

**Write a pseudocode and a C++ program for the following problem.**

A Lawn service provider has three types of services: mowing, fertilizing, and planting trees. The cost of mowing is \$20 per 5000 square yards, fertilizing is \$25 per application, and planting a tree is \$40. Design an algorithm, to enter the length and width (in yards) of the lawn, and the number of trees to be planted. Calculate the area (hope you know how do this!). Calculate and display the billing amount. Add an 8% tax. Display the calculated tax value and display the total bill with tax.

**So, if my yard is 20 yards by 30 yards and I want to plant 5 trees. The following calculation can be done.**

$$\text{Area} = 20 * 30 = 600$$

$$\text{Mowing cost} = 600/5000 * 20 = 2.4$$

$$\text{Bill} = 2.4 + 25 + 40*5 = 227.4$$

$$\text{Tax} = 227.4 * .08 = 18.192$$

$$\text{Bill} = 227.4 + 18.192 = 245.592$$

**A possible Answer:**

```
/*  
 * Name: You  
 * Class: CIT 133  
 * Due:  
 * Time Taken: About 2 1/2 hours over 2 days.  
 *  
 */  
/*  
 */
```

A Lawn service provider has three types of services: mowing, fertilizing, and planting trees. The cost of mowing is \$20 per 5000 square yards, fertilizing is \$25 per application, and planting a tree is \$40.

Design an algorithm, to enter the length and width (in yards) of the lawn, calculate the area (hope you know how do this!), and the number of trees to be planted. Calculate and

display the billing amount. Add an 8% tax. Display the calculated tax value and display the total bill with tax.

```
 */  
/* This program calculates the area given from the user's length and width, asks  
 * how many trees to plant, and uses it to calculate the billing amount with tax  
 * of all the services.  
 */
```

```

/* Pseudocode:
1. start
2. input length
3. input width
4. input numTreesPlanted
5. MOWINGCOSTUNIT = 20
6. FERTILIZINGPERAPP = 25
7. PLANTPERTREECOST = 40
8. TAXRATE = 8
8. set area = length * width
9. set mowAmount = area/5000 * mowingCostUnit
10. set bill = mowAmount + FERTILIZINGPERAPP + numTreesPlanted * PLANTPERTREECOST
11. set tax = .TAXRATE * bill
12. totalBill = bill + tax
13. display area
14. display the totalBill
*/
#include <iostream>
using namespace std;

```

```

//Main Function

```

```

int main(){

    //Variables
    double length;
    double width;
    double area;
    double mowAmount; //Store the cost of the mowing service
    double numTreesPlanted; //Stores the amount of trees
    double treeAmount; //Store the cost for tree planting
    double billingAmount; //Store the amount before taxes
    double taxedAmount; //Store the taxed amount
    double total; //Store the total

    //Constant Variables
    const float MOWINGCOSTUNIT = 20;
    const double FERTILIZINGPERAPP = 25;
    const double PLANTPERTREECOST = 40;
    const double TAXRATE = 8;

    //Ask and set the lengths and widths
    cout << "What is the length?\n";
    cin >> length;
    cout << "What is the width?\n";

```

```

cin >> width;

//Calculate the area then the cost for the mowing
area = length * width;
mowAmount = area / 5000 * MOWINGCOSTUNIT;

//Display the area
cout << "The area is " << area << endl;
cout << "The cost to mow is " << mowAmount << "." << endl;

//Ask for how many trees.
cout << "How many trees do you wish to plant?\n";
cin >> numTreesPlanted;

//Determine cost for the trees
treeAmount = numTreesPlanted * PLANTPERTREECOST;
cout << "The tree amount is " << treeAmount << endl;

//Determine the billingAmount
billingAmount = mowAmount + FERTILIZINGPERAPP + treeAmount;

//Calculate the tax
taxedAmount = TAXRATE / 100 * billingAmount;

//Calculate the total
total = billingAmount + taxedAmount;

//Display the sales figures
cout << "Your billing amount is " << billingAmount << endl
      << "Tax: " << taxedAmount << endl
      << "Your total: $" << total << endl;

return 0;
}

```