: Read the passage Temperature and Seasons aloud with the students. Allow time for students to respond to the questions in the text. Debrief and discuss the questions with the students. Then, write the following vocabulary words on the board or on chart paper: temperature, thermometer. Tell students: The temperature tells us how hot or cold the air is. A thermometer is an instrument used to measure the temperature. As a class, discuss what the temperature is like today. Ask students: Is it cold, hot, or warm today? Show students a weather thermometer and allow them to read it. Explain what the reading means in terms of feeling cold, hot, or warm. Discuss the temperature of the seasons in general. Explain that winter is usually the coolest season and the summer is the hottest. Then transition to discussing the temperature and the seasons in your area. Explain to students that a weather report gives us information about the weather. Tell students they are going to learn about the weather patterns that weather reports describe. Read the Read Aloud Passage Weather Patterns with the students. Debrief and discuss the questions in the text. Write the following vocabulary words on the board or chart paper: forecast and symbol. Draw some symbols on the board, such as a sun or cloud, and ask students what they mean. Tell students: A forecast is a prediction about what the weather will probably be like. A symbol is a picture that represents something else. As a class, come up with weather symbols for different types of weather.			

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