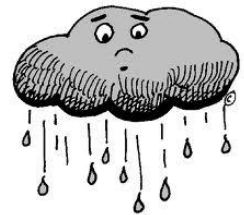


## ST

### The Atmosphere

- a) What is the main gas found in the atmosphere, and **nitrogen**
  - b) what are its roles?
    - **Makes oxygen less explosive by lowering its concentration**
    - **Part of the nitrogen cycle where its atoms are incorporated into proteins, DNA of plants and animals**
- a) Why is the second most common gas also important to life, and **Oxygen is used in cellular respiration which releases energy from food molecules.**
  - b) where did it come from?  
**Most of the oxygen comes from the algae living in marine biomes**
- a) Identify the gas whose percentage can vary from <1 to almost 5, and **water vapour**
  - b) which biomes' atmospheres have the most, and **tropical, ocean**
  - c) which have the least?  
**Desert , tundra**
- a) What is atmospheric pressure and, **it's a force of air per square meter caused by the weight of the air above a certain area**
  - b) mention two factors that could make it change.  
**It is influenced by temperature(an increase will lower air's density, make it rise and lower the pressure) and altitude(as air thins out on mountain tops, pressure drops. There's less air weighing down.)**
- Use the following terms to answer the following: troposphere, stratosphere, mesosphere, thermosphere, exosphere
  - a) The layer responsible for our weather  
**troposphere**
  - b) The layer containing the protective ozone layer  
**stratosphere**
  - c) It is found an altitude of 50-80 km; has noctilucent clouds  
**mesosphere**
  - d) Unlike its neighbouring zone, the troposphere, here temperature increases with increasing altitude
  - e) **stratosphere**
  - f) Where satellites are found  
**exosphere**
  - g) Where most meteors burn up; Northern lights occur here  
**mesosphere; thermosphere**



6. What is the Coriolis effect?

It is the rotating Earth's effect on air movement in the atmosphere. As a result north to south circulation is deflected to the right in the northern atmosphere, and to the left in the southern atmosphere. Storms have a clockwise pattern in the North and a counterclockwise pattern in the Southern atmosphere.

7. Taking the westerlies into account, predict which will take longer: cycling from Quebec City to Montreal or cycling from Montreal to Quebec City, assuming the same leg strength.

Since the westerlies are in the direction of Quebec city (west to east), a cyclist moving in that direction will have the wind at his back and move faster.

8. a) What are the key latitudes that separate Hadley cells from Ferrel cells?

$0^{\circ}$ ,  $30^{\circ}$ ,  $60^{\circ}$

b) Why do these cells exist?

Closer to the equator the sun's rays are more direct, raising the surface temperature. The warm air will rise, cool form condensation and then cooler air will descend and push into the area where the air had become less dense.

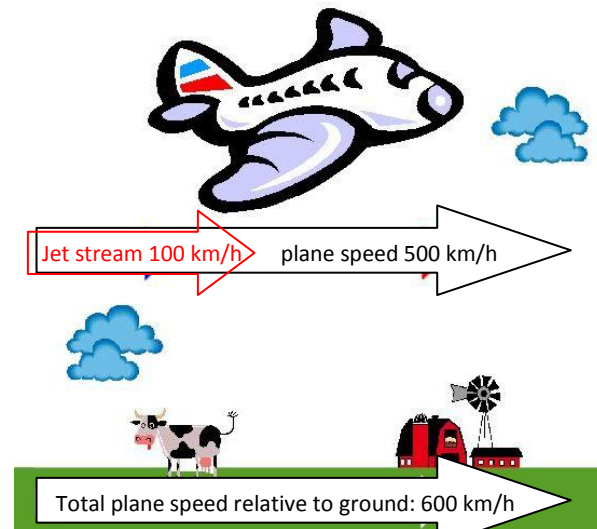
9. a) At what latitudes do we find trade winds?

Between the equator and  $30^{\circ}$ N and between the equator and  $30^{\circ}$ S

b) What is their direction in the Northern hemisphere? Southern hemisphere?

Northeast to southwest in Northern hemisphere; and southeast to northwest in southern hemisphere

10. Why does flying to Europe from Quebec take less time than the return trip?



The jet stream blows from west to east and makes planes fly faster. On the way back, pilots avoid the stream when they can, but they lose out on the advantage of the tail wind they had coming from Europe.