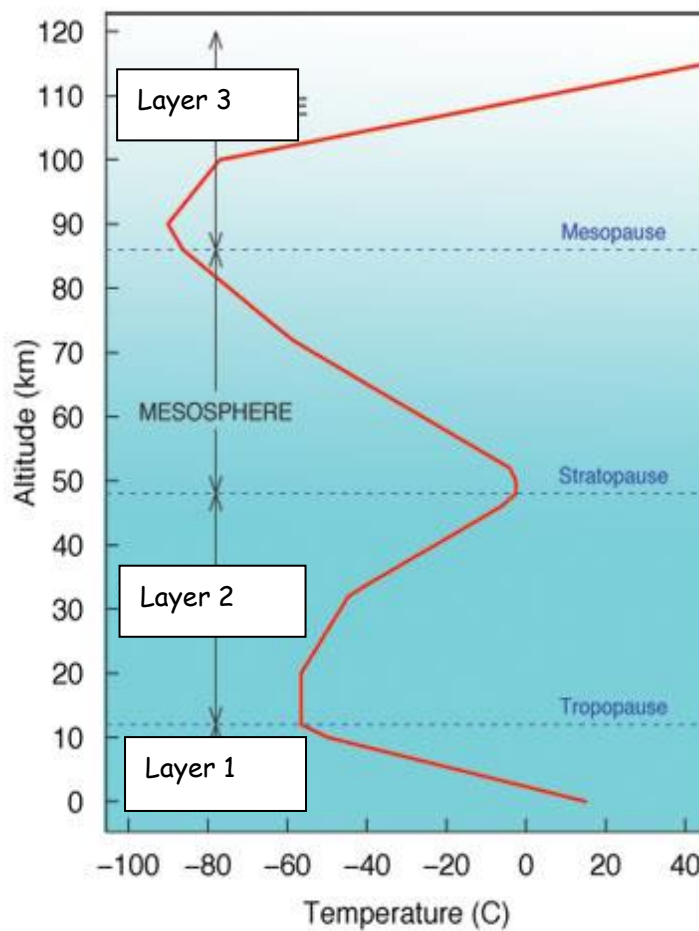


## Grade 8 Social Sciences Worksheet

### Air and water

- Study the diagram below showing the structure of the atmosphere.



- Give the names of layers 1, 2 and 3. [3]
  - In which two layers is the temperature **decreasing** with height? [2]
- Look at the photograph showing Mt Kilimanjaro in Kenya. Kenya is a warm country situated almost on the equator. However, Mt Kilimanjaro [summit is 6 km above sea level] always has snow on its summit.

## Grade 8 Social Sciences Worksheet

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- 2.1 Use the graph to read off the temperature at the top of Kilimanjaro [6 km]. [2]
- 2.2 **Explain** why it is so cold at the top of Kilimanjaro, even though it is situated on the equator. [4]
- 2.3 Name the type of cloud stretching across the middle of the photograph. [2]
  
3. Study the table below, which shows how various atmospheric gases [pollutants] contribute to the greenhouse effect and global warming.

## Grade 8 Social Sciences Worksheet

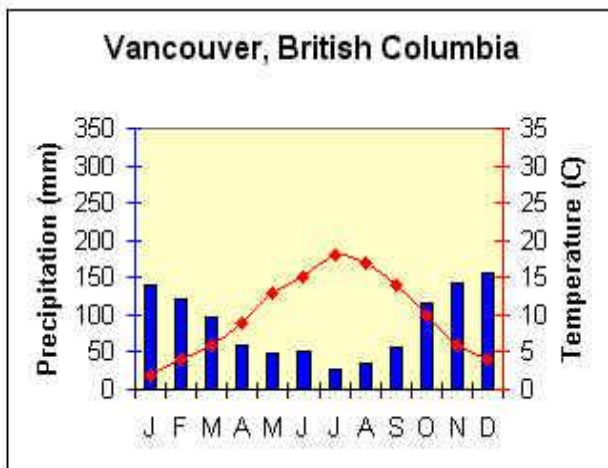
	Chemical formula	Pre-industrial concentration	1994 concentration	Percent increased	Human source
<b>Carbon dioxide</b>	CO <sub>2</sub>	278 parts per million	358 ppm	30%	Fossil-fuel combustion. Land-use changes. Cement production.
<b>Methane</b>	CH <sub>4</sub>	700 ppb	1721 ppb	240%	Fossil fuels. Rice paddies. Waste dumps.
<b>Nitrous oxide</b>	N <sub>2</sub> O	275 ppb	811 ppb	15%	Fertilizer. Industrial processes. Fossil-fuel combustion.
<b>Sulphur hexa-fluoride</b>	SF <sub>6</sub>	0 Does not exist naturally and is human generated	0.032 ppb		Dielectric fluid

ppm = parts per million, ppb = parts per billion

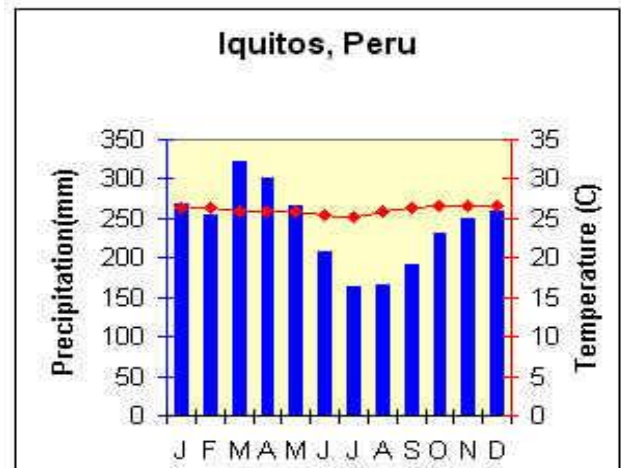
- 3.1 **Name** the gas that contributes the most to the greenhouse effect. [1]
- 3.2 **Which** gas has increased the most? [1]
- 3.3 **List** three human activities that increase the amount of carbon dioxide released into the atmosphere. [2]
- 3.4 **Suggest** three ways in which humans can reduce the amount of carbon dioxide we release into the atmosphere. [3]
  
4. **Explain** how an increase in the atmospheric gases shown in the diagram above contributes to global warming. [4]

## Grade 8 Social Sciences Worksheet

Study the diagram showing climate graphs A and B below. Use the graphs to answer the questions that follow.



Climate Graph A



Climate Graph B

Study Climate Graph A above.

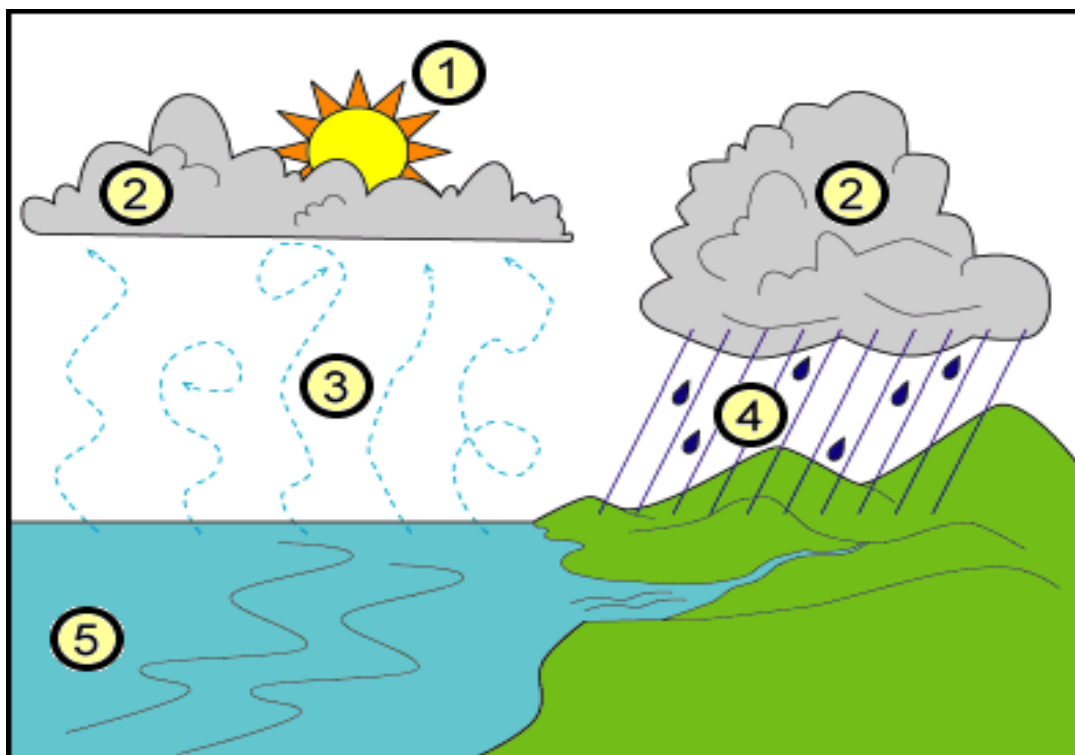
- 5.1 **Name** the hottest month of the year. [1]
- 5.2 What is the approximate temperature in this month? [1]
- 5.3 **Identify** the month that receives the highest rainfall. [1]
- 5.4 **State** the amount of rainfall received during this month. [1]
  
6. Answer **TRUE** or **FALSE** to the following statements. Write the word TRUE or FALSE and give a reason to support your answer.
  - 6.1 The place represented by Climate Graph A receives most rainfall during the summer months. [3]
  - 6.2 The place represented by Climate Graph A is in the southern hemisphere. [3]

Study Climate Graph B above.

- 7.1 **Calculate** the TOTAL amount of rainfall received during the year. [3]
- 7.2 **Write** a short paragraph in the space below, in which you describe the general climate of the place shown by Climate Graph B. You must include a description of the rainfall and temperatures throughout the year and use the information on the graph to support your description. [6]

## Grade 8 Social Sciences Worksheet

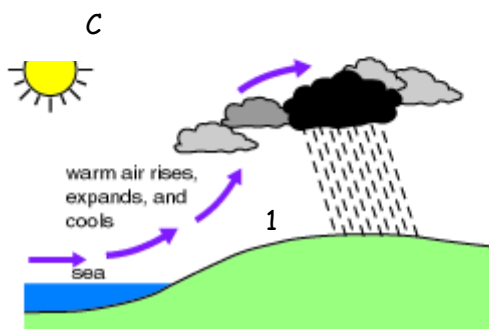
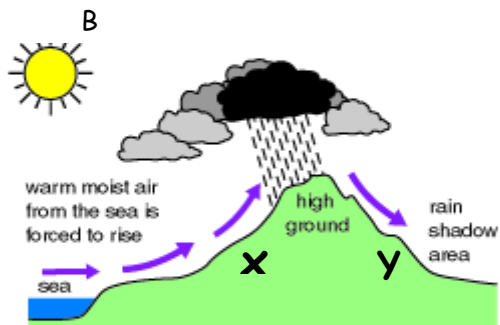
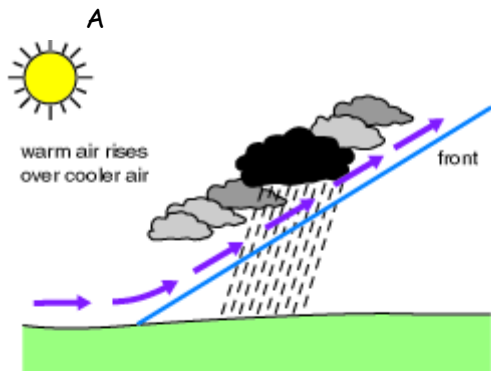
8. **Draw a weather station model** for the following weather conditions:  
It is a cool, clear and sunny day with a maximum temperature of 17°C and a dew point temperature of 13°C. Morning fog is expected. There is a breeze of 15 knots blowing from the southeast. [6]
9. **Write down** the correct word or term for the following:
- 9.1 The instrument that is used to measure rainfall or precipitation.  
9.2 The element of weather that is measured with a barometer.  
9.3 The instrument that is used to measure wind speed.  
9.4 The unit in which we measure temperature [in South Africa]. [4]
10. Study the diagram below, showing the water cycle, and answer the questions that follow.



- 10.1 Provide suitable labels for numbers 1 to 5 on the diagram. [5]  
10.2 In which state [liquid, solid or gas] does water occur at points e, f and g? [3]  
10.3 What is the name given to water that is stored in the soil? [1]  
10.4 What is the name of the process by which water is lost by plants to the air? [1]

## Grade 8 Social Sciences Worksheet

Study the diagrams below illustrating the main types of rainfall.

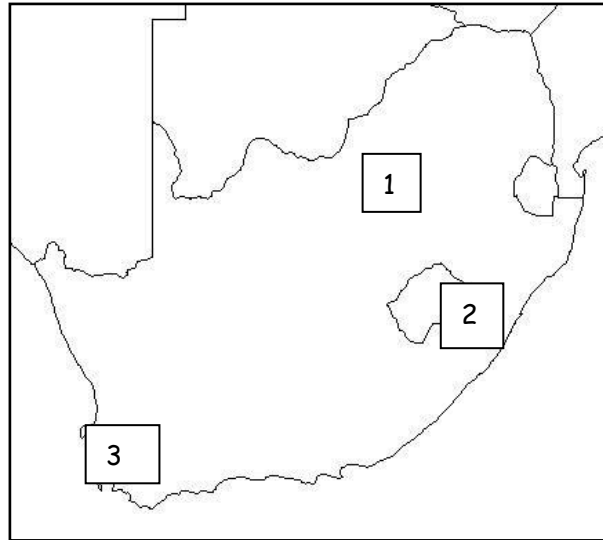


11.1 Name the types of rainfall A, B and C.

[3]

## Grade 8 Social Sciences Worksheet

- 11.2 **Match** the numbers 1, 2 and 3 on the map of South Africa below where each of the above types of rainfall, A, B and C is most likely to occur. [3]



12. Study rainfall type C in the diagrams above.

12.1 **What causes the air to rise** at point 1 on the diagram? [1]

12.2 **What name is given to** the process of heat transfer that causes the warm air to rise? [1]

Study rainfall type B.

12.3 **Explain** why it rains at X but not at Y on diagram B. [2]

12.4 What is the **name** given to the side of the mountain labelled B on diagram B? [1]

13. **Explain** how dew forms on the ground on cool, calm, clear summer nights. [3]

## Grade 8 Social Sciences Worksheet

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### Suggested Solutions

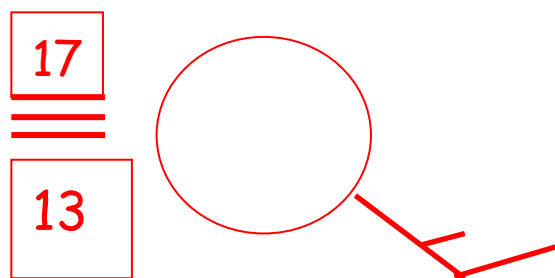
#### Air and Water

- 1.1 Give the names of Layers 1, 2 and 3. [3]  
1. Troposphere  
2. Mesosphere  
3. Thermosphere
- 1.2 In which two layers is the temperature **decreasing** with height? [2]  
Layer 1 (Troposphere); Mesosphere.
- 2.1 Use the graph to read off the temperature at the top of Kilimanjaro [6 km]. [2]  
-20°C
- 2.2 **Explain** why it is so cold at the top of Kilimanjaro, even though it is situated on the equator. [4]  
Thin air, low moisture content do not keep warmth in.
- 2.3 Name the type of cloud stretching across the middle of the photograph. [2]  
Stratus/strato cumulus/nimbostratus
- 3.1 **Name** the gas that contributes the most to the greenhouse effect. [1]  
Carbon dioxide
- 3.2 **Which** gas has increased the most? [1]  
Methane
- 3.3 **List** three human activities that increase the amount of carbon dioxide released into the atmosphere. [2]  
Any three from human source column (or any other sensible answer)
- 3.4 **Suggest** three ways in which humans can reduce the amount of carbon dioxide we release into the atmosphere. [3]  
Any answer that reduces activities in last column for carbon dioxide + any other sensible answer, eg smaller cars.
4. **Explain** how an increase in the atmospheric gases shown in the diagram above contributes to global warming. [4]  
Greenhouse gases trap/ absorb heat, so leading to an increase in temperatures.
- 5.1 **Name** the hottest month of the year. [1]  
**June**
- 5.2 What is the approximate temperature in this month? [1]  
Any answer between 15° and 20°C (must have units)
- 5.3 **Identify** the month that receives the highest rainfall. [1]



## Grade 8 Social Sciences Worksheet

- December
- 5.4 **State** the amount of rainfall received during this month. [1]  
 150 mm (must have units)
6. Answer **TRUE or FALSE** to the following statements. Write the word TRUE or FALSE and give a reason to support your answer.
- 6.1 The place represented by Climate Graph A receives most rainfall during the summer months. [3]  
 False – summer is when it is warmest in June July, it receives most rain in N, D, J.
- 6.2 The place represented by Climate Graph A is in the southern hemisphere. [3]  
 False – Highest temperature in June, therefore NH.
- 7.1 **Calculate** the TOTAL amount of rainfall received during the year at Iquitos. [3]  
 Any answer between 2 500 and 3 000 mm. Must have units.
- 7.2 **Write** a short paragraph in the space below, in which you describe the general climate of the place shown by Climate Graph B. You must include a description of the rainfall and temperatures throughout the year and use the information on the graph to support your description. [6]  
 Three good points x 2 each. Rain all year. Temperature fairly constant (hot 27°C).  
 Equatorial climate
8. **Draw a weather station model** for the following weather conditions: [6]  
 It is a cool, clear and sunny day with a 2 pm temperature of 17°C and a dew point temperature of 13°C. Morning fog is expected. There is a breeze of 15 knots blowing from the southeast.



- 9.1 The instrument that is used to measure rainfall or precipitation.  
 Rain gauge
- 9.2 The element of weather that is measured with a barometer.  
 Pressure
- 9.3 The instrument that is used to measure wind speed.  
 Anemometer
- 9.4 The unit in which we measure temperature [in South Africa].

## Grade 8 Social Sciences Worksheet

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- °Celcius / centigrade [4]
- 10.1 Provide suitable labels for numbers 1 to 5 on the diagram.  
1) Sunlight; 2) Clouds/condensation; 3) Evaporation; 4) Rain/precipitation;  
5) Ocean/sea
- 10.2 In which state [liquid, solid or gas] does water occur in at points 2, 3 and 4? [3]  
2) Liquid (droplets); 3) Gas; 4) liquid
- 10.3 What is the name given to water that is stored in the ground? [1]  
Ground Water
- 10.4 What is the name of the process by which water is lost by plants to the air? [1]  
Transpiration/evapotranspiration
- 11.1 **Name** the types of rainfall A, B and C. [3]  
A) Frontal; B) Relief/Orographic; C) Convectional
- 11.2 **Match** the numbers 1, 2 and 3 on the map of South Africa below where each of the above types of rainfall, A, B and C is most likely to occur. [3]  
1: C; 2: B; 3: A
- 12.1 **What causes the air to rise** at point 1 on the diagram? [1]  
Warm air is lighter than cold air, so it rises.
- 12.2 **What name is given to** the process of heat transfer that causes the warm air to rise? [1]  
Convection
- 12.3 **Explain** why it rains at X but not at Y on diagram B. [2]  
Air at X is rising and cooling, causing condensation. Air at Y is sinking, warming and evaporating, so no cloud, no rain.
- 12.4 What is the **name** given to the side of the mountain labelled Y on diagram B? [1]  
Leeward/rainshadow
- 13 **Explain** how dew forms on the ground on cool, calm, clear summer nights. [3]  
At night the ground cools down faster than the air. If it cools below dew point temperature, then moisture condenses on the ground NB dew does NOT