

Widget Factory Exercise

Follow the directions below to create the exercise. Read through each individual direction before performing it, like you are following recipe instructions.

Remember that to move between cells you can use your mouse, the arrow keys on the keyboard, or the Name Box.

Remember, too, that there is usually more than one way to do something. If a different way to do it occurs to you, go ahead and try it! If it doesn't work, you can always click the Undo button.

If you can't remember what a button does, move the cursor over it and pause. A yellow ToolTip will appear describing the button's function.

The gray boxes will contain tips, suggestions, and reminders.

In the instructions, the following terms will be used:

Click – a single left mouse click.

Command - a button displayed on a tab on the Ribbon.

Key – a key on the keyboard.

Part 1: Opening the Excel Program, Entering the Information, & Naming the Worksheets

1. Locate the *Excel* icon on the computer's desktop and then double click on it to open the program OR
2. Click on the *Start* button and locate the *Excel* program under *All Programs* and then *Microsoft Office*. Click once on the name of the program, *Microsoft Excel*, to open it.
3. Enter the information in the cells as illustrated in Table 1 below. REMEMBER that you can move to the next cell down by pressing the *Enter* key and you can move the next cell to the right by pressing the *Tab* key. You can also select the cell you want to type in with a single mouse click and then begin typing the text. Note that there is nothing entered in cell *A1*. Adjust the column widths to approximate those in the table below.

Table 1

	A	B	C	D	E
1		Quarter 1	Quarter 2	Quarter 3	Quarter 4
2	Red Widgets	125	150	175	100
3	Green Widgets	100	125	150	75
4	Yellow Widgets	75	100	125	50

4. To rename this worksheet, position your mouse pointer over the current name of the worksheet tab *Sheet1* and double click to highlight the name.
5. When *Sheet 1* is selected, type in **Shift One** and press the *Enter* key on the keyboard.
6. Double click on the name of the second sheet tab, *Sheet2*.
7. When *Sheet2* is selected, type in **Shift Two** and press the *Enter* key on the keyboard.

- On the worksheet now called *Shift Two*, type the information in the cells as illustrated in Table 2 below. Note that there is nothing entered in cell *A1*.

Table 2

	A	B	C	D	E
1		Quarter 1	Quarter 2	Quarter 3	Quarter 4
2	Red Widgets	110	130	150	90
3	Green Widgets	90	110	130	70
4	Yellow Widgets	70	90	110	50

- Double click on the name of the third sheet tab, *Sheet3*.
- When *Sheet3* is selected, type in **Total Production** and press the *Enter* key on the keyboard.
- On the worksheet now called *Total Production*, type the information in the cells as illustrated in Table 3 below. Note that there is nothing entered in cell *A1*.

Table 3


	A	B	C	D	E
1		Quarter 1	Quarter 2	Quarter 3	Quarter 4
2	Red Widgets				
3	Green Widgets				
4	Yellow Widgets				

- Click on the *Office Button* and then click on *Save As* from the drop down menu.
- The *Save As* dialog box will open. Using the down arrow at the right end of the *Save in:* text entry box, select the drive or folder from the drop down menu where you wish to save the exercise by clicking on your choice.
- In the *File name:* text entry box at the bottom, delete **Book1** and type in **Widget Factory**.
- Click on the *Save* button in the bottom right corner of the *Save As* dialog box. This has performed the initial save of the file. Further on in this exercise you will be instructed to save updates to the file.

Part 2: Entering Formulas Using Cells from Multiple Worksheets

The first two worksheets, *Shift One* and *Shift Two*, contain the number of widgets produced by each shift. The third worksheet will contain formulas to add the total number of Red, Green, and Yellow Widgets produced in each quarter.

- Make sure you are still working in the *Total Production* worksheet and click on cell *B2* to select it.
- Press the = key on the keyboard.
- With your mouse, click on the *Shift One* sheet tab and then, on that worksheet, click on cell *B2* to select it.
- Press the + key on the keyboard.
- With your mouse, click on *Shift Two* sheet tab and then, on that worksheet, click on cell *B2* to select it.
- Press the *Enter* key on the keyboard. The cell *B3* on the *Total Production* worksheet should now be selected.

7. Select cell *B2* on the *Total Production* worksheet and look at the *Formula* bar. It should contain this formula: **=*'Shift One'!*B2+*'Shift Two'!*B2**
8. Position the mouse pointer over the *Fill* handle (the little black square in the lower right hand corner of the active cell) and, when it changes to a thin black plus sign, click and drag to the right to copy the formula in cell *B2* to cells *C2* thru *E2*. 
9. Four cells, *B2* thru *E2*, should now be selected. If not, select that range of cells.
10. Position the mouse pointer over the *Fill* handle (look at the lower right hand corner of cell *E2*) and, when it changes to a thin black plus sign, click and drag down to cell *E4*.
11. To check the copied formulas, click on cell *E4* to select it and look at the *Formula* bar. It should contain this formula: **=*'Shift One'!*E4+*'Shift Two'!*E4**
12. Your table should now look like this:

	A	B	C	D	E
1		Quarter 1	Quarter 2	Quarter 3	Quarter 4
2	Red Widgets	235	280	325	190
3	Green Widgets	190	235	280	145
4	Yellow Widgets	145	190	235	100

13. Save this updated workbook under the same name by clicking on the *Save* button on the *Quick Access* toolbar. The *Save* button looks like a floppy disk.

Part 3: Entering Sum Functions

1. On the *Total Production* worksheet, select cell *F1*, type in **Total** and press the *Enter* key on the keyboard.
2. Cell *F2* should now be the selected cell. Click on the *AutoSum* command in the *Editing* group on the *Home* tab of the *Ribbon*. Excel should guess correctly that you want to add cells *B2* thru *E2*. Press the *Enter* key.
3. Click on cell *F2* to select it again and use the *Fill* handle to copy the Sum function to cells *F3* thru *F4*.
4. Select cell *A5*, type in **Total** and the press the *Tab* key on the keyboard.
5. Cell *B5* should now be selected. Click on the *AutoSum* command in the *Editing* group on the *Home* tab of the *Ribbon*. Excel should guess correctly that you want add cells *B2* thru *B4*. Press the *Enter* key.
6. Click on cell *B5* to select it again and use the *Fill* handle to copy the function in cell *B5* to cells *C5* thru *F5*.
7. Your table should now look like this:

	A	B	C	D	E	F
1		Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
2	Red Widgets	235	280	325	190	1030
3	Green Widgets	190	235	280	145	850
4	Yellow Widgets	145	190	235	100	670
5	Total	570	705	840	435	2550

8. Save this updated workbook under the same name by clicking on the *Save* button on the *Quick Access* toolbar.

Part 4: Data Validation

Only whole widgets can be counted. To make sure that only whole numbers are entered on the *Shift One* and *Shift Two* worksheets follow these steps.

1. Select the worksheet *Shift One* by clicking on the sheet tab name.
2. Select cells *B2* thru *E4*.
3. Click on the *Data* tab on the *Ribbon* and then click on the *Data Validation* command in the *Data Tools* group.
4. On the *Settings* tab, click on the down arrow at the end of the text entry box under *Allow:* and click on *Whole Number*. Then, click on the down arrow at the end of the text entry box under *Data:* and click on *greater than or equal to*. Lastly, click in the text entry box under *Minimum:* and type the number **0**. Your screen should match the first picture to the right. **DO NOT** click on the *OK* button.
5. Click on the *Input Message* tab to move to that screen. Leave the check box checked, click in the text entry box under *Title:* and type **Entering Data**. Now, click in the text entry box under *Input message:* and type **Only enter whole numbers. Partial Widgets are not allowed**. Your screen should now match the second picture to the right. **DO NOT** click on the *OK* button.
6. Click on the *Error Alert* tab to move to that screen. Leave the check box checked and leave the *Style* selected as *Stop*. Click in the text entry box under *Title:* and type **Wrong Input**. Now, click in the text entry box under *Error message:* and type **Partial Widgets are not allowed. Try again**. Your screen should now match the third picture to the right.
7. Now, click on the *OK* button to apply the data validation.
8. Click on the *Shift Two* sheet tab and repeat steps 2 through 7 above.
9. To check the data validation settings, select cell *B2* on the current worksheet and type the number **130.5** and press the *Enter* key on the keyboard.
10. When the *Wrong Input* error message appears, click on the *Retry* button.
11. After the error message, type the number **130** into the cell instead and press the *Enter* key.
12. Save this updated workbook under the same name by clicking on the *Save* button on the *Quick Access* toolbar.
13. Close this file and the Excel program by clicking on the *X* button in the upper right corner of the screen.

