



## CAVOC 8<sup>th</sup> Grade Curriculum- Urban Forestry

(Cedric A. Vig Outdoor Classroom)

### Suggested Schedule-

7:50	Homerooms
7:55	Report to Commons, check in, board bus
8:10	Arrive at CAVOC
8:15	Orientation & Large Group Ropes Instruction
8:30	Session I (75 minutes)
9:45	Break – juice served at the lodge (20 minutes)
10:05	Session II (75 minutes)
11:20	Lunch (40 minutes)
12:00	Session III (75 minutes)
1:15	Session IV (75 minutes)
2:30	Clean Up
2:35	Walk to bus
2:40	Departure
2:50	Arrive JWJHS – Commons or outside
2:58	Dismissal

### **--SESSIONS--**

GEO/O: Orienteering or Geocaching

FA: When Seconds Count

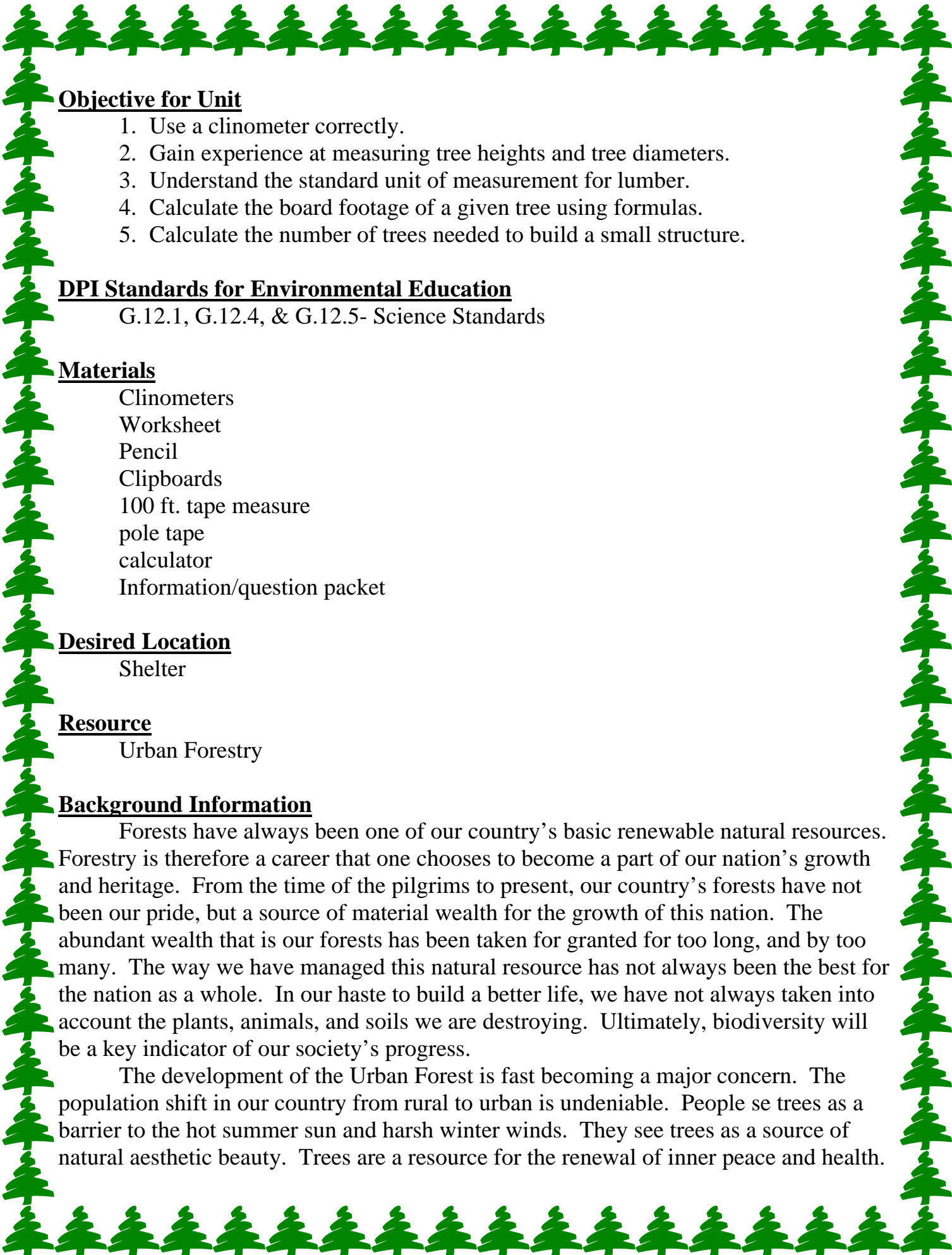
HE: High Elements

UF: Urban Forestry

Sessions	1	2	3	4
Time/team	8:30 – 9:45	10:05–11:20	12:00–1:15	1:15 – 2:30
1	HE	UF	FA	GEO/O
2	UF	FA	GEO/O	HE
3	FA	GEO/O	HE	UF
4	GEO/O	HE	UF	FA

### Urban Forestry

(~ 75 minutes)



**Objective for Unit**

1. Use a clinometer correctly.
2. Gain experience at measuring tree heights and tree diameters.
3. Understand the standard unit of measurement for lumber.
4. Calculate the board footage of a given tree using formulas.
5. Calculate the number of trees needed to build a small structure.

**DPI Standards for Environmental Education**

G.12.1, G.12.4, & G.12.5- Science Standards

**Materials**

- Clinometers
- Worksheet
- Pencil
- Clipboards
- 100 ft. tape measure
- pole tape
- calculator
- Information/question packet

**Desired Location**

Shelter

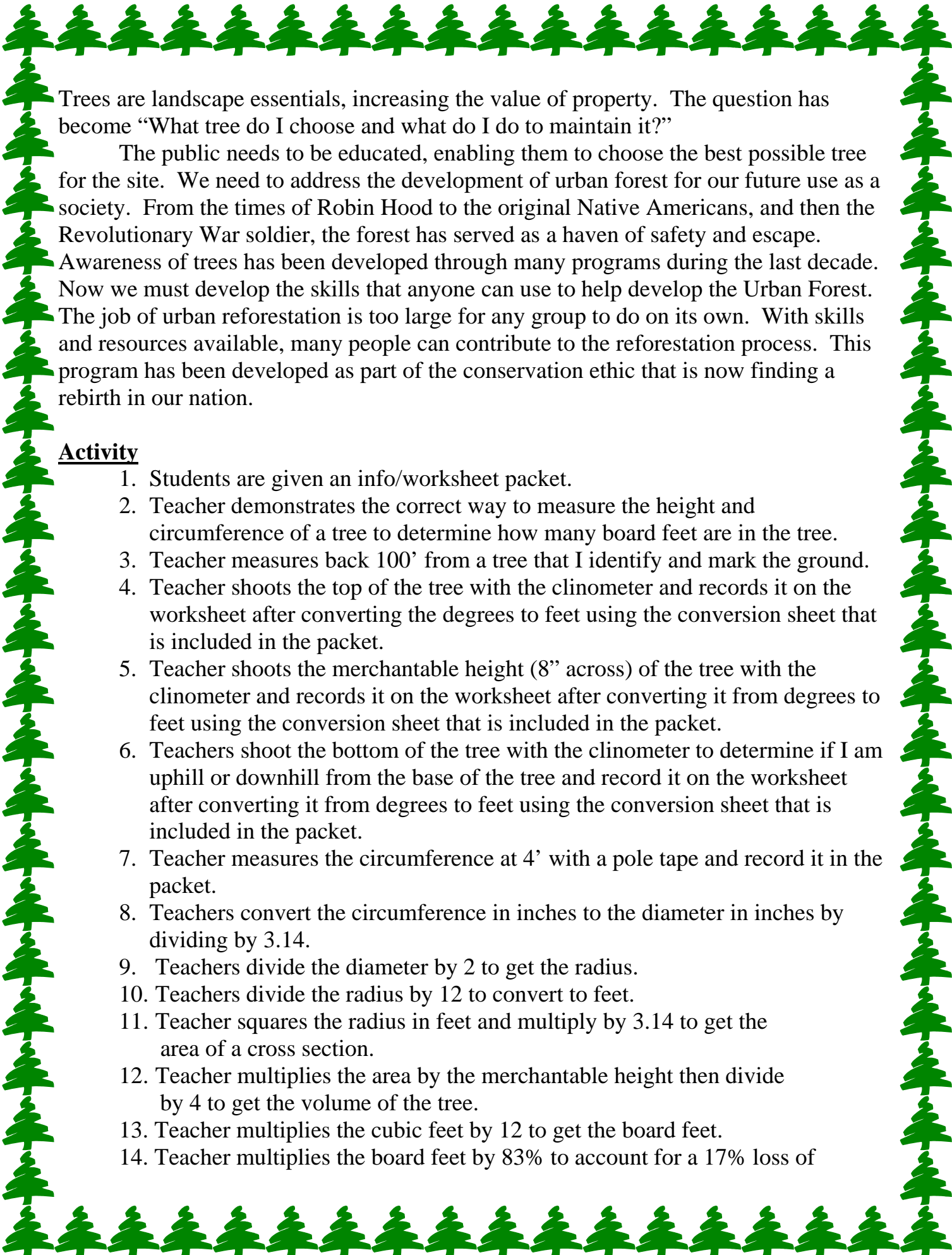
**Resource**

Urban Forestry

**Background Information**

Forests have always been one of our country's basic renewable natural resources. Forestry is therefore a career that one chooses to become a part of our nation's growth and heritage. From the time of the pilgrims to present, our country's forests have not been our pride, but a source of material wealth for the growth of this nation. The abundant wealth that is our forests has been taken for granted for too long, and by too many. The way we have managed this natural resource has not always been the best for the nation as a whole. In our haste to build a better life, we have not always taken into account the plants, animals, and soils we are destroying. Ultimately, biodiversity will be a key indicator of our society's progress.

The development of the Urban Forest is fast becoming a major concern. The population shift in our country from rural to urban is undeniable. People see trees as a barrier to the hot summer sun and harsh winter winds. They see trees as a source of natural aesthetic beauty. Trees are a resource for the renewal of inner peace and health.

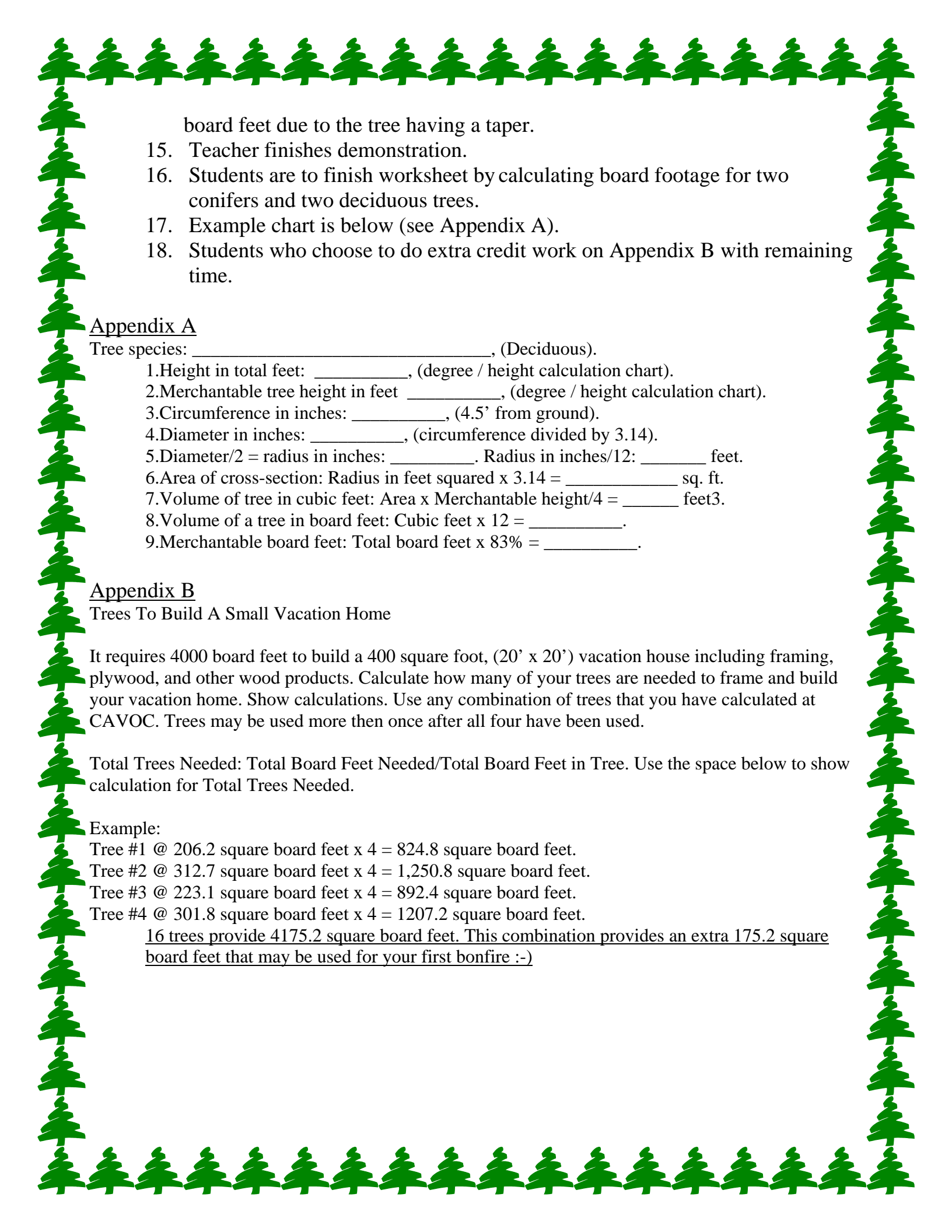


Trees are landscape essentials, increasing the value of property. The question has become “What tree do I choose and what do I do to maintain it?”

The public needs to be educated, enabling them to choose the best possible tree for the site. We need to address the development of urban forest for our future use as a society. From the times of Robin Hood to the original Native Americans, and then the Revolutionary War soldier, the forest has served as a haven of safety and escape. Awareness of trees has been developed through many programs during the last decade. Now we must develop the skills that anyone can use to help develop the Urban Forest. The job of urban reforestation is too large for any group to do on its own. With skills and resources available, many people can contribute to the reforestation process. This program has been developed as part of the conservation ethic that is now finding a rebirth in our nation.

**Activity**

1. Students are given an info/worksheet packet.
2. Teacher demonstrates the correct way to measure the height and circumference of a tree to determine how many board feet are in the tree.
3. Teacher measures back 100’ from a tree that I identify and mark the ground.
4. Teacher shoots the top of the tree with the clinometer and records it on the worksheet after converting the degrees to feet using the conversion sheet that is included in the packet.
5. Teacher shoots the merchantable height (8” across) of the tree with the clinometer and records it on the worksheet after converting it from degrees to feet using the conversion sheet that is included in the packet.
6. Teachers shoot the bottom of the tree with the clinometer to determine if I am uphill or downhill from the base of the tree and record it on the worksheet after converting it from degrees to feet using the conversion sheet that is included in the packet.
7. Teacher measures the circumference at 4’ with a pole tape and record it in the packet.
8. Teachers convert the circumference in inches to the diameter in inches by dividing by 3.14.
9. Teachers divide the diameter by 2 to get the radius.
10. Teachers divide the radius by 12 to convert to feet.
11. Teacher squares the radius in feet and multiply by 3.14 to get the area of a cross section.
12. Teacher multiplies the area by the merchantable height then divide by 4 to get the volume of the tree.
13. Teacher multiplies the cubic feet by 12 to get the board feet.
14. Teacher multiplies the board feet by 83% to account for a 17% loss of



board feet due to the tree having a taper.

15. Teacher finishes demonstration.
16. Students are to finish worksheet by calculating board footage for two conifers and two deciduous trees.
17. Example chart is below (see Appendix A).
18. Students who choose to do extra credit work on Appendix B with remaining time.

### Appendix A

Tree species: \_\_\_\_\_, (Deciduous).

1. Height in total feet: \_\_\_\_\_, (degree / height calculation chart).
2. Merchantable tree height in feet \_\_\_\_\_, (degree / height calculation chart).
3. Circumference in inches: \_\_\_\_\_, (4.5' from ground).
4. Diameter in inches: \_\_\_\_\_, (circumference divided by 3.14).
5. Diameter/2 = radius in inches: \_\_\_\_\_. Radius in inches/12: \_\_\_\_\_ feet.
6. Area of cross-section: Radius in feet squared x 3.14 = \_\_\_\_\_ sq. ft.
7. Volume of tree in cubic feet: Area x Merchantable height/4 = \_\_\_\_\_ feet<sup>3</sup>.
8. Volume of a tree in board feet: Cubic feet x 12 = \_\_\_\_\_.
9. Merchantable board feet: Total board feet x 83% = \_\_\_\_\_.

### Appendix B

Trees To Build A Small Vacation Home

It requires 4000 board feet to build a 400 square foot, (20' x 20') vacation house including framing, plywood, and other wood products. Calculate how many of your trees are needed to frame and build your vacation home. Show calculations. Use any combination of trees that you have calculated at CAVOC. Trees may be used more than once after all four have been used.

Total Trees Needed: Total Board Feet Needed/Total Board Feet in Tree. Use the space below to show calculation for Total Trees Needed.

Example:

Tree #1 @ 206.2 square board feet x 4 = 824.8 square board feet.

Tree #2 @ 312.7 square board feet x 4 = 1,250.8 square board feet.

Tree #3 @ 223.1 square board feet x 4 = 892.4 square board feet.

Tree #4 @ 301.8 square board feet x 4 = 1207.2 square board feet.

16 trees provide 4175.2 square board feet. This combination provides an extra 175.2 square board feet that may be used for your first bonfire :-)

