

# C&NS Source Guide

## Excel 2003 - Formulas and Functions Basics

### ▪ Activity 1 – Formulas

- Mathematical symbols for: addition +, subtraction -, multiplication \*, division /, exponents ^, parenthesis ().
- PEMDAS – order of operations. **P**arenthesis, **E**xponents, **M**ultiplication, **D**ivision, **A**ddition, **S**ubtraction.
- Formula basics: A set of mathematical instructions that performs calculations.
  - Formulas in Excel always begin with the equals (=) sign. (Ex. =2+2) and are entered into the Formula bar.
  - You can use cell references rather than numbers when creating formulas. (Ex. =A2+A3)

### Activity – Open the Calculations.xls file.

- **Manually entering a formula**
  1. Select cell **C12**.
  2. In the Formula Bar, type “=C7+C8+C9+C10.”
  3. **Press Enter** and notice the total in C12.
- **Manually entering a formula by selecting cells**
  4. Select cell **D12**.
  5. In the Formula Bar, type “=D7+D8+D9+” then **select D10** by using your mouse and then **press Enter**. Notice the total in D12.
- **Manually entering a formula by selecting a range of cells**
  6. Select cell **E12**.
  7. Type “=Sum(“
  8. **Click and drag a selection/range around cells E7, E8, E9, and E10** to add this range of cells to the formulas.
  9. Type “)” **in the Formula Bar** and press Enter to apply the calculation.
  10. Select the cell E12, and then **click and drag the fill handle** to cell F12 to apply the sum calculation to cell F12.
- **Create an average formula manually**
  11. Select cell **C13**
  12. In the formula Bar, type “=(C7+C8+C9+C10)/4 “
  13. **Press Enter** to populate cell C13 with the January average.
- **Create an average formula by selecting cells**
  14. Select cell **D13**.
  15. In the Formula bar, type “=(“

16. Select cell **D7**, and then type “ + “
17. Select cell **D8**, and then type “ + “
18. Select cell **D9**, and then type “ + “
19. Select cell **D10**, and then in the Formula bar, type “ )/4 “
20. **Press Enter** and notice the average for the February column.

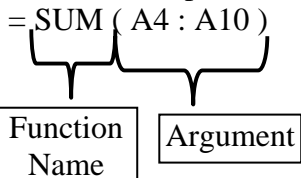
- **Copy formulas to other cells by dragging the fill handle**

21. To populate cells E13 and F13 with their respective monthly averages, **select cell D13 and then click and drag the fill handle to cell F13**. Notice the averages.

- **Activity 2 - Calculate with Functions**

- A function is a built in formula in Excel. Functions start with an equals (=) sign and have two components.
  1. The function name (or an abbreviation of that name).
  2. The arguments, which are the required data enclosed in parentheses.

- Function components:



The colon between the cell references represents the range between the cell references.

- There are over 200 built in functions in Excel. Here are some of the common ones:
  1. =SUM(A4:A10) -Adds all the values in cells A4 through A10.
  2. =AVERAGE(A4:A10) -Averages the values in the cells A4 through A10.
  3. =MIN(A4:A10) -Finds the minimum value of the values in cells A4 through A10.
  4. =MAX(A4:A10) -Finds the maximum value of the values in cells A4 through A10.
  5. =COUNT(A4:A10) -Finds the number of entries in cells A4 through A10.
- Functions can be found in the Standard toolbar via the AutoSum button and in the Insert menu.

**Activity – Continue using the Calculations.xls file.**

- **Using the AutoSum Button**

1. Select cell **H7**.
2. Click the **AutoSum** button.
3. Draw a selection range around the cells **C7, D7, E7, and F7**.
4. **Press Enter** to populate cell H7 with the total.

- **Inserting the SUM function**

5. Select cell **H8**.
6. **Choose Insert>Function** to open the Insert Function dialog box with the SUM function selected by default.
7. Under the “Select a Function” heading, **double-click SUM** to open the Function Arguments dialog box.
8. Drag the Function Arguments dialog box to the bottom of the screen so that you can see the top of your work sheet and still see the Function Argument dialog box.
9. On the worksheet, **drag a selection range around cells C8, D8, E8, and F8**. The Function Arguments dialog box will minimize while you do this.

10. In the Function Arguments dialog box, **click OK** to populate cell H8 with the total.

- **Copy a function to other cells**

11. **Drag the fill handle from cell H8 down to cell H10** to copy the function to these cells to populate them with totals as well.

- **Selecting Averages from the AutoSum button**

12. Select cell I7.

13. **Click the drop-down arrow** next to the AutoSum button.

14. **Select Average.**

15. **Draw a selection range around cells C7, D7, E7, and F7 and then press Enter** to populate cell I7 with the average.

- **Inserting the Average Function**

16. Select cell I8, **choose Insert>Function** to open the Insert Function box.

17. Under the “Select a Function” heading, **double-click AVERAGE** to open the Function Arguments dialog box.

18. Drag the Function Arguments dialog box to the bottom of the screen so that you can see the top of your work sheet and still see the Function Argument dialog box.

19. On the worksheet, **drag a selection range around cells C8, D8, E8, and F8.** The Function Arguments dialog box will minimize while you do this.

20. In the Function Arguments dialog box, **click OK** to populate cell H8 with the total.

21. **Drag cell I8's fill handle down to cell I10** to populate the average for the last 2 rows.

- **Activity 3 - Copying Formulas and Functions**

- When you want to copy a formula from an original cell and you want the destination cell to have the same value as the original cell. (See Activity A)

1. Select the cell that contains the formula you want to copy.
2. Select the contents of the Formula Bar.
3. Choose Edit>Copy, and then press Enter.
4. Select the cell that you want to copy the formula to.
5. Choose Edit>Paste.

- When you want to copy a formula from an original cell to a destination cell, but you want the destination cell to have a new value relative to a new set of cells that are different from the original cell. (See Activity B).

- **Activity A – Continue using the Calculations.xls file.**

1. In cell B19, **type “Totals Summary”** and press Enter.
2. Select cell B21, **type ”January”** and press Enter.
3. **Select the Fill Handle of cell B21 and drag it down to B26** to fill the series with the other months (February, March, and April).
4. Select cell B26, **type “TYD”** and press Enter.

- **Copy and Paste formulas**

5. **Select cell C12** and then select the contents of the Formula Bar.
6. Choose Edit>Copy, and then press Enter.
7. **Select cell C21** and then choose Edit>Paste.
8. **Select cell D12** and then select the contents of the Formula Bar.

9. Choose Edit>Copy, and then press Enter.
10. **Select cell C22** and then choose Edit>Paste.
11. **Select cell E12** and then select the contents of the Formula Bar.
12. Choose Edit>Copy, and then press Enter.
13. **Select cell C23** and then choose Edit>Paste.
14. **Select cell F12** and then select the contents of the Formula Bar.
15. Choose Edit>Copy, and then press Enter.
16. **Select cell C24** and then choose Edit>Paste.

- **Activity B**

1. Select cell H7, and then **select the contents of the Formula Bar**.
2. **Choose Edit>Copy**, and then press Enter.
3. **Select cell C26** and then choose Edit>Paste.
4. **Double click cell C26** to activate the selection range around cells C7 through F7.
5. Drag the bottom right corner of the selection range **to cell H10**.
6. Drag the top left corner of the selection range **to cell H7**.
7. **Press Enter** to populate the cell with the new value.
8. Save your file.