

Botany Individualized Study Agreement Fall #1

Photosynthesis & Energy Flow

Name: _____

Date Due: September 17, 2007

I certify that I have done the work below for which I have earned a total of _____ points.

For this I expect a grade of _____ .

Student Signature

To turn your contract in:

1. Place your work in the order that the activities appear on the contract
2. Staple together your required activities.
3. Staple together your optional activities.
4. Fill in the total points earned, grade you expect, and sign your contract.
5. Paper clip everything together with the contract (this sheet) on top.

******* Failure to follow these two format requirements will result in point deduction.*******

Required Activities:

	Point Value	Points Earned
• Read in <u>Biology</u> (elephant book) :		
Chapter 47-4 Energy & Nutrients: Building the Web of Life	(5)	_____
Diagram: Water cycle (fig 47-16) & Ecological pyramid of Energy (fig 47-15)	(5)	_____
• Read in <u>Biology</u> (elephant book):		
Chapter 6-1 Photosynthesis: Capturing and Converting Energy	(5)	_____
Define Vocabulary & Answer Questions (Handout)	(5)	_____
• Labs:		
Chromotography- Part 1: separating colors in an ink pen	(6)	_____
Part 2: separating chlorophyll in spinach	(8)	_____
• Graph:		
“Chlorophyll Absorption Spectrum & 3 Different Light Sources”	(9)	_____

- **Botany Coloring Book**
 - 2- Tapping Earth's Major Energy Resource (5) _____
 - 7- Energy Transfer and Utilization (5) _____

- **Film Questions:**
 - The Private Life of Plants Part 1-"Branching Out" (5) _____

- **Study Guide:**
 - write out answers for the Study Guide on a separate sheet of paper. (7) _____

- **Lab Fee:** \$3.00 turned in on time-due: **Friday, August 24, 2007** (5) _____

Total = 70

Optional Activities:

• **Articles: Read and write a 1 page summary/reaction**

- "Natural Dyes from Plants" (The Herb Quarterly, No. 36) (4) _____
- "Permaculture in the Rockies" (Rocky Mountain Gardener Summer '94) (3) _____
- "Terrific Homegrown Tomatoes" (Rocky Mountain Gardener, Spring '94) (3) _____
- "Growing Herbs from Stem Cuttings" (The Herb Companion, Feb/Mar, '93) (5) _____
- "What's Frost Got to do with it?" (Rocky Mountain Gardener, Winter '95-96) (2) _____
- "Radishes to Relish" (Kitchen Garden, May '97) (4) _____
- "Special Spuds" (Fine Gardening, May '97) (5) _____
- "Design Lessons From Nature" (Fine Gardening, July/August '95) (5) _____
- "Bird Friendly Gardens" (Garden Gate, October '00) (5) _____
- "The First American Gardener" (Fine Gardening, July/August '92) (5) _____

• **The Art of Botany:**

Design and construct a necklace or bracelet from Fragrant Herbal Beads after reading the following article: "Fragrant Herbal Beads", (The Herb Companion, Feb/Mar, '93). Show me your herbal jewelry when you turn in your contract. Check by Mr. Boyer _____ (8) _____

• **Field Trip -Composting**

1) Visit & photograph (at least 4 different photographs with you in each one) the Compost Demonstration Site at the North Boulder Rec Center located on Broadway near Iris. The compost bins are located near the bike path by the red storage barn. Mount 2 photos on one side of plain white paper (8 1/2" x 11") with a description below each photo describing what you are doing. **Describe the type of compost bin in each photo and the strengths and weaknesses of each design.** (8) _____

2) Read "Composting" (Encyclopedia of Organic Gardening 4pp) - Answer the questions entitled "Why build a Compost Bin ?"

• **Gardening on PBS** (5) _____



On Rocky Mountain PBS (channel 6)
 Saturday morning Ch. 6 @ 7:30 AM
 Visit the web site to learn more;
<http://www.pbs.org/wgbh/victorygarden/>

Write a 1 page summary of what you learn.

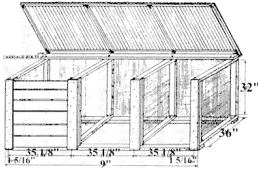
• **Botany Coloring Book-**



- 1- Importance of Plants to Humans (5) _____
- 4- Green Solar Cells: Chloroplast Structure and Function (5) _____

• **Build a Compost Bin for Your Household**

(20) _____



1. Review the following 4 articles: (from Boyer)

- a) Composting: The Basics, Gardening & Landscaping Techniques
- b) What to Consider Before Building an Outdoor Pile, Let it Rot
- c) Bins, Barrels & Tumblers, Let it Rot
- d) Composting, Encyclopedia of Organic Gardening

2. Answer the questions entitled “Why build a Compost Bin ?” (from Boyer)

3. Speak with Mr. Boyer and submit a plan.

4. Take 4 photos of the construction process with you in each photo.

Mount 2 photos on one side of plain white paper (8 1/2" x 11") with a description below each photo describing what you are doing.

5. Summarize construction details and explain why you chose the design that you built.

• **Tree Measuring**

(8) _____

- make your own diameter tape and cruising stick (instructions from Boyer)
- measure 10 trees on campus.

• **Design a Feng Shui Garden:**

(8) _____



1. Read the article “In Harmony with Feng-Shui” to learn about the 10 simple ways to bring Feng-Shui Energy to your garden.

2. Create a design using the principles from the article (instructions from Boyer)

• **Internet Scavenger Hunt:**

(8) _____

Cruise around the internet looking for specific information from botany-related internet sites. Get handout from Mr. Boyer and turn in your answers with your contract.

• **Calculate your personal Greenhouse Gas emissions**

(8) _____

http://www.epa.gov/climatechange/wycd/calculator/ind_calculator.html

This calculator uses information from your family’s utility bills along with driving data to calculate pounds of Carbon produced and also how many mature maple trees it would take to offset the carbon emissions.

Print your results and turn them in with your contract.

• **Plant a Radish/Lettuce Garden:**

(12) _____

For this contract, bring in 4 photos of the planting process. One photo must show your germinated seeds. In order to receive full credit you **MUST** bring radishes/lettuce that you have grown to class during contract 2.

Watering your radishes/lettuce **everyday** will be necessary.