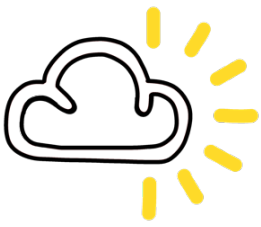
Climate vs. Weather

What is the climate like where you live? What is the weather like where you live? Wait… aren't weather and climate the same thing? Actually, they are not! Many people use these words as if they mean the same thing, but they are actually different. An easy way to understand the difference between weather and climate is to think of weather as short term and climate as long term. **Weather** is the current condition of the atmosphere at a set time and set place. **Climate** is the pattern of typical weather that occurs at a set place over a period of time.

You probably already know that weather is measured using a variety of tools. Can you remember what any of these tools are? The thermometer, anemometer, rain gauge, and wind vane are a few of the tools that are used to measure weather. These tools gather data about certain weather conditions such as temperature, wind speed, wind direction, and the amount of precipitation. Meteorologists use this data to come up with daily or weekly weather forecasts that they share with the people that live in their areas. These weather forecasts help you decide what to wear each day and whether or not you need a rain jacket, snow boots, or flip flops. Meteorologists can also use the information they gather using weather tools to warn people about incoming severe weather.

Information gathered from weather tools is also used by meteorologists in another way. Meteorologists look at weather data over time to try to see patterns in weather conditions. For example, it is always ULTRA hot in the southern part of the United States during the summer months. Meteorologists use the patterns they see in weather data to make even more specific predictions about the expected weather in the future. Following weather patterns is also helpful for tracking severe weather, like thunderstorms and hurricanes. Meteorologists plot the data they collect about a storm's position on a map to make predictions about which direction the storm might go in next. Collecting data to discover weather patterns and make predictions about future weather conditions is meteorologists' main job.

In addition to weather tools, meteorologists use two other pieces of technology to help them predict weather: satellites and radar. **Satellites** are machines that are sent into outer space to orbit around earth. These devices collect information by constantly taking images in sequence. The images are immediately sent down to earth where meteorologists are able to easily see cloud patterns and severe weather movement through the images. Radar technology is also important. **Radars** are machines that emit quick, short pulses that are reflected back to the point where they are shot out from. The time that it takes for the pulses to return to the radar machine helps provide information about changes in the atmosphere. If the pulse returns to the radar quickly, it indicates that the precipitation is nearby. If the pulse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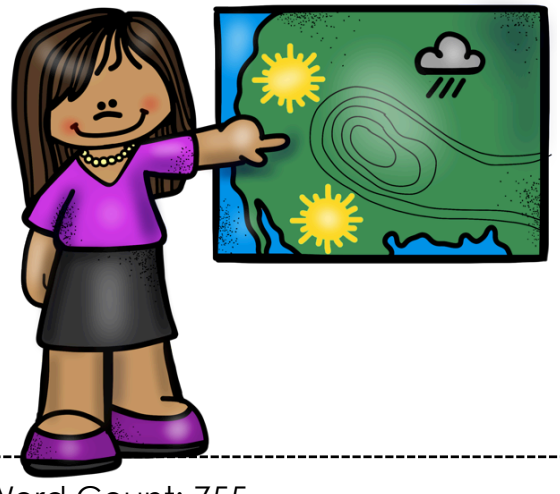
returns more slowly, the precipitation is further away. Radar is helpful in determining the size, location, and movement of rain or severe weather. Together, information that is collected from satellites and radars allow meteorologists to gather a great deal of information about rain and severe weather.

Scientists use **weather maps** to organize the weather data that they collect in a visual display. Weather maps are very useful in forecasting weather because they visually display one or more weather condition. The most common weather conditions that are displayed on weather maps are cloud coverage, temperature, wind direction, wind speed, precipitation, and barometric pressure. **Barometric pressure**, or atmospheric pressure, is the weight of the atmosphere pushing down on earth. Meteorologists use weather maps to predict weather by looking at patterns. Isobars and isotherms are lines that are included on weather maps to show patterns more clearly. These lines are created by plotting data points on a map and connecting the lines. **Isobars** show patterns of barometric pressure over time, while **isotherms** show patterns of temperature over time.

Meteorologists use weather tools like satellites and radars to look at weather patterns and create weather maps. By looking at weather patterns over time, meteorologists can better understand the climate of an area and better predict future weather conditions there. Weather is constantly changing from moment to moment in a given place. Climate only changes from place to place. Although weather and climate are similar in that they both relate to the condition of the atmosphere, there is quite a big difference between the two. Can you see the difference now?



Name _____

TEXT-BASED EVIDENCE QUESTIONS

Climate vs. Weather

Directions: Answer these questions after you read the passage. Remember to begin your answer by restating part of the question, use direct evidence from the text, and explain your thinking.

KEY IDEAS & DETAILS

1. According to the first paragraph of the text, what misunderstanding do many people have about climate and weather? **RI.1**

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2. Explain the difference between climate and weather. **RI.3**

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3. Explain how meteorologists use weather patterns. **RI.3**

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4. Describe how weather maps are helpful to meteorologists. **RI.3**

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5. List the different types of technology that meteorologists use. **RI.2**

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Name _____

TEXT-BASED EVIDENCE QUESTIONS

Climate vs. Weather

Directions: Answer these questions after you read the passage. Remember to begin your answer by restating part of the question, use direct evidence from the text, and explain your thinking.

CRAFT & STRUCTURE

6. Explain the difference between the meaning of the term "isobar" and "isotherm." **RI.4**

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7. How is the passage organized? (Chronological, cause/effect, comparison/contrast, description, problem/solution). Use evidence from the text to explain your answer. **RI.5**

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INTEGRATION OF KNOWLEDGE & IDEAS

8. What is the key idea that the author wants readers to understand from this text? Use evidence from the text to support your reasoning. **RI.8**

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