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Balancing equations F2

The purpose of this portion of the program is to provide the chemistry student with practice in balancing chemical equations. All major type of reactions will be presented. To start this portion of the program select Balancing Chemical Equations from the main menu or press the F2 key.

Stoichiometry Problems F3

The purpose of this portion of the program is to provide the chemistry student with practice in solving various stoichiometry problems. Mass-mass, mass-volume, and volume-volume problems are included.

To start this portion of the program select Stoichiometry Problems from the main menu or press the F3 key.

Using this part of the program

The Purpose of the program

Learning about stoichiometry can be very difficult for the introductory chemistry student. This program is designed to be a non-threatening device which can provide the student with practice in both balancing chemical equations and solving stoichiometry problems. Students using the program in a computer lab will be presented with the reactions in a different order.

Procedure for balancing chemical equations

Start this portion of the program by pressing the F2 key. An equation will appear in the main window. To balance the equation type the number of the coefficient (the number in front of the formula) for each substance in the equation. To move from substance to substance use the TAB key. Make sure the number of atoms of each element is the same on both sides of the arrow. When you believe you have balanced the equation correctly press the enter key. You will be informed if you are correct or incorrect. When all of the equations have been balanced you will be informed.

Procedure for solving stoichiometry problems

To start this portion of the program press the F3 key. A balanced chemical reaction will appear along with a grid below the reaction with entries for mass, moles, and volume(if appropriate). The goal is to fill in every space in the grid by solving for mass, moles, or volume. The first thing that must be done is a starting value must be placed into the grid. To do so click on New Mass, New Moles, New Volume, or Random Value. If you choose new mass, moles, or volume a dialog box will appear asking you for the value you want to input. Enter the value and then click on OK or press enter. You then need to place the value on the grid by choosing the substance you want to assign the value to. To do so click the left mouse button on the formula of the substance in the chemical equation. The value will appear in the appropriate place on the grid.

The next step is to choose the starting and ending quantities for your problem. Click the left mouse button on the starting quantity (which is the only value present on the grid if you have just started) and then the right mouse button on the area of the grid you want to solve for. A series of conversion factors will appear below the grid. Click on each conversion factor as you would use it in the correct order to solve for the desired quantity. If the conversion factor is correct it will appear at the bottom of the window next to the starting quantity. If incorrect you will be informed. When you have chosen the correct conversion factors to solve for the desired quantity a dialog box will appear asking you to find the answer. Using a calculator calculate the answer to **3** significant figures and enter into the dialog box. If correct you will be notified.

Fill in the remainder of the grid by choosing quantities present on the grid and solving for quantities not determined yet. When the grid is completed you will be informed and a new problem will be given.

New Mass

Click on this box in the upper left hand corner and a dialog box will appear. Enter the value of the mass desired and then click the left mouse button on the substance you want to assign this mass to. The value will appear in the grid below the substance. Click the left mouse button on this quantity and then click the right mouse button on your goal.

New Moles

Click on this box in the upper left hand corner and a dialog box will appear. Enter the value of the new moles and then click the left mouse button on the substance you want to assign this mole value to. The value will appear in the grid below the substance. Click the left mouse button on this quantity and then click the right mouse button on your goal.

New Volume

Click on this box in the upper left hand corner and a dialog box will appear. Enter the value of the desired volume and then click the left mouse button on the substance you want to assign this volume to. The value will appear in the grid below the substance. Click the left mouse button on this quantity and then click the right mouse button on your goal.

Random value

Choosing this menu item will generate a random mass, moles, or volume. Click the left mouse button on the quantity you want to assign the value to after selecting this menu item.

