

Grade 9 - Weather Dynamics - Pre-Assessment

Purpose:

This document is for grade 10 teachers to use as a pre-assessment for the “Weather Dynamics” unit. It assesses students understanding of the of the end of unit knowledge outcomes from the grade 5 “Weather” unit.

Curriculum Comparison:

| Grade 5 - Weather | Grade 10 - Weather Dynamics |
|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 300-13 describe weather in terms of temperature, wind speed and direction | 331-1 describe and explain heat transfer within the water cycle |
| 302-11 describe the key features of a variety of weather systems | 331-2 describe and explain heat transfer in the hydrosphere and atmosphere and its effects on air and water currents |
| 303-21 relate the transfer of energy from the sun to weather conditions | 331-3 describe how the hydrosphere and atmosphere act as heat sinks within the water cycle |
| 300-14 describe situations that demonstrate air takes up space, has weight, and expands when heated | 331-4 describe and explain the effects of heat transfer within the hydrosphere and atmosphere on the development, severity, movement of weather systems |
| 302-10 identify patterns in indoor and outdoor air movement | 331-5 analyse meteorological data for a given given time span and predict future weather conditions, using appropriate methodologies and technologies |
| 301-13 relate the constant circulation of water on Earth to the processes of evaporation, condensation, and precipitation | |
| 301-14 Describe and predict patterns of change in local weather conditions | |

Rubric Coding:

The purpose of an assessment is not to assign a “Mark” or a “Grade”. Rather, this document demonstrates to teacher the students previous understanding of the outcome. Each question assesses on specific knowledge outcome from the grade 5 unit that precedes the grade 10 “Weather Dynamics” unit.

Code 0 - Indicates that students do not understand the concept

Code 1 - Indicates that students understand the basic concept but either cannot elaborate in detail or have not considered more information could of been added

Code 2 - Indicates that students have a mastery of the concept.

*Please note that not all outcomes will allow for a Code 2 based on complexity.

Grade 9 - Weather Dynamics - Pre-Assessment

Grade 5 Properties and Changes in Materials

Knowledge Outcomes and Curriculum Focus

300-13 describe weather in terms of temperature, wind speed and direction, precipitation, and cloud cover

- Students investigate and record observations and measurement in charts and tables
- Students observe clouds - they should classify based on characteristics (stratus, cumulus, or cirrus) and by elevations (nimbostratus, cumulonimbus)

302-11 describe the key features of a variety of weather system

- Students have investigated hurricanes, tornadoes, sleet storms, and thunderstorms
- Students have used information such as wind speed, amounts of types of precipitation when looking at weather systems

303-21 relate the transfer of energy from the sun to weather conditions

- Students should understand that precipitation and winds are a cause of weather phenomena
- Students should explain how solar energy provides energy to evaporate water, and energy to warm the Earth's lands and oceans

300-14 describe situations that demonstrate air takes up space, has weight, and expands when heated

- Students should understand that moving air (wind) is a noticeable part of weather systems.
- Students should have investigated properties air.

302-10 identify patterns in indoor and outdoor air movement

- Students investigate indoor air movement in terms of heat from radiator and simple changes pressure
- Students should have been exposed to convection currents of water moving to mimic outdoor wind patterns

301-13 relate the constant circulation of water on Earth to the processes of evaporation, condensation, and precipitation

- Students should understand change of state and the water cycle

301-14 describe and predict patterns of change in local weather conditions

- Students should make weather forecasts based on indicators and sayings they have collected and compiled.

** Please Note that not all knowledge outcomes from grade 5 have been assessed. Only outcomes with a direct connection to the learning in grade 10 have be included.*

Grade 9 - Weather Dynamics - Pre-Assessment

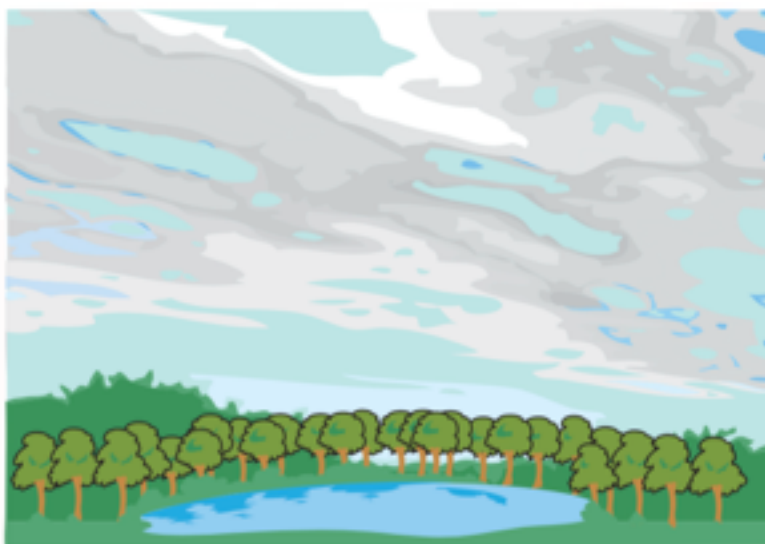
Name: _____

Teacher/Class: _____

1. Which two terms are used to describe weather?

- A. wind direction and amount of erosion
- B. gravity and amount of rain
- C. groundwater and cloud cover
- D. air temperature and wind speed

2. The clouds shown in the picture below look like gray sheets that spread across the sky. They form at 1500 meters and may bring heavy mist, snow, or drizzle



What type of clouds are these?

- A. Cirrus
- B. Cumulus
- C. Cumulonimbus
- D. Stratus

Grade 9 - Weather Dynamics - Pre-Assessment

3. Draw a diagram to show how the following concepts are related:

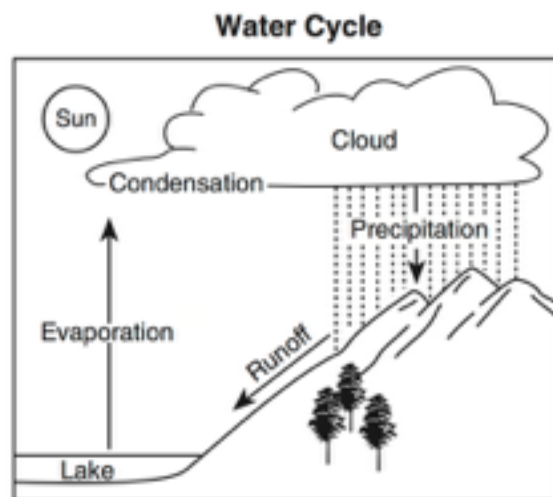
- Energy
- Sun
- Water
- Land
- Evaporation
- Condensation
- Precipitation

4. Why is air pressure greater at sea level than at the top of a mountain? Draw a diagram to support your explanation. (Remember to related your answer to the fact that air takes up space, has weight, and expands when heated).

Grade 9 - Weather Dynamics - Pre-Assessment

5. Explain how a change of pressure can lead to a change in wind current.(air movement)

6. Four parts in the water cycle are labeled in the diagram below.



The first column of the chart below describes what happens during each of the process in the water cycle. Complete the chart by filling in the word for each process. The process in the first row is shown.

| What Happens During the Process | Water Cycle Process |
|-------------------------------------------|---------------------|
| Water falls from the cloud to the ground. | precipitation |
| Liquid water flows over Earth's surface. | |
| Liquid water changes into water vapor. | |
| Water vapor changes into liquid water. | |

Grade 9 - Weather Dynamics - Pre-Assessment

7.

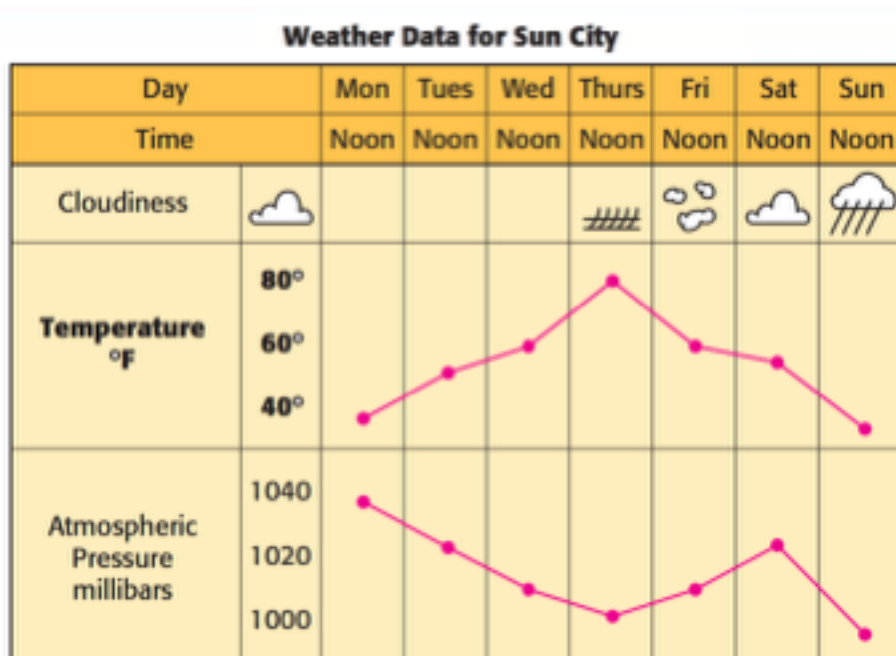
Weather Conditions for Miramichi, New Brunswick

| | Temperature | Wind Direction |
|--------------|-------------|----------------|
| Day 1 | 25 | Sotheast |
| Day 2 | | North |
| Day 3 | 28 | Southwest |
| Day4 | 30 | South |

Predict a reasonable temperature for Day 2.

- A. 21
- B. 25
- C. 28
- D. 29

8.



Look at the diagram for the days Monday through Thursday. Which best describes the relationship between temperature and pressure for those days?

- A. As the temperature rose, the pressure remained the same
- B. As the pressure rose, the temperature remained the same
- C. As the pressure rose, the temperature dropped
- D. As the temperature rose, the pressure dropped

Grade 9 - Weather Dynamics - Pre-Assessment

Coding Rubric

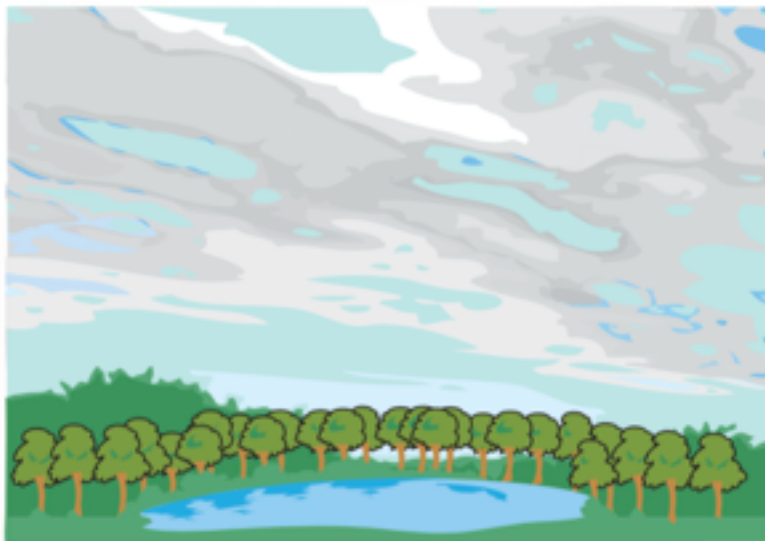
1. Which two terms are used to describe weather? (300-13)

- A. wind direction and amount of erosion
- B. gravity and amount of rain
- C. groundwater and cloud cover
- D. air temperature and wind speed**

0 - Any other answer

1 - D

2. The clouds shown in the picture below look like gray sheets that spread across the sky. They form at 1500 meters and may bring heavy mist, snow, or drizzle (300-13)



What type of clouds are these?

- A. Cirrus
- B. Cumulus
- C. Cumulonimbus
- D. Stratus**

0 - Any other answer

1 - D

Grade 9 - Weather Dynamics - Pre-Assessment

3. Draw a diagram to show how the following concepts are related: **(303-21)**

- Energy
- Water
- Evaporation
- Precipitation
- Sun
- Land
- Condensation

0 - Any other answer

1 - A simple diagram drawn that properly incorporates each concept

2 - A complex answer that adds depth to the diagram and explains the relationships between concepts

4. Why is air pressure greater at sea level than at the top of a mountain? Draw a diagram to support your explanation. (Remember to related your answer to the fact that air takes up space, has weight, and expands when heated).

(300-14)

0 - Any other answer

1 - A simple diagram drawn that properly incorporates air molecules being spaced farther apart on top of a mountain vs at sea level

2 - A complex answer that adds depth to the diagram and explains the relationships between concepts (takes up space, has weight, expands)

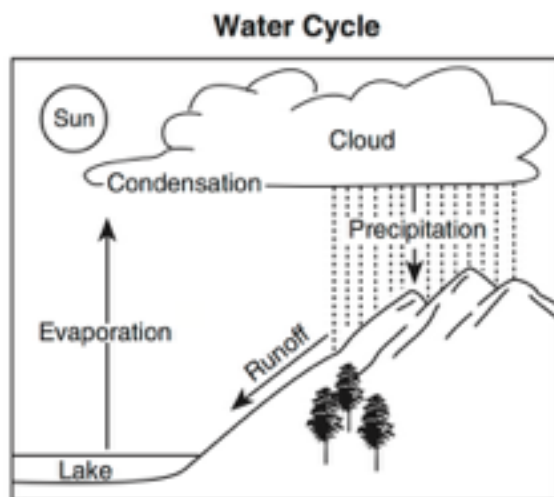
Grade 9 - Weather Dynamics - Pre-Assessment

5. Explain how a change of pressure can lead to a change in wind current (air movement).
(302-10)

0 - Any other answer

1 - Students should explain that warm air moves up and over top of cold air and cold air moves down and across to replace the warm air - convection current - Particles move from area of large concentration to an area of small concentration

6. Four prices in the water cycle are labeled in the diagram (301-13)



The first column of the chart below describes what happens during each of the process in the water cycle. Complete the chart by filling in the word for each process. The process in the first row is shown.

| What Happens During the Process | Water Cycle Process |
|-------------------------------------------|---------------------|
| Water falls from the cloud to the ground. | precipitation |
| Liquid water flows over Earth's surface. | Runoff |
| Liquid water changes into water vapor. | Evaporation |
| Water vapor changes into liquid water. | Condensation |

Grade 9 - Weather Dynamics - Pre-Assessment

7. (301-14)

Weather Conditions for Miramichi, New Brunswick

| | Temperature | Wind Direction |
|-------|-------------|----------------|
| Day 1 | 25 | Sotheast |
| Day 2 | | North |
| Day 3 | 28 | Southwest |
| Day4 | 30 | South |

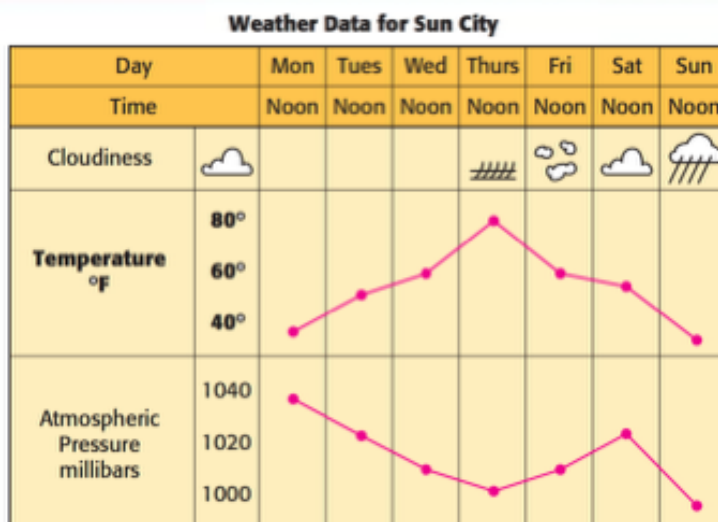
Predict a reasonable temperature for Day 2.

- A. 21
- B. 25
- C. 28
- D. 29

0 - Any other answer

1 - A

8. (301-14)



Look at the diagram for the days Monday through Thursday. Which best describes the relationship between temperature and pressure for those days?

- A. As the temperature rose, the pressure remained the same
- B. As the pressure rose, the temperature remained the same
- C. As the pressure rose, the temperature dropped
- D. As the temperature rose, the pressure dropped**

0 - Any other answer

1 - D