

Changes in Air Conditions



Focus: Students will observe and measure changes in air conditions, selecting tools appropriate for their needs.

Specific Curriculum Outcomes

Students will be expected to:

- 15.0 explore changes in air conditions in indoor and outdoor environments, and describe and interpret these changes [GCO 1/3]
- 16.0 use appropriate tools [GCO 2]

Performance Indicators

Students who achieve these outcomes will be able to:

- observe and measure changes in air conditions such as temperature and wind speed
- select appropriate tools to use to measure particular air conditions

NOTES:

Attitude Outcome Statements

Encourage students to:

- show concern for their safety and that of others in carrying out activities and using materials [GCO 4]

Cross-Curricular Connections

Social Studies

Students will be expected to:

- describe how people's interactions with their environment have changed over time [2.4.2]

English Language Arts

Students will be expected to:

- communicate information and ideas effectively and clearly, and to respond personally and critically [GCO 2]

Getting Organized

Components	Materials	Before You Begin	Vocabulary
• Science Card 7 • BLM <i>Venn Diagram</i> • IWB Activity 6 • BLM <i>Pinwheel</i> Literacy Place: • <i>The North Wind and the Sun</i> (Guided Reading, Level H)	• weather instruments (e.g., thermometers, hygrometers, anemometers, wind socks, weather vanes) • students' Science Journals • paper or index cards • markers • crayons • coloured pencils or markers • scissors • straws • paper fasteners • single-hole paper punch • digital camera (optional)	• If necessary, gather photos or videos of various weather instruments. • Invite an Elder or an Indigenous Knowledge Keeper to talk about how knowledge of weather is important in traditional practices such as being on the land. • Punch holes through both sides of a straw at one end (one per student).	• temperature • thermometer • rain gauge • anemometer • wind sock • weather vane

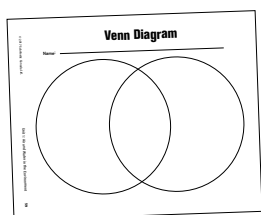
Science Background

- Weather is a combination of sunlight, precipitation (rain, snow, hail), wind, humidity, air pressure, and temperature for a given area at a particular time. Scientists measure and record these conditions in order to describe the weather and to identify patterns over time. Meteorologists forecast weather so that communities can prepare for specific conditions.

Possible Misconceptions

- Common misconceptions about weather include: clouds can block wind and slow it down; wind is caused by moving objects or by Earth turning; cold weather makes wind or makes stronger wind; rain falls out of holes or funnels in clouds; rain is clouds sweating or melting; rain is caused by the wind shaking clouds, by clouds colliding, or by clouds getting too heavy.

ACTIVATE



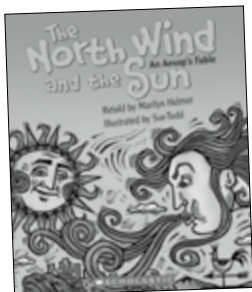
A Change in the Air

Focus on the images on Science Card 7 one at a time, and guide students on an imagination walk through each scenario. Have the class tell you what they imagine the air feels like. Record students' ideas for each scenario on a large chart and post the chart in a central place.

Then, divide the class into pairs and provide each pair with a copy of BLM *Venn Diagram*. Tell the class that they are to work with their partner to choose two of the imagination walks, and use the BLM to compare and contrast the air in each scenario. Provide prompts such as:

- Was there anything different about how the air felt?
- Was the temperature the same in both?
- Was the air moving in both? If so, was it moving the same amount?

Invite students to suggest another scenario (e.g., entering a walk-in freezer or walking on a hot beach) and lead an imagination walk to describe the air conditions.



Literacy Place Connection:

In *The North Wind and the Sun* (Guided Reading, Level H) the North Wind challenges the Sun to prove who is stronger. Invite students to describe the air conditions when the North Wind is blowing and then when the Sun is shining. Ask:

- What evidence do you see in the illustrations to show the air is moving?

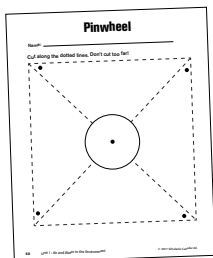
CONNECT

Measuring Weather

Gather together some instruments used to measure air conditions, wind speed, and wind direction, such as thermometers, hygrometers, anemometers, wind socks, and weather vanes. When possible, demonstrate how the instruments work. Display the instruments in the classroom and allow the students to explore them. (If you cannot assemble a collection of instruments, show

IWB Activity:

- Challenge students to identify the weather instruments using IWB
- Activity 6: *Mystery Object* (see the Teacher's Website).



students photos or videos of weather instruments.) Discuss what air condition each instrument measures and how it is used. Ask:

- **When is it important to know air conditions?**

Weather Knowledge

Invite an Elder or an Indigenous Knowledge Keeper to talk about how knowledge of weather is important in traditional practices such as being on the land. Ask the guest to share information such as, when out on the land, how they predict the weather; what they do to stay safe in severe weather; and if they use any special tools to measure the weather.

Air Temperature

Working in small groups of three or four, have students explore thermometers. If necessary, remind students how the liquid rises and falls with temperature changes. Ask students to suggest ways to record the temperature (e.g., draw a line on a paper that is as long as the liquid is high, draw a line on an index card attached to the thermometer).

Tell students that you are curious about the air temperature inside and outside the school. Invite students to ask questions about this; if necessary, prompt thinking by saying “I wonder if the temperature is the same inside all the time?” Record the students’ questions. Then, as a class, choose a question to investigate, or have the small groups decide on their own question to investigate. Work with the students to come up with a plan for gathering data with the thermometers. Students should plan to measure and record air temperature at different times of the day and in different locations, both inside and outside the school. Students can record these observations in their Science Journals. Assist students in keeping track of their data over the day as needed.

Spin Me Around: Pinwheels

Gather a class set of the following: crayons, coloured pencils or markers; scissors; straws; paper fasteners, and copies of BLM *Pinwheel*. You will also need at least one single-hole paper punch. Either before class or as the students are working, punch a hole through both sides of all of the straws at one end.

Have students collect their supplies. Draw their attention to the BLM and explain that they are to cut along the dotted lines and stop where the line stops. Circulate when the students are cutting out the pinwheel, making sure they don’t cut too far. Invite students to decorate their pinwheel after they cut it out. Tell them to decorate both sides as they will be able to see both sides of the paper when they are finished. When students have finished decorating, have them use a paper punch to make holes where there are black dots on their pinwheel.

Demonstrate the next steps to the class:

1. Form the pinwheel by looping each cut triangular piece back towards the centre and lining up all the holes.
2. Insert the paper fastener through the aligned holes, and through the holes in the straw, before opening it. It should be tight enough to keep the pinwheel together but not so tight the pinwheel won’t spin.

After your demonstration, have students assemble their pinwheels as you showed them. Circulate to offer assistance as needed. When pinwheels are finished, invite students to make them move by blowing on them. Ask:

- **What is making the pinwheel move?**

Invite students to test the pinwheels in various locations in and around the school to note how fast the pinwheel spins in different locations and conditions. Students may wish to record their observations by taking digital videos.

CONSOLIDATE

Weather Station

As a class, create a display showing the collected weather instruments and describing what air conditions each measures. If possible, create a weather station with the instruments. Make a large chart in a central area in the classroom to display collected data. Have volunteers help you to read and record data on the weather each day for several weeks using appropriate instruments. Invite a student to make a weather report to the class each day. Students could also take turns giving the weather report over the PA to the entire school.

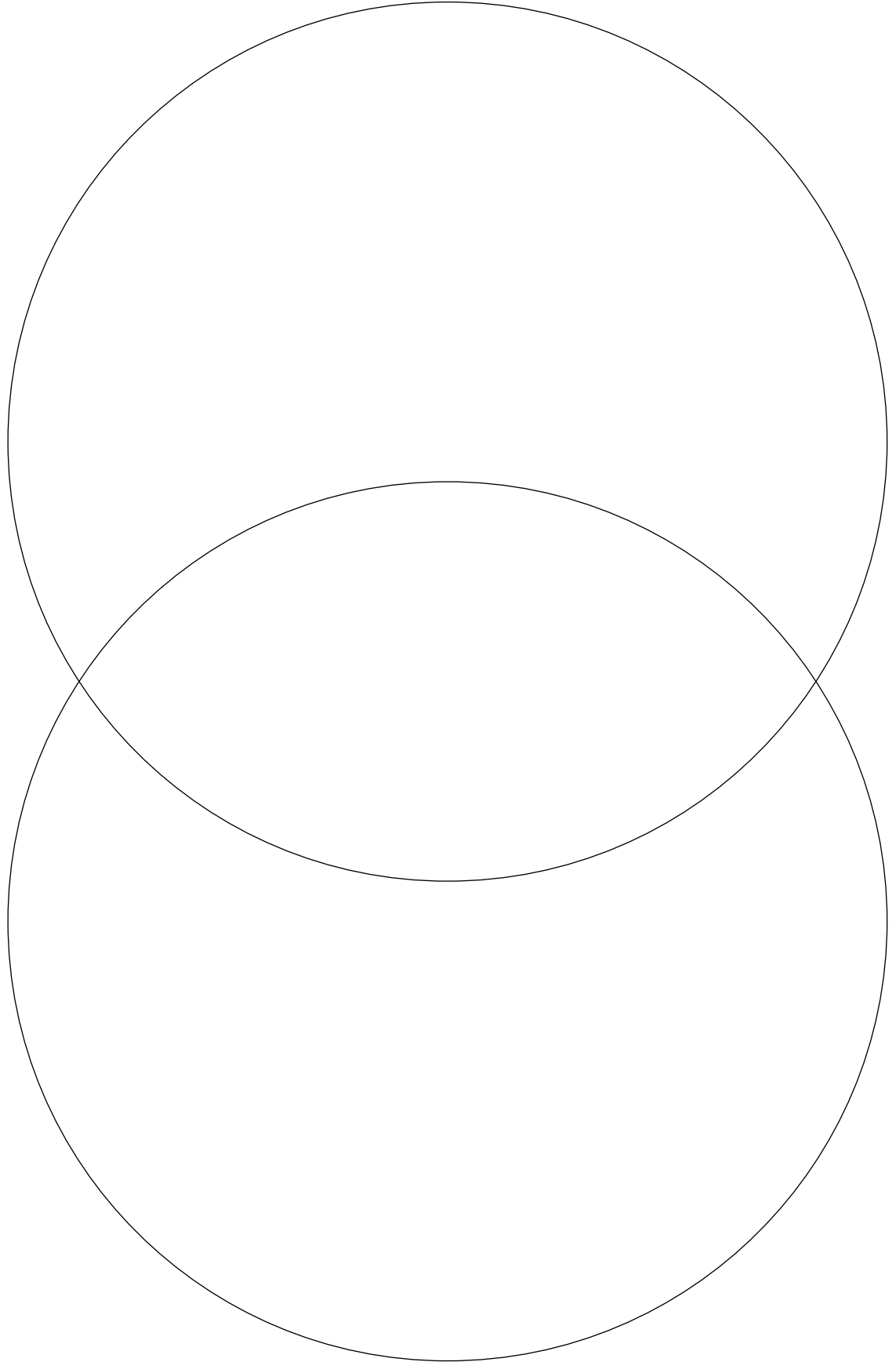
EXPLORE MORE

Blowin' in the Wind

Have students draw a series of pictures of an object (e.g., a tree, clothes on a clothesline, or a flag) to show how it looks in various air conditions (e.g., no wind, light wind, and strong wind). Encourage students to exchange their work with a partner and explain what is happening in each picture and why.

Venn Diagram

Name: _____



Pinwheel

Name: _____

Cut along the dotted lines. Don't cut too far!

