Earth Science

WEATHER

1. **Weather is how hot or cold a place is**

2. **Weather has four elements to it**

What are the four elements of weather?

There are four main elements of weather which affect how we experience our daily lives. These are temperature, wind, rain, and sunlight or clouds.

Temperature deals with heat. How hot or cold. We in Grenada has a warm temperature while the United States in the winter months have a cold temperature.

The elements can exist in different combinations and affect what we wear, where we go, and how we feel. For example, it can look very sunny outside in the middle of winter, but you will still need to wear a coat. Or it could be cloudy and windy but still quite warm.

Watching weather forecasts each day can help you to decide how the four elements of weather will affect your decisions that day. They show a weather map with the different conditions you can expect across the day and the week ahead. Maybe you can make the most of the sunshine. Perhaps you need to find some indoor activities instead.

What causes the weather?

Weather is caused by the heat from the sun and the movement of the air. The amount of moisture in the air also affects the weather. All weather happens in the lower layer of the Earth's atmosphere. That is why it affects our lives so much. The four elements of weather combine to cause the day-to-day weather we experience.

The wind is created by warm air in the atmosphere rising and being replaced by colder air. This then causes other weather conditions to occur such as clear skies or rain. The amount of moisture in the clouds affects the weather, causing us to experience rain, snow, and more.

How can we predict the weather?

Measuring the weather is called weather observation. That sounds quite easy – anyone can observe the weather just by looking out of the window! But how do we predict weather so that we can make forecasts? And how do we do it accurately and in detail?

Meteorologists measure all the different parts of the weather and put them together. They use special weather instruments to measure and record the four elements of weather. This helps them to predict what the weather will be like. Below we have listed the ways that different elements of the weather are measured.

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Temperature

Measuring temperature is quite easy: it only takes a thermometer. In the past, we used mercury in our thermometers, but mercury is a very dangerous substance. Nowadays, digital thermometers are used to measure temperature.

Humidity

Humidity is the amount of water vapour in the air. It is measured by measuring the temperature of a thermometer with its end wrapped in a damp cloth. This is then compared to a normal thermometer. After doing some calculations, we can work out the humidity.

Wind

We measure wind direction and wind speed. Wind direction can be measured with a weather vane. It show us where the wind has come from, which can tell us a lot about the weather. Wind from the north tends to be quite cold, while wind from the south is warmer.

To measure wind speed, an anemometer is used. This spins to show how fast the wind is moving.

Visibility

Visibility is the distance that we can see without binoculars or other assistance. When it is foggy, the visibility can be very low.

We measure our visibility by using our eyes. We look out for points that are a set distance away and see which are very clear. Sometimes, lasers are used for better accuracy.

Rain

Rain accumulation is the amount of rain reaching the ground over a period of time. It is measured using rain gauges that capture rain.

Rain rate is the amount of rain falling out of the sky, as well as its speed. We can use radar to estimate the rain rate.

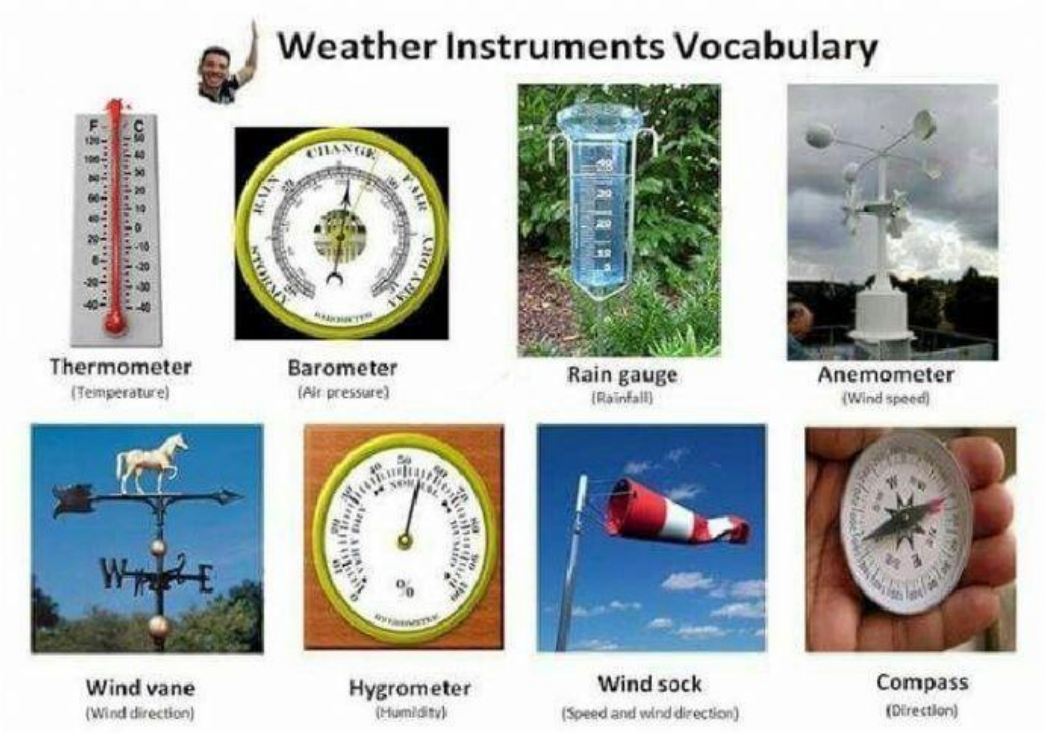
Pressure

The air pressure can tell us what type of weather to expect. With high pressure, we normally expect clear skies and light winds. But when the pressure is low, the weather

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is often wet and windy. Pressure is measured with a barometer, which has different bubbles to show the air pressure.

These are the main factors that we use to forecast the weather!



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Thermometer **Barometer** **Rain Gauge**

Anemometer **Wind Vane** **Compass**

1.

ACTIVITY	INSTRUMENT
A pilot needs to know the speed of the wind before landing	
There was a heavy rain over night	
The wind is blowing to the east	
It is a hot day today	
Outside is very Humid	
Outside makes you feel like the air is heavy	
I need to know which direction to sail the ship	

2. **Instructions:** ***Match the word with the correct sentence or definition.***
Temperature **Weather** **Meteorologist** **Humidity** **Visibility**

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	People that study the weather
	How hot or cold it is
	How far you can see
	The condition or how outside is
	How much water vapour or cloud in the air

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