ARIZONA SCIENCE CENTER
Never stop wondering.
Never stop imagining.

Cloudy with a Chance of Science! Week 3: Grades 3-5

Day	Topics	Related Standards
1	What's the Weather Like Outside?	**Collect**, **analyze**, and **interpret** data to explain weather and climate patterns.
2	Weather vs. Climate	**Collect**, **analyze**, and **interpret** data to explain weather and climate patterns.
3	Proceed with Caution: Severe Weather Challenge!	**Collect**, **analyze**, and **interpret** data to explain weather and climate patterns. **Define problem(s)** and **design solution(s)** to minimize the effects of natural hazards.
4	Gotta Plan?	
5	Improvements Ahead!	

Cloudy with a Chance of Science!

Week 3

Day 1: What's the Weather Like Outside?

Teacher/Parent Background:

Breezy, warm, cloudy, wet! What is the weather like outside your house today? In science, weather is described as the condition of an environment at a given time and involves factors such as cloud coverage/sun exposure, wind, temperature and precipitation. Tracking the weather over time by collecting data can tell us more about the environment we live in and can help us better prepare for upcoming weather.

Overview:

In this activity, students will engage in an outdoor exploration in order to describe the weather conditions of their environment.

Related Standards:

- Collect, analyze, and interpret data to explain weather and climate patterns.

Key Terms:

- Weather: the condition of an environment at a given time.
- Temperature: the measurement of heat in a place.
- Precipitation: water (liquid or solid) that falls from clouds.
- Thermometer: a tool used to measure temperature.
- Meteorologist: a scientist who studies weather.

Materials List:

- Internet access
- Parental/adult supervision
- Safe, outdoor areas
    - Frontyard, backyard, neighborhood sidewalks, nearby field or park, etc.
- Thermometer
- Timer
- Pen/pencil
- *Student Resources - Pages 6-8*

- *Weather Cards*
- *Weather Data Table - Part 1*
- *Weather Data Table - Part 2*

Activity Description:

- Temperature is a weather condition and is the measurement of the heat in a place. Before starting the lesson, place a thermometer on an outdoor surface that is not covered by shade and is not directly on the ground (ex: resting on lawn furniture).
  - Record the initial temperature to give to students at a later time.
  - You and your students will revisit this thermometer later in the lesson to record a final temperature. Use a timer to keep track of the time between temperature readings.
- Ask students to observe and describe what they see in each of the *Weather Cards*. Engage students in a discussion of key ideas:
  - What do you see in each card?
    - Trees, skies, clouds, water, sunshine, playground equipment, etc.
  - What kinds of words would you use to describe each card?
    - Card 1: Windy
    - Card 2: Cloudy
    - Card 3: Sunny
    - Card 4: Rainy
    - Card 5: Hot
  - How would you need to dress/bring with you in order to go outdoors in each of the scenarios?
    - Card 1 and 2: Sometimes when it is windy or cloudy, I get cold so I would need to bring a jacket.
    - Card 3: When it is sunny, I wear sunglasses and sunscreen to protect me from the Sun.
    - Card 4: When it rains, I use an umbrella and I wear rain boots.
    - Card 5: When it is hot, I wear lighter clothes and bring lots of water to drink!
  - What are some differences between the cards? What is similar between the cards?
    - One card shows the Sun shining brightly while other cards show cloudy skies and rain, one card shows a hot place, etc.
    - All of the cards show things that happen to/affect us outside.
- Although all of these cards are different from one another, they have something in common: each card shows a weather condition! In the science community, we describe *weather* as the condition of an environment at a given time. Just like you saw in each card, there are certain weather conditions or factors, such as:
  - Cloud coverage/Sun exposure - as seen in Card 2 and 3

    - Wind - as seen in Card 1
    - Temperature - as seen in Card 5
        - *Temperature* is defined as the measurement of heat in a place. Like a hot, summer day in Phoenix!
    - Precipitation - as seen in Card 4
        - *Precipitation* is defined as water, either in liquid (rain) or solid (snow) form, falling from clouds.
- All of these conditions can be studied by using tools and making observations.
    - Prompt students to access the *Scholastic Study Jams: Weather Instruments Slideshow*. As applicable/wanted, prompt students to engage in the *Test Yourself* option.
- Explain to students that the conditions outside tell us a lot about the weather in our environments and since we live in our environments, we want to know the weather to plan for the day/week!
    - We can track the weather over time by collecting data. This data can tell us more about the environment we live in and can help us better predict and prepare for upcoming weather!
    - In fact, scientists who study weather are called *meteorologists*. Today, we are going to become meteorologists and collect data about the weather outside our homes!
- Engage students in the following activity:
    - With adult/parental supervision, explore the weather of the safe, easily accessible outdoor areas of your neighborhood. This may include:
        - Your front and backyard, sidewalks around your neighborhood, a nearby field or park, etc.
    - Prompt students to collect and record data to explain the weather conditions of their environment:
        - Briefly review the *Weather Data Table - Part 1* details and prompt students to circle the appropriate rating, depending on the current weather conditions.
        - Briefly review the *Weather Data Table - Part 2* details.
            - **Note:** Provide students with the starting temperature from the beginning of the lesson and then guide students to read and record the final temperature.
            - Reading and recording temperature in degrees Fahrenheit may be the most familiar measurement to students at this time.

Closure:

- After the activity has concluded, return home and engage in a discussion with students:

- What is the weather like outside your house? Describe the weather using observations from your investigation.
- Why do you think it is important to know the weather conditions of your environment?
- Based on the weather observed today, what do you predict tomorrow's weather will be like? Will it be similar? Why do you think so?

Extensions:

Continue the Investigation!

- Engage students in collecting specific information about the wind outside!
  - Explore this activity to make a *wind vane* with household materials!
    - How can you tell which direction the wind is blowing?
- Encourage students in collecting specific information about rainfall!
  - Explore this activity to make a *rain gauge* with household materials!
    - How can you tell how much rainfall we had?
- Assist students in downloading the free *Google Science Journal* app. to collect and record real-time conditions about their environments!
  - Barometer
  - Brightness

- Call or video-chat with a family member/friend that lives in a different city. What is their weather like today?
  - Encourage students to share the weather data they collected and listen to the data from a different environment.
    - What is similar about the weather data?
    - What is different about the weather data?

Student Resources

Weather Cards

Card 1	Card 2
	
Card 3	**Card 4**
	
Card 5	
	

Weather Data Table - Part 1

Sunshine/Cloud Scale

1 Low	2 Medium	3 High
The sky is completely covered by clouds. Little/no sunshine is seen.	The sky is somewhat cloudy. The Sun can be seen.	The sky has no/few clouds. The Sun can be seen shining full, brightly.

Wind Scale

1 Low	2 Medium	3 High
There is little/no wind. The leaves of trees are completely still.	There is moderate wind. The leaves of trees move/sway back and forth.	There is a strong wind. The leaves/branches of trees shake violently and make loud noises.

Precipitation Scale

1 Low	2 Medium	3 High
There is no precipitation. There is no falling rain or snow.	There is light precipitation. Some rain or snow is falling.	There is strong precipitation. Rain or snow is falling heavily.

Weather Data Table - Part 2

Temperature Over Time

Starting Temperature	Final Temperature