

Name: _____

Grade Ten Science
Climate Quiz - First Four Notes

1. This question is related to climate vs weather.

a) Is a thunderstorm considered an example of climate or weather? Explain

weather

it is a single event, not an average

b) Is the number of thunderstorms that are observed on a yearly basis an example of climate or weather? Explain

climate

it is an average over a period of time

2. What is the most common greenhouse gas on earth?

water vapour

Is it responsible for the natural greenhouse effect or for the man-made (anthropogenic) greenhouse effect.

natural greenhouse effect

What would happen to the earth if this greenhouse gas was absent?

our planet would be cooler

we would experience permanent ice age

3. What is the second most common greenhouse gas on earth?

carbon dioxide

What has happened to the concentration (i.e. amount) of this gas over the last 150 years. How has this affect the overall temperatures on our planet?

concentration has increase due to human activity

additional greenhouse affect

overall increase in temperatures

4. Why is the climate in Western Europe milder than it is here, even though it is further north?

Gulf Stream (ocean current - convection current)

transports heat (and moisture due to evaporation)

from the equator to Western Europe (provides heat)

5. Complete this table to show all types of electromagnetic radiation in order from most energetic to least energetic. Include one use or danger for each type of radiation. Use the word list on the next page to help with remembering the types of radiation.

← ENERGY → High Energy			
← FREQUENCY → High Frequency			
← WAVELENGTH → Short Wavelength		Type of Radiation	Uses and/or Dangers
Low Energy		gamma ray	<ul style="list-style-type: none"> - very dangerous radiation, cancer causing - used for cancer treatment, gamma ray knife (brain surgery)
Low Frequency		X-rays	<ul style="list-style-type: none"> - cancer causing - medical imaging, structural imaging
Long Wavelength		ultraviolet	<ul style="list-style-type: none"> - cancer causing, sunburn - used to start some chemical reactions, water filter, vitamin D in your skin
← WAVELENGTH → Short Wavelength		visible light	<ul style="list-style-type: none"> - good to see with
← FREQUENCY → High Frequency		infrared	<ul style="list-style-type: none"> - only dangerous in high concentrations (too hot) - radiant heat energy - night vision goggles
← ENERGY → High Energy		microwaves	<ul style="list-style-type: none"> - only dangerous at specific wavelengths - used for microwave ovens - telecommunications (cell-phones)
← FREQUENCY → High Frequency		radiowaves	<ul style="list-style-type: none"> - telecommunications, cell-phones, medical imaging (MRI), GPS signals, astronomy

6. PLACE THE LETTER for each word in front of the description that it BEST SUITS!

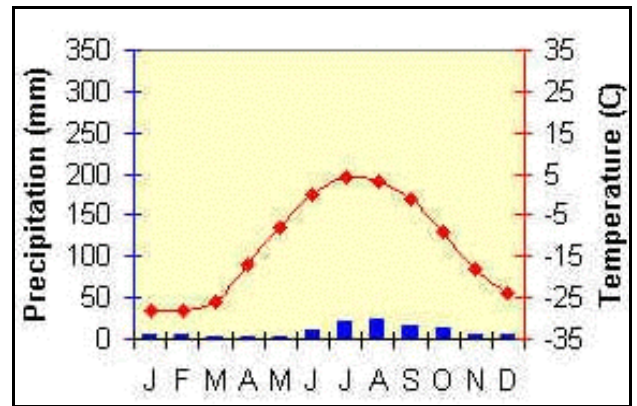
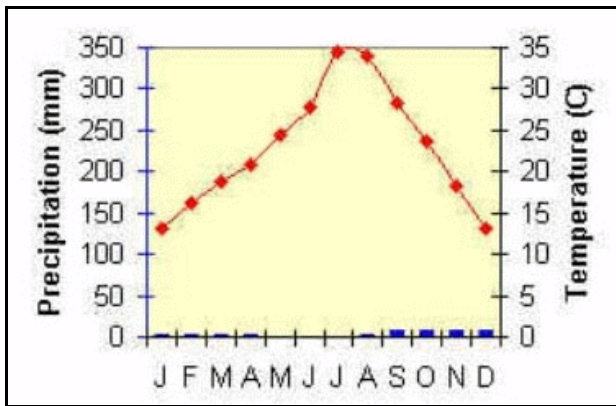
N	type of radiation that can be used to warm food.	A	Anthropogenic
C	is the second most common greenhouse gas on our planet.	B	Atmosphere
L	type of radiation that can efficiently transport heat from one location to another.	C	Carbon dioxide
F	is an average of temperature, precipitation and wind over a long period of time.	D	Carbon footprint
P	type of radiation that is responsible of sun burns as well as vitamin D production in your skin.	E	Carbon sink
A	refers to anything that has a source in human activity.	F	Climate
E	any process that absorbs and traps carbon.	G	Convection
B	all gases that exist above the surface of the earth.	H	Gamma rays
D	the amount of carbon dioxide produced by a person, an industry or a country.	I	Greenhouse gases
K	all of the water found on earth including the water found in the atmosphere and underground.	J	Gulf stream
Q	the most common greenhouse gas on our planet.	K	Hydrosphere
I	any gases that are able to trap infrared radiation and prevent it from escaping back into space.	L	Infrared
H	the highest energy and most dangerous form of electromagnetic radiation.	M	Light
J	an ocean current that is responsible of making the climate in Europe more moderate than North America.	N	Microwave
G	method of heat transfer that takes place on earth using either wind or water currents.	O	Radiowaves
O	the lowest energy form of electromagnetic radiation.	P	Ultraviolet
R	is the given temperature, precipitation and wind conditions at any moment in time.	Q	Water vapour
M	a form of electromagnetic radiation that you can see.	R	Weather
S	a form of electromagnetic radiation that is used for medical imaging	S	X-rays

7. Draw a diagram to explain how the greenhouse effect works. Add words and short explanations as appropriate. Please include key terminology such as:
- solar radiation
 - infrared radiation
 - greenhouse gases
 - reflected ...
 - escaping ...

TURN THE PAGE SIDEWAYS BEFORE YOU BEGIN

SEE ANSWER ON-LINE

8. Look carefully at the two climatographs below. Describe the biome/habit that you would expect for each climatograph. Give reasons for your choice.



desert

tundra

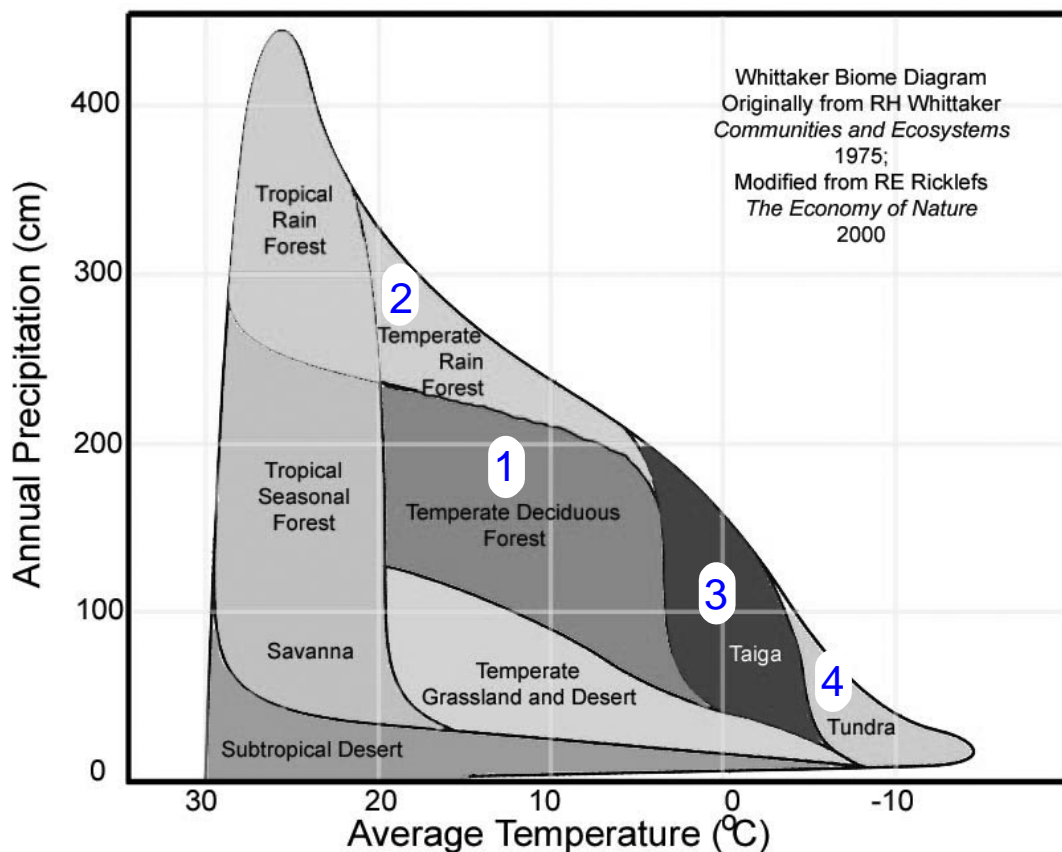
very little precipitation

very little precipitation

temperature can be hot

temperatures are cold

9.



Using the number only, place each location in the correct biome. Please note that the Taiga biome is another word for Boreal Forest:

① Toronto - Ontario ② Vancouver - British Columbia

③ St John's - Newfoundland ④ Cambridge Bay - Nunavut