The Cycles: March Break Homework

BIOSPHERE and C-Cycle

1. The most important process that removes CO_2 from the atmosphere is done by living organisms. The process is called_____.

2. When animals(or plants) break down sugar to release energy, the process is called respiration.
   a) Write the chemical equation for the overall process of respiration:

   b) Is this the most significant contributor of CO_2 to the atmosphere?_____

3. What other natural processes add CO_2 to the atmosphere?
   _____and _____

LITHOSPHERE (technically HYDROSPHERE too) **and C-Cycle(without man-made pollution)**

4. a) What removes CO_2 from the atmosphere and creates H_2CO_3?
   _____and _____
   b) Write a chemical equation for the reaction between carbon dioxide and water.
   c) What tall structures containing the right minerals also remove CO_2 from the atmosphere?
5. What is the source of the CO_2 emitted by volcanoes?_____
6. What living organisms of the ocean are the source of limestone?_____

LITHOSPHERE (technically HYDROSPHERE too) **and C-Cycle(with man-made pollution)**

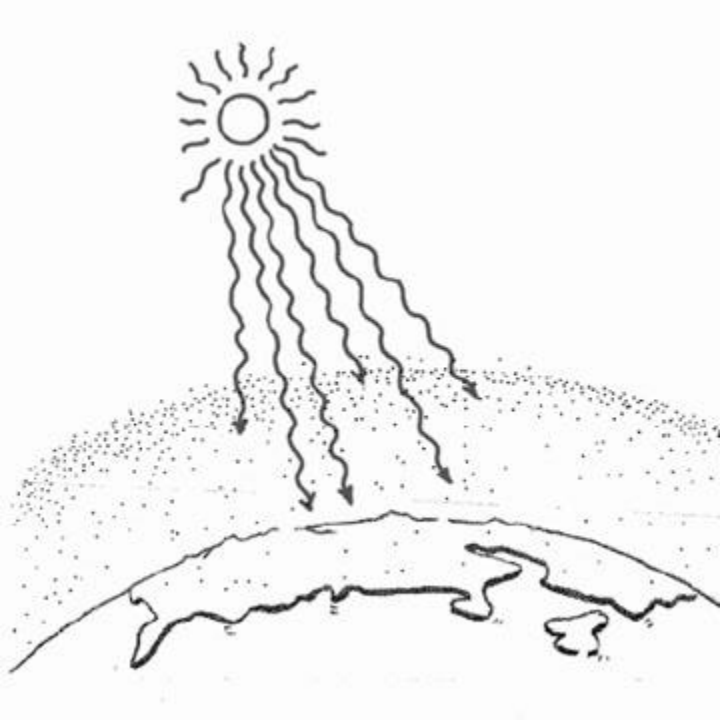
7. What fossil fuel forms over millions years from dead plants?_____
8. Which fossil fuels form over millions years from the oils of dead algae?_____and _____

9. What element is abundant in fossil fuels and leads to the formation of CO_2 when they're burnt?_____

10. a) What carbon compound is used by cement companies?_____
    b) What does heating this compound release?_____

CLIMATE CHANGE

11. a)In the diagram show the location of CO_2, CH_4, H_2O and N_2O.



b) Show what happens to heat energy.

c) Does heat energy escape regardless of the amount of CO_2?

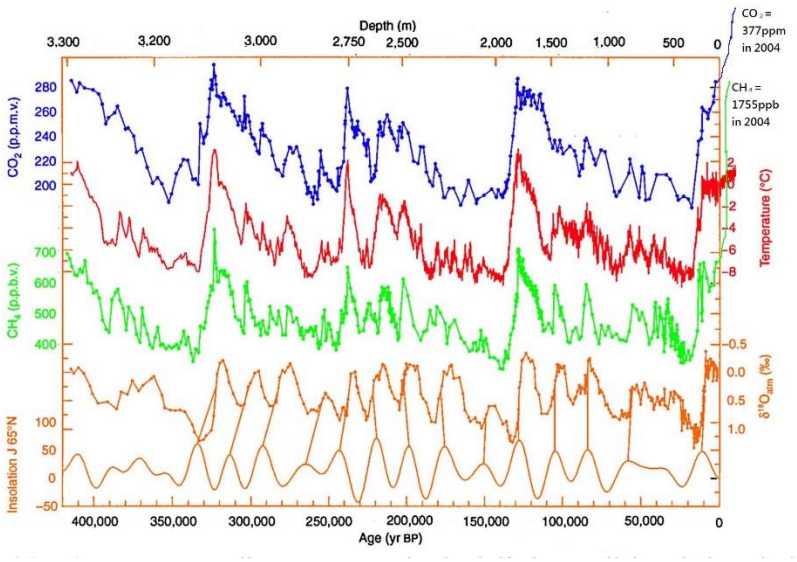
d) Which of the greenhouse gases are see-through and colorless?

e) Which part of the greenhouse acts like the greenhouse-gases of the atmosphere?

f) What penetrates both the glass and the greenhouse gases?

g) Where does the heat(infrared) come from—which energy transformation?

12. a) What this graph evidence for ?



b) Give an obvious example of something measured in the Arctic revealing that global warming has taken place.

c) What two human activities account for 75% of the 9 gigatons of CO_2 pumped into the atmosphere every year?

13. Give three consequences of climate change.

14. Aside from conserving energy and consuming less, what else can be done to fight climate change? Give four examples of alternative energy sources.

STE ONLY

N-CYCLE

1. In the nitrogen cycle what organisms convert nitrogen from the air to ammonium?

2. What is the difference between denitrification and nitrogen fixation?

3. What are natural sources of nitrates or ammonium? List 4.

4. a) What's going on in the roots of legumes?

   b) Label the nodules in the roots.

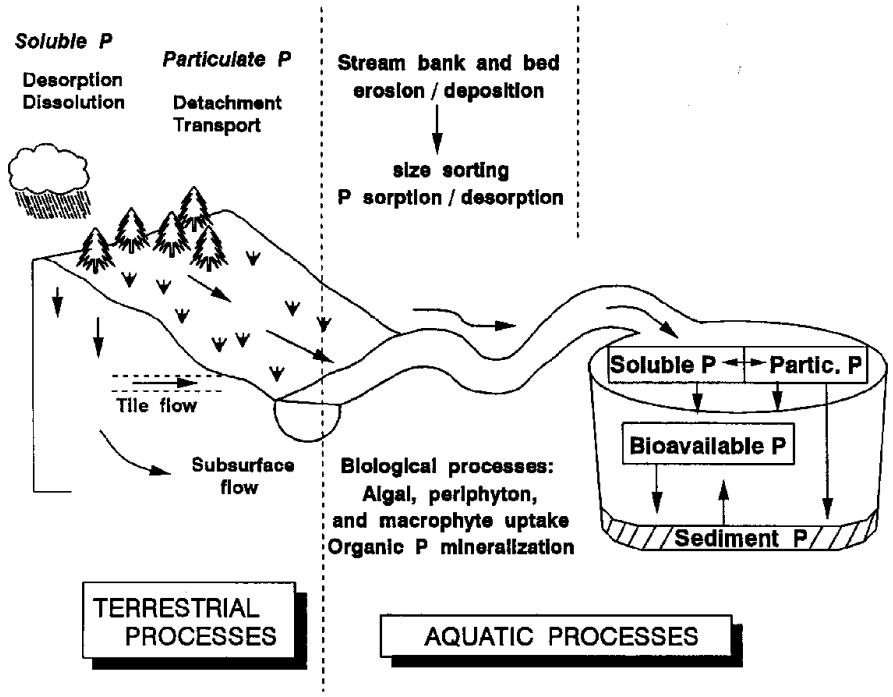
   c) Why do plants need nitrogen?

P-CYCLE

5. a) In the diagram, show where the runoff is.

   b) Show where eutrophication occurs.

   c) Show where dead algae can decrease the depth of the lake and consume oxygen.



6. Why do plants need phosphates or hydrogen phosphate?

7. Why is the charge of hydrogen phosphate -2?

8. What is the major source of phosphates for plants?

9. What organisms convert organic waste into inorganic phosphate?

10. What are the two sources of excess phosphates that lea to eutrophication?