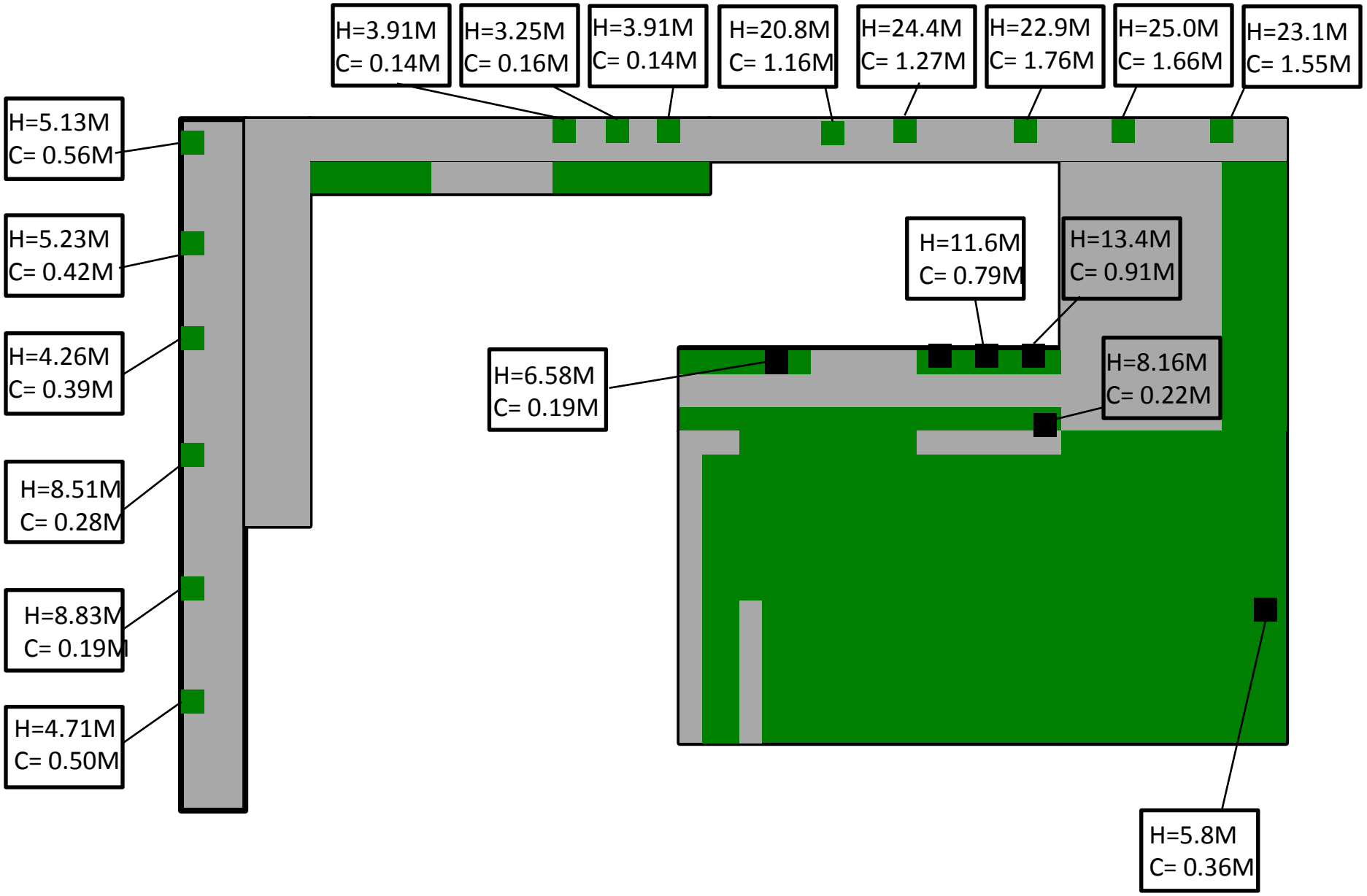
Circle the tree you will be using for the CO2 calculations



What is AUP's Carbon Footprint?

Name(s)_____

Directions: Calculate your schools carbon footprint by using the following steps below.

NEED TO KNOW!

1 kwh of energy produced from a coal powered electricity plant generates 1.33 kg of CO_2

1 kWh = 1.33 kg CO_2

Step 1: The appliances in your school that use the most electricity are listed below. In order to calculate AUPs carbon footprint you will need to estimate:

1. the number of each appliance in your school
2. how long each appliance is in use per day

Fluorescent Light Bulb: 0.025 kW used each hour

0.025 kW X _____ X _____ hr X 1.33 kg CO_2 / KWh =

(# of light bulbs in AUP; hours used each day)

kg CO_2/day

Laptop Computer: 0.09 kW used per hour

0.09 kW X _____ X _____ hr X 1.33 kg CO_2 / KWh =

(# of computers; hours used each day)

kg CO_2/day

Air Conditioning: 0.76 kWh used per hour

0.76 kW X _____ X _____ hr X 1.33 kg CO_2 / KWh =

(# of air conditioning unit; hours used each day)

kg CO_2/day

Part 2: Add the carbon production from all three appliances together to calculate AUP's total CO_2 production.

Total CO_2 production from your school:

TOTAL kg CO_2/day

How much CO_2 is produced per year?

(given there are 365 days in one year)

TOTAL kg CO_2/year

How Much Carbon Can Your Tree Capture?

Height (H) of your tree : _____
Circumference (C) of your tree: _____

Name(s)_____

<u>Step 1</u>: Calculate the Area of your tree using the Circumference (C):

$$C = 2\pi r$$

We know that $\pi = 3.14$. Insert your value for C and re-arrange to solve for r.
Then use that r value to calculate the Area of your tree using the formula:

$$A = \pi r^2$$

Show your work here:

Area:

Unit: m^2

<u>Step 2</u>: Calculate the Volume of your tree using Area (A) and Height (H)

$$V = A^x H$$

Use the value for A you just calculated and Insert your value for H to solve for V
Show your work here:

Volume:

Unit: m^3

<u>Step 3</u>: Calculate the Mass of your tree using Area (A) and Density(D)

$$\text{Mass (M)} = A^x D$$

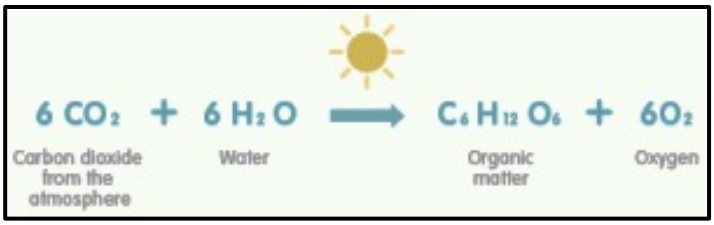
We will assume that the Density (D) of your tree is 700Kg/m^3; a typical density for a tree.
Use the values for A and D you just calculated to solve for mass.
Show your work here:

Mass:

Unit: Kg

<u>Step 4</u>: Calculate the Amount of CO_2 sequestered by your tree

Trees use CO_2 and water in the air for Photosynthesis. It takes 6 molecules of CO_2 to make one molecule of sugar (tree food!). The ratio of the mass of CO_2 used to the mass of Sugar Produced is 1.5, therefore:



$$CO_2 \text{ sequestered} = 1.5 \times M$$

Use the value for M you just calculated to solve for CO2 sequestered.
Show your work here:

Carbon Sequestered per life time of tree:

Unit: Kg

<u>Step 5</u>: Calculate the TOTAL amount of CO_2 sequestered by the trees around AUP in one year

Use the map provided to count how many trees are around AUP

Assumptions:

- Assume each tree is the same size as the one you just completed calculations for.
- Assume each tree is 50 years old.

Show your Work Here:

Answer:

Kg CO_2 sequestered per Year By trees around AUP

<u>Step 6</u>: Conclusions:

<u>ACCORDING TO YOUR DATA</u> How does the amount of CO_2 produced by AUP compare to the amount of CO_2 sequestered in the trees? Is this what you expected to find? Explain.

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