SNC2D Task – Climate Factors Name:

1. Match each key term in the left column with its definition in the right column. You many need your textbook, Chapter 8 to assist you with some of the definitions.

Term	Letter	Definition
A. system		energy that travels as waves that move outward in all directions from a source; includes infrared radiation, ultraviolet radiation, radio waves, X rays, gamma rays, and visible light
B. feedback loop		a process that removes greenhouse gases from the atmosphere
C. electromagnetic radiation		a description of the total energy exchange within a system; a summary of how energy from the Sun enters, moves through, and leaves the Earth system
D. thermohaline circulation		the increased capacity of the atmosphere to absorb and prevent the escape of thermal energy because of an increase in greenhouse gases introduced by human activities
E. energy budget		a part of a biogeochemical cycle in which matter or energy accumulates; also called a reservoir
F. concentration		a group of interdependent parts that work together to form a single, functioning whole
G. parts per million (ppm)		the ability of a substance to warm the atmosphere by absorbing thermal energy
H. greenhouse gas		the process by which atmospheric nitrogen is changed into forms that can be used by plants and other organisms
I. sink		the relative amounts of carbon in different stores; also an accounting of the exchanges (incomes and losses) of carbon between the stores of the carbon cycle
J. ozone		a natural process that exchanges matter and energy between the abiotic environment to the biotic environment and back
K. chlorofluorocarbon (CFC)		a three-dimensional pattern of ocean circulation driven by wind, heat, and salinity that is an important component of the ocean–atmosphere climate system
L. anthropogenic greenhouse effect		a process in which part of a system's output is returned, or fed back, to the input
M. global warming potential (GWP)		a human-made chemical compound that contains chlorine, fluorine, and carbon; when released into the atmosphere may cause depletion of the ozone layer
N. biogeochemical cycle		the amount of a particular substance in a specific amount of another substance
O. store		a greenhouse gas that is composed of three atoms of oxygen; it is commonly found in a concentrated layer in the stratosphere
P. global carbon budget		a gas in Earth's atmosphere that absorbs and prevents the escape of radiation as thermal energy; examples include carbon dioxide and methane
Q. nitrogen fixation		a unit of measurement that indicates the number of parts of a substance per million parts of another substance;

2. Use the words provided to complete the following statements.

system	concentration	nitrogen fixation
feedback loops	biogeochemical cycles	greenhouse gases
energy budget	stores	global warming potential (GWP)

1. _____ can be measured in parts per million. (8.2)

2. Earth is an example of a closed _____. (8.1)

3. A(n) _____ _____ describes the total energy exchange within a system. (8.1)

4. Methane has a higher _____ _____ _____ than carbon dioxide. Scientists are concerned about increased methane, produced by cattle, in our environment. (8.2)

5. Through the process of _____ _____, nitrogen is changed into forms that living things can use. (8.3)

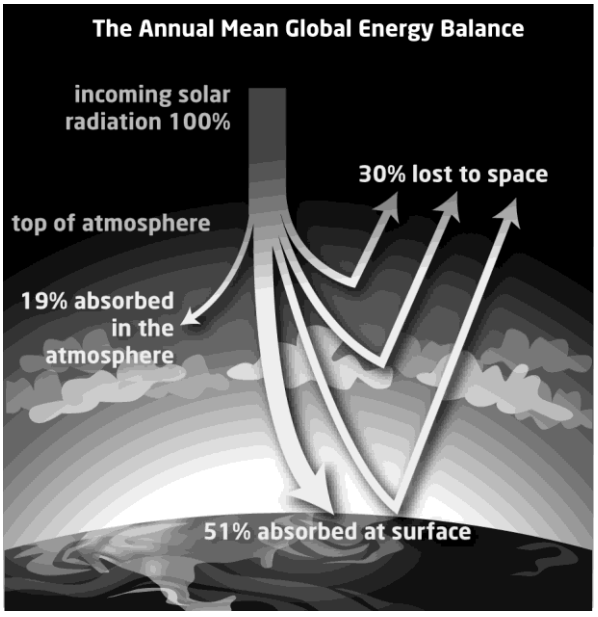
6. Carbon dioxide, water vapour, and methane are all examples of _____ _____. (8.2)

7. Energy and matter move through reservoirs in the Earth system as part of several _____ _____. (8.3)

8. Matter can be stored in reservoirs, also called _____, for a few minutes to many million years. (8.2)

9. _____ _____ may increase or decrease the effect of one small change on a biogeochemical cycle. (8.1)

3. The diagram below shows what happens to most of the solar energy that enters the Earth system.

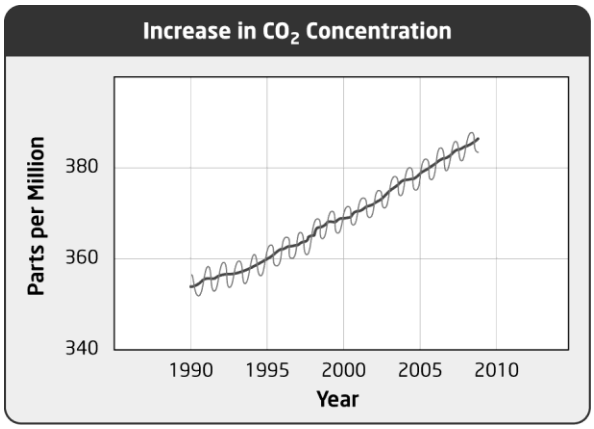


a. What percentage of solar energy is lost to space?

b. What percentage of solar energy is absorbed at Earth's surface?

c. Is more solar energy currently absorbed at the poles or at the equator? Explain your reasoning.

4. The graph below shows carbon dioxide concentrations in Earth's atmosphere as measured at Mauna Loa, in Hawaii.



a. Why do you think the concentration of carbon dioxide has a peak each year?

b. Why do you think the concentration of carbon dioxide has a low point each year?

c. How have carbon dioxide concentrations changed on average since 1990?

5. List the five main stores in the carbon cycle.

1. _____

2. _____

3. _____

4. _____

5. _____