

# WEATHER

This unit has been field tested with a Grade 3-4 class through a partners unit with the school librarian.

At the end of the 5-6 week study, the students became expert weather watchers.

The hands-on activities allowed the students to discover weather in a fun way.

Incorporate the suggestions from this unit with your own weather ideas and let the students investigate weather.

It is hoped that the following concepts will be developed:

- Many of life's activities are affected by the weather.
- Specific conditions usually precede certain weather changes.
- Seasons have distinct weather conditions and they change continually.
- Weather is responsible for cyclical patterns found in the natural world.
- The students should become familiar with the scientific method.

A variety of teaching methods and strategies can be used to present the concept and to get the students involved.

- co-operative learning strategies
- individual research activities
- experiments using the scientific method
- partners unit with your librarian or a team of teachers



## Weather Sayings and Superstitions

In small groups or as a class activity, brainstorm weather sayings and superstitions.

### Follow Up Activities

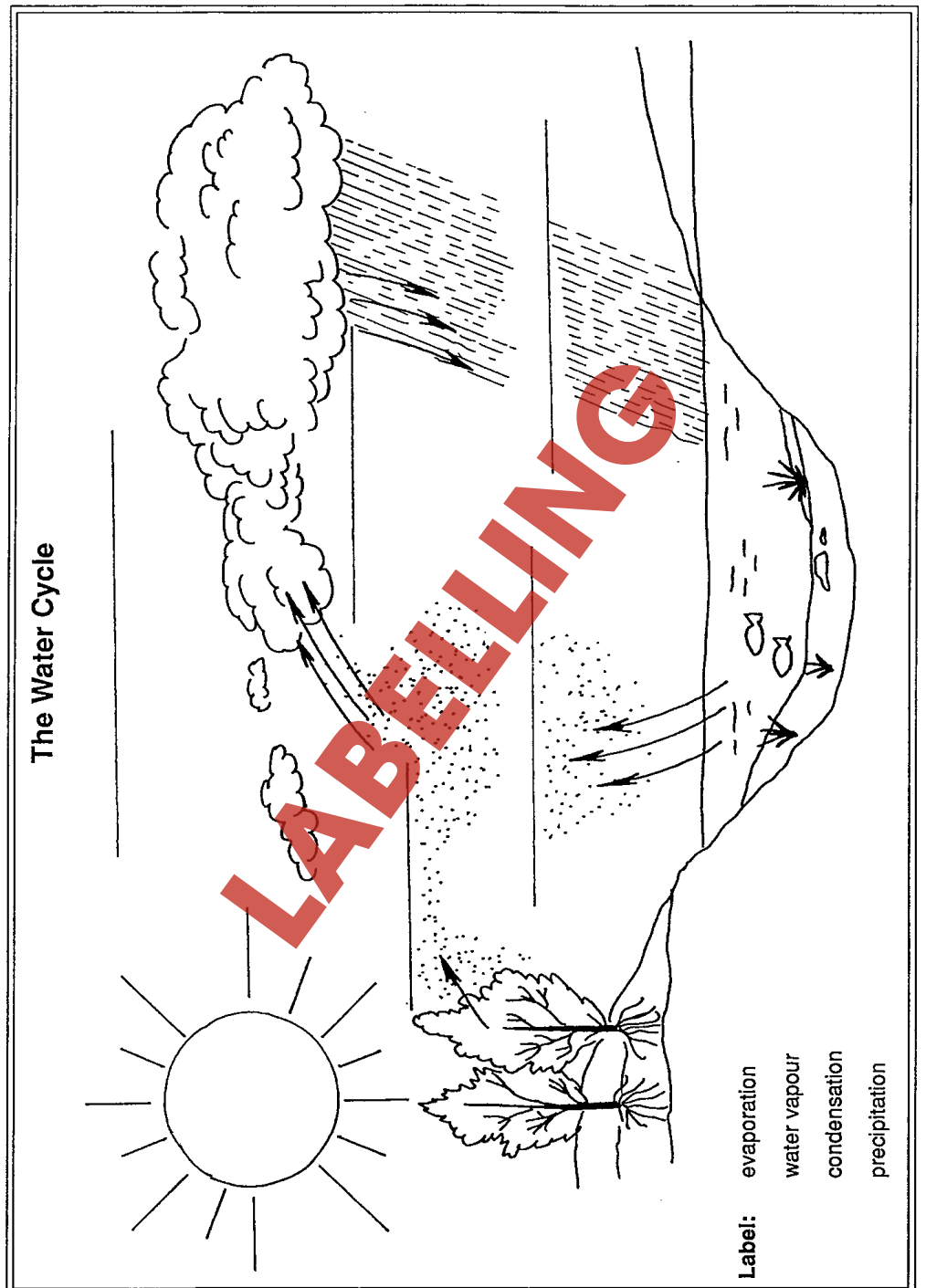
Sayings can be illustrated using different media:

- cartoon format
- used as title page illustrations for various sections of the unit
- used in the development of "Big Books"
- adapted to a small book format, i.e. Little Miss & Mr. Men series, to be used with cassette, etc.
- chosen as a base for research to discover the origins of the sayings
- checked for scientific accuracy
- interview grandparents, farmers, a sailor...to discover which weather sayings were common to them
- handed out with blank spaces in the "sayings" for the students to fill in new words
- displayed on the blackboard/bulletin board/outside door/hallway with new one each day/week
- used for handwriting exercises
- explained by the students using their own words
- printed in large format, coloured, mounted, laminated and cut out to create a puzzle for the students to match the beginnings and endings of the "sayings"
- given in part to the students, having the students complete the "saying"
- memory work
- banners could be made with the help of a computer, or posters could be made to decorate bulletin boards or put on the ceiling
- "sayings" could be used as beginning/endings/both in creative writing or essays
- advertisements could be created for use on "T.V." when the students give their weather reports
- "sayings" can be used in commercials to sell farm products, sports equipment, etc.
- could lead to rhyming couplet writing, e.g. "On a rainy day,  
Our recess comes in to play"
- students may be able to create their own "sayings" based on observations of weather

Brainstorm and discuss signs in nature and how they were used to forecast the weather.

Are any of these used today to forecast weather?

How accurate are the forecasts when using signs in nature?



## Home Project/Science Fair Anemometer

- Materials:**
- 3 pieces of wood about 3/4" (2cm) thick and of the following dimensions:
    - 7"x3" (17.5cmx7.5cm) for bottom of base
    - 4"x3" (10cmx7.5cm) for top of base
    - 9"x3" (22.5cmx7.5cm) for upright part of base
  - household egg beater (the kind with two beater sections) with wooden handle
  - 4 dowels (round pieces of wood 1/4" (1cm) in diameter and 9" (22.5cm) long)
  - 1 dowel 6" (15cm) long
  - 4 metal funnels 6" (15 cm) in diameter at widest part
  - 1 large carpet-thread type wooden spool
  - screws
  - 4 wooden plugs
  - glue

### Instructions:

1. Remove the "beater" ends of the egg beater, and the stem of the "idling" side. Leave a 3" (7.5cm) U-shaped support attached to the small gear (which meshes with the large driving gear). This is the part which will permit you to attach the beater to the wind cups (see step 3).
2. Saw the wooden handle off flat. Drill a screw through the bottom of the base into the wooden handle of the beater.
3. Drill a hole in the centre of the top of the base. Wax the 6" (15cm) dowel and slip it through the hole. Fasten this dowel to the beater by means of a nut and bolt through the U-shaped part described in step 1.
4. Drill holes on 4 sides of the spool (spaced evenly apart) and glue in dowels to form arms at right angles.
5. Glue spool to upright dowel attached to beater.
6. Shorten the ends of the funnels. Insert wooden plugs into them then fasten the funnels to the arms by screws into the plugs. Make sure the funnels all point in the same direction.

### How to Use This Instrument

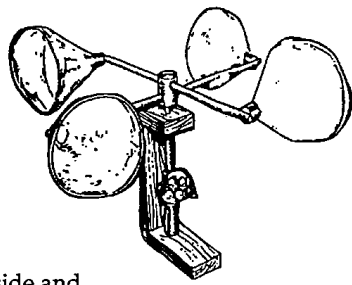
This instrument needs to be calibrated. A good way to do this is to have someone drive you in a car on a windless day. Have the driver proceed at an even speed, starting at 5 km/h. Count the number of turns the beater handle makes in one minute.

Do this again at 10 km/h, 15, 20, etc. in five km intervals up to 70 km/h. Your instrument is not accurate measuring above this. You may wish to do this again travelling the opposite way to check your calibrations.

Chart the data in 2 columns, with wind speed on one side and revolutions of the handle per minute in the other.

Now it will be easy to turn the revolutions per minute into kilometres per hour.

To save time, count the turns in 30 seconds and double it to get revolutions per minute.



## Weather Vane

A weather vane is an instrument that measures wind direction. Wind is caused by the uneven heating of the atmosphere by energy from the sun. Wind is air moving across the earth's surface. A hot, moist day may suddenly turn cool if a wind blows from a cool area. Clouds with rain and lightning may form where the cool air meets the hot moist air.

Winds are named according to the direction from which they blow. An east wind blows from east to west, etc.

The weather vane (or wind vane) is one of the oldest of all weather instruments. It is often ornamental in shape.

### History

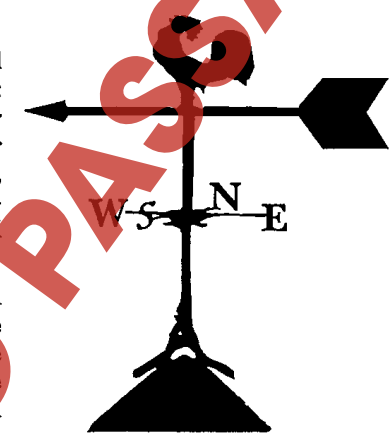
For the most part, we have simply used the four cardinal points of the compass: north, east, south, west, and the four points in between. Always put north or south first when naming them, i.e., northeast, northwest, southeast, southwest, or abbreviated NE, SE, SW, and NW.

The city fathers of ancient Athens had an eight-sided tower built, each side was decorated with a picture and the name of one wind. A vane on top of the structure turned with the wind and when it blew from the north it would indicate a north wind.

For many centuries wind vanes were mounted on church steeples and public buildings and everyone knew their orientation. These black ornamental vanes are still available today from most garden centres. The actual weathercock sits above the base, which is clearly marked N, E, S, and W. They are a reminder that many roads, streets and highways in Canada and the United States follow these compass directions.

If no wind vane is visible, you can still tell wind direction from the direction smoke blows, or the behaviour of a flag. The Chinese watch streamers from a tethered hat, and, at an airport, the wind sock performs the same function.

It is generally understood that the weather vane had its origins in Italy about 50 B.C.





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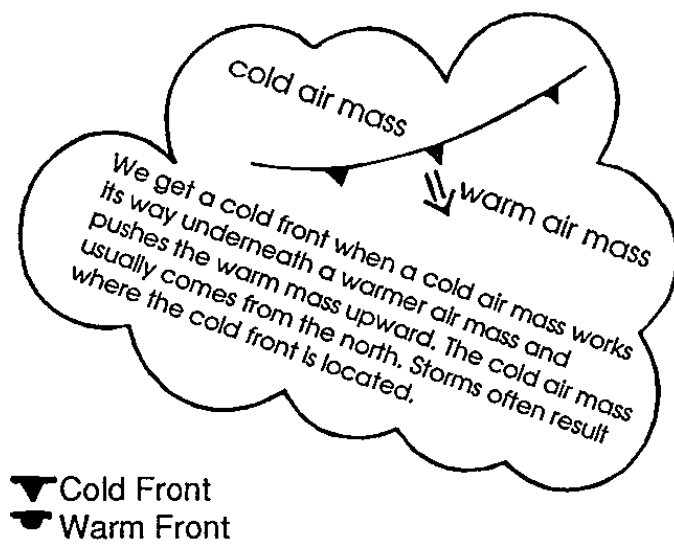
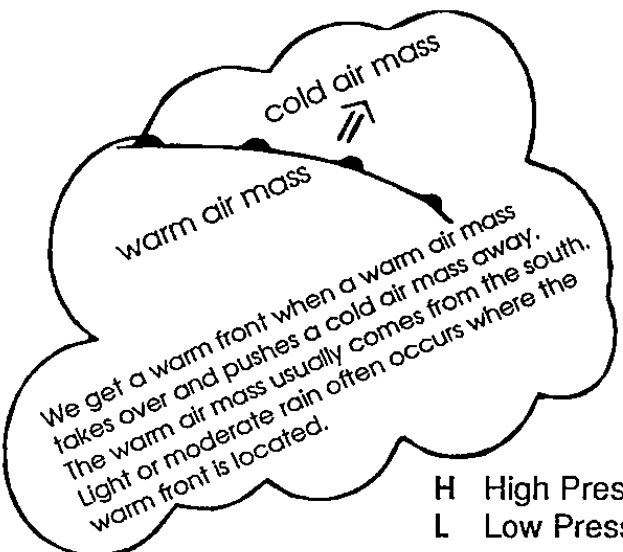
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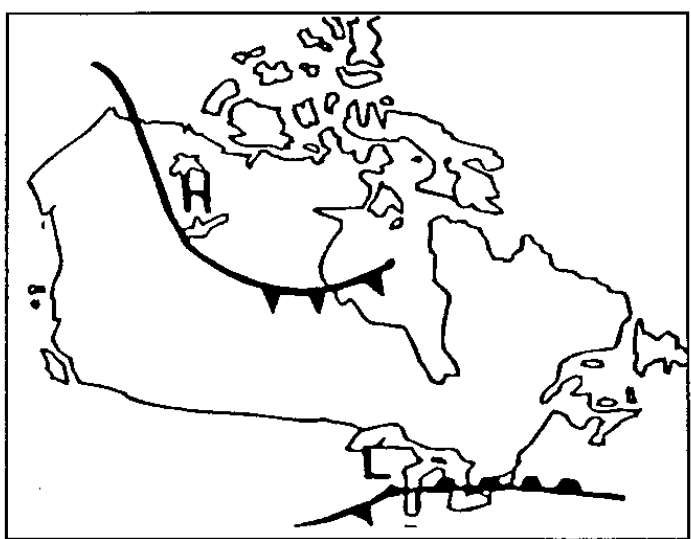
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H High Pressure  
L Low Pressure  
Cold Front  
Warm Front




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### What Makes the Wind

The sun gives us heat. It heats the earth. The earth heats up the air, and the warmer air rises. Cold air quickly moves in to take its place. This cool air is then warmed and it rises too. More cool air moves in. the moving air is called wind.

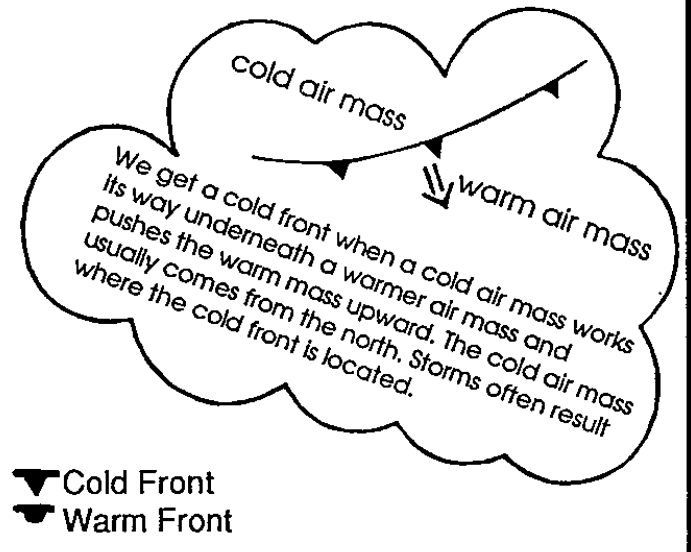
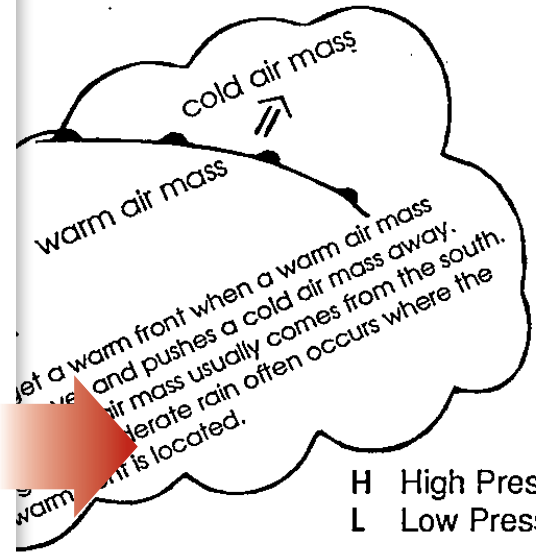
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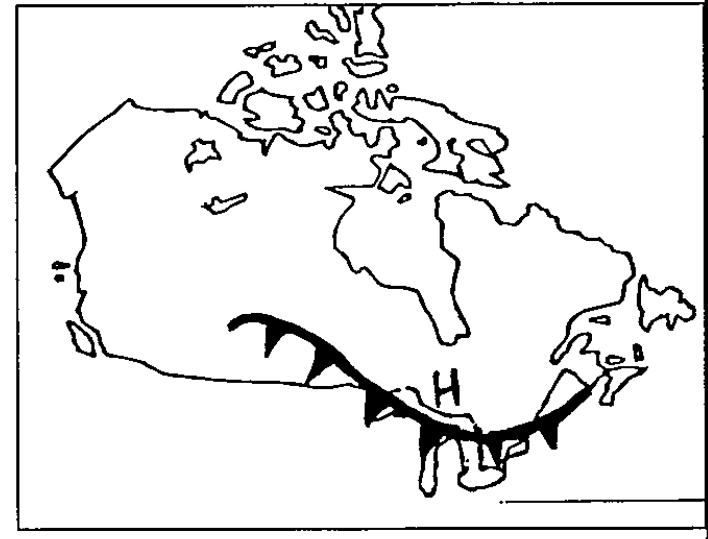
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H High Pressure  
L Low Pressure  
Cold Front  
Warm Front



In Toronto the weather would be \_\_\_\_\_  
m. There may be a chance  
in.

In Toronto the weather would be \_\_\_\_\_  
cold with a good chance of a storm.