The Carbon Cycle (12 points possible)

name:_____

Use complete sentences on those marked with an asterisk (*).

Go to **www.bengalfrosh.com** -> Benson's website -> Unit 7 and then scroll down to the link titled Carbon Cycle Tutorial. Take your time and carefully read that captions (and think!) as you click through the animation. Answer the following questions as you work your way through the animation.

1. How many billions of tons of carbon are in the atmosphere? _____ billion

2. How does carbon dioxide enter the leaf of a plant? _____

3. All of the bodies of all living things is collectively referred to as _____

4. Living things and any material made by living things are made of _____ compounds

5. How is carbon passed from one organism to another? _____

6. What is litterfall? _____

7. How is animal respiration involved with the Carbon Cycle? _____

_____

8. How many billions of tons of carbon are believed to be in soil? _____ billion

9. What is "soil respiration" and what makes it happen? _____

_____

10. How does carbon go from the atmosphere directly into the ocean? _____

11. What are the three factors that influence the movement of carbon from air to the water?

_____

12. Limestone is made of carbonates. How many billions of tons of carbon are stored as carbonates?

_____ billion

13. What important materials are formed if organic material does not decompose properly?

_____

14. How many billion tons of carbon are stored as fossil fuels? _____ billion

15. How have humans impacted the carbon cycle? (What have humans been doing to speed up the movement of carbon into the atmosphere?)

_____

NOTE: The next part if challenging. Do not ask your teacher or classmates for help. Figure them out!

Carefully read **Box 3.1** on page 69 of your text. Look at the diagram and think about it.

16. Tell one place (in nature) where a significant amount of each of the following carbon-containing molecules can be found. Also, provide a chemical formula for carbon dioxide, for one hydrocarbon, for calcium carbonate, and one for organic molecule. Use the Internet to find information.

Carbon dioxide: _____

Hydrocarbons: _____

Calcium carbonate: _____

Organic molecules: _____

17.*Explain how carbon moves from the atmosphere into molecules that make up the body of a wolf?

18.*List 3 ways that carbon taken in by the wolf may return the carbon to the atmosphere.

19.*Explain what is meant by the phrase, “decay of biomass” as it is used on the diagram. Provide an example. Be sure to explain what “biomass” and “decay” are.

20. * There is a HUGE amount of carbon (not carbon dioxide) stored in layers of limestone. Explain how carbon in the atmosphere can end up in limestone, where it may be stored for millions of years (WITHOUT the involvement of rain or weathering).

21. Fossil fuels are another place where carbon can be stored for long periods of time. What is the title of the arrow on figure 3.A that represents the storage of carbon in fossil fuels?

22. Go back to Benson's website (Unit 7) and select **Carbon Cycle Diagram**. According to this diagram, what are the 6 reservoirs (pools) where carbon is stored? List them in order from most carbon stored to least. (1 petagram = ~1 billion tons)

1. 4.

2. 5.

3. 6.

23. Of all the fluxes on the diagram that put carbon into the atmosphere, which two are most directly related to human activity?

24. *Besides weathering/erosion, what are two other ways that carbon that has been locked up in the Madison limestone (in $CaCO_3$ molecules) for 340 million years might get back into the atmosphere (in the form of CO_2 molecules)? Hints: plate tectonics, Ashgrove

25. *Use the Internet to find out what "Ocean Acidification" is. IN YOUR OWN WORDS, explain what it is, what causes it, and why it is such a concern. Put your answer on back of this sheet.