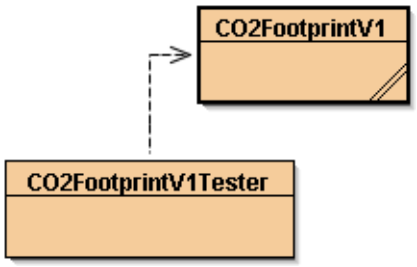
Assessment Instructions

Instructions: Write a program that calculates the amount of carbon dioxide emitted for each gallon of gas consumed. Include **`javadoc`** comments in the program where appropriate.

1. If the Assessment project has not yet been created in the Unit08 Assessments folder, please do so now.
2. Be sure to save a copy of these instructions in the Unit08 Documents folder.
3. Print a copy for your notebook.
4. Carefully read the instructions before you attempt the assessment.
5. Create a class called **`CO2FootprintV1`** and another one call **`CO2FootprintV1Tester`** in the newly created project folder.
6. The program should be written in OOP format by explicitly creating an object of the **`CO2FootprintV1`** class.



7. Write a method to calculate how many metric tons of CO_2 are emitted for the number of gallons of gas you are projected to use in a year. (This was calculated in the last assessment.) This quantity can be calculated using the following:

   8.78×10^{-3} metric tons of CO_2 are emitted per gallon of gas.

8. Write another method to convert the metric tons of CO_2 to pounds.
9. Create **javadoc** comments for the constructor and each method in the CO2FootprintV1 class. Use the demo program in the lesson as a model.
10. Print the results in a user-friendly format, to one decimal place (see expected output).

Algorithmic Thinking/Planning: There are several components to this program that require careful thought, so resist the temptation to start coding without planning.

CO2FootprintV1
<<Instance Variables>> - double myGallonsUsed - double myTonsC02 - double myPoundsCO2
<<Constructor>> + CO2FootprintV1(double gals) **<<Methods>>** + void calcTonsCO2( ) + void convertTonsToPoundsCO2( ) + double getTonsCO2( ) + double getPoundsCO2( )

To help you plan your approach to the program, a class diagram is provided.

Use the diagram to write the **`CO2FootprintV1`** class. With some careful analysis, this class diagram will also help you write the **`CO2FootprintV1Tester`** class.

You may use different identifier names if you prefer, or the ones shown here.

Expected Output: When your program runs correctly you should see output similar to the following screen shot. (The table will grow considerably in future lessons.)

```
            CO2 Emissions
Gallons    Pounds      Tons
of Gas    from Gas   from Gas
****************************
1288.0    24931.28    12.466
```

Grading: Your assessment will be graded according to the following rubric.

Grading Rubric	**Pts**
Comments include name, date, and purpose of program.	1
`javdoc` comments accurately produce an API-style web page.	2
Constructor correctly written.	2
Statement to invoke constructor included.	2
Method headers correctly written.	2
Individual methods invoked on an object from **`main()`** method.	2
All calculations correct.	1
Output formatted with **`printf()`**.	1
No compiler or runtime errors.	1
Thoughtful PMR included.	1

Submission: Submit the CO2FootprintV1.java and CO2FootprintV1Tester.java for a grade.