Interactive Trail *Draft 4*

The trail begins at the Ela Sanctuary Information Station

Answer all questions in your notebook.

Exercise 14

Station 9

Gentle Giants

Part 1

We are very dependent on trees!

1. List at least 10 functions of a tree. *(4-7.04, 5-7.05)*
2. Examine the tree closely. Can you find evidence of **insects, bird nests, holes for birds, scares from lightning, moss, fungus, spider webs, cocoons, insects scars** or other evidence that other forms of life are using the tree. *Questions 1-9, (4-5.01, 4-5.02, 5-5.02, 5-5.03)*
3. How many owl boxes can you see from this location?
4. Why are the owl boxes so high?
5. What other birds may use the boxes?
6. Can you find any evidence that owls are present in the owl boxes?
7. Why do you think this may be a good habitat for owls?
8. Did you ever swing from a rope swing hung from the branch of an old tree?
9. Did you ever visit a tree house build in the branches of an old tree?
10. If you are visiting in summer, place a piece of cobalt chloride paper on each side of a leaf and check the paper after several minutes. Cobalt chloride is a test for moisture. If there was a change in the color of the paper, explain why the change occurred. Does there seem to be more moisture on one side of the leaf than the other? If so, why? *(4-2.31, 5-2.33, 4-6.03)*
11. Count the rings in the cross-section of the tree stump you find near the post for station 9. This cross-section was cut from a tree that was the same size as the cottonwood. How old is the cottonwood? *Questions 11 - 14, (4-7.04, 5-7.05)*
12. If the tree had eyes, list five changes the tree would have observed in its lifetime.
13. How many times older than you is the tree?
14. If there is a flood about once every 50 years, how many floods has the tree survived?
15. Look closely at the of a leaf with your magnifying glass and make a sketch of the surface of the leaf.

Part 2

1. The formula for **photosynthesis** appears below. Why may this be one of the most important formulas in the world! Draw a picture of a person, a dog, an automobile, smoke coming from a house, smoke coming from a factory, and a tree. Draw red arrows to show where carbon dioxide comes from and where it ends up. Draw blue arrows to show where oxygen comes from and where it ends up. This is called the carbon dioxide cycle. *(4-1.04, 5-1.07)*

$$\underset{\text{carbon dioxide}}{CO_2} + \underset{\text{water}}{H_2O} \xleftrightarrow{\text{sun}} \underset{\text{sugar}}{C_6H_{12}O_6} + \underset{\text{oxygen}}{O_2}$$

2. Did you know that we produce 20 pounds of carbon dioxide by burning one gallon of gasoline in our automobiles? It takes the average tree 9 months to remove the carbon dioxide from the air and change it back into oxygen! If your family uses 20 gallons of gasoline in their car each week, determine how many pounds of carbon dioxide are produced.
3. How many months will it take the average tree to remove the carbon dioxide from the air?

Part 3

1. Use the same colored arrows to show the flow of energy and the chemical changes that are so essential to us as humans. Your teacher will help you with this process. *(4-1.04, 5-1.07, 4-3.14, 5-3.14)*

$$\underset{\text{carbon dioxide}}{CO_2} + \underset{\text{water}}{H_2O} \xleftrightarrow{\text{sun}} \underset{\text{sugar}}{C_6H_{12}O_6} + \underset{\text{oxygen}}{O_2}$$

Part 4

1. Make plans to plant trees with your class on Arbor Day or remember to plant a tree with your own children on Arbor Day many years from now.