

Excel: Basic Skills for University Students Handout

Exercise Instructions

1. Open the file “Excel Basics Raw Data.xlsx”. The active tab will be called **Cell Formatting**.

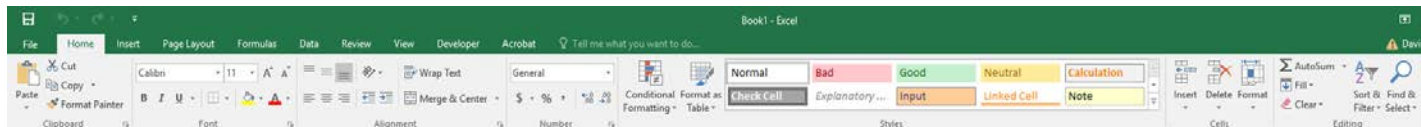
Cell Location

Let’s start by reviewing the layout of Excel. Columns run vertically and are marked by letter (A, B, C, etc.). Rows run horizontally and are marked by numbers (1, 2, 3, etc.). A cell’s location requires both a letter and a number (i.e. A1, C5, etc.).

	A	B	C
1	A1	B1	C1
2	A2	B2	C2
3	A3	B3	C3
4	A4	B4	C4
5	A5	B5	C5

Excel Ribbon

Excel has a ribbon which contains and organizes many Excel functions. We will be focused on the Home tab today, but feel free to explore the other tabs as well.

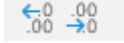


Cell Formatting

Cells can contain any kind of value (currency, date, time, fractions, etc). We want to make sure we present our data in the right format and with the right look. There are many ways to do this.

1. In order to format a cell, we go to the “Home” tab. We can change the font and alignment using the available options in each section. Select Cell **B2**, **C2** and **D2** and make the contents bold and centered.
2. Click on cell **B3**. In the Home tab, under the Number section, select the dropdown and choose “**Currency**”
3. Click on cell **C3**. In the Home tab, under the number section, select the “**%**” option.

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4. Click on cell D3. In the Home tab, under the Number section, select the “\$”. We can add/reduce the number of decimal places by clicking on . Remove the decimal places to the figure in D3
5. Column and row width can be expanded or narrowed by clicking on the edge of the column/row headings and dragging it wider or shorter. You can also double click on the edge of the column/row headings to automatically make the column/row as wide as your largest value. Use this to make the columns the appropriate width.

Calculations Using Excel

Excel allows us to perform math operations like addition, subtraction, multiplication and division using the symbols “+”, “-”, “*”, or “/” and the cells containing data.

2. Navigate to the **Wage Calculator** tab and let’s attempt **Example 1**.
3. Enter the value **15** in cells **D4 to D8**
4. We would like to calculate the weekly earnings of these employees. In cell E4, type **=C4*D4**. In cell E5, type **=C5*D5**. Do this for each employee using the appropriate cells.
5. Add up all the weekly earnings in Cell E9 by typing **=E4+E5+E6+E7+E8**.

Copy and Paste Cells/Ranges

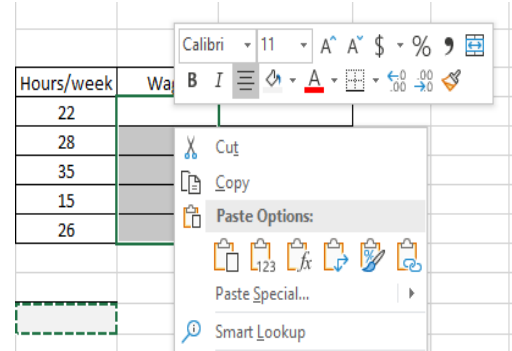
Excel allows you to copy contents from one cell (or group or cells) and paste it to another cell (or group of cells). You can paste all features of the cell(s) you copied or select any specific feature of the original cell(s).

For example, you could copy a cell with a formula and yellow highlighting in one cell and paste the same formula and formatting in a new cell. Or you could just paste the formula to the new cell.

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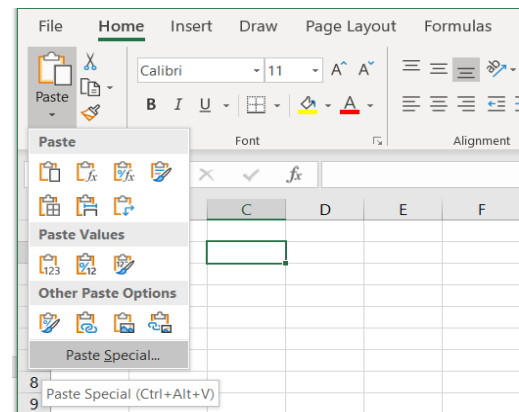
6. Let's attempt **Example 2** by copying the value for the wage you recorded in **B20** into cells **D13 to D17**

- Select **B20**. Enter 15 and change the value to currency format.
- Right click on the cell and select "**Copy**".
- Select cells **D13 to D17** (click on D13, hold and to drag over to D17), right click and select the second paste option.
- This will paste only the value "15" to each cell.

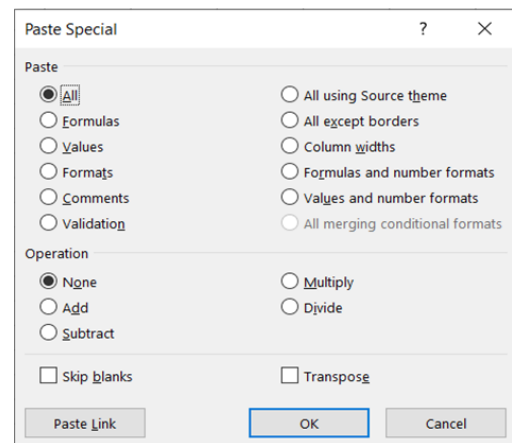


7. This time we are going to pick and choose what we paste.

- In cell **E13**, let's calculate the weekly earnings by typing **=C13*D13**
- Copy the cell **E13** by right clicking the cell and choosing "**Copy**".
- Select cells **E14 to E17**
- We could right-click and choose to paste formulas. However, this time, we are going to go the "**Home**" tab and select the "**Paste**" dropdown and select "**Paste Special**".



- It will prompt us with the following options. We can choose to paste either the Formula, Value, Format, Comment or Validation. In this case, let's choose **Formula**. You should see that all employee's wages are now calculated but Cell E14 to 17 should still appear grey.



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Absolute and Relative Referencing

In our previous example, we copied the formula in E13; it had the formula “=C13*D13”. When we pasted that formula into E14, that cell now contains the formula =C14*D14. But why? Shouldn’t it have copied the formula exactly?

8. Switch to the **Relative vs. Absolute Reference** tab of the Raw data.
9. Let’s explore relative referencing.
 - a. Select cell **B1**.
 - b. Enter the formula =**A1**. Notice, both A1 and B1 have the value **22** in them.
 - c. Now we will copy the formula in **B1** to **B2** to **B5**

	A	B	C	D
1	22	22		
2	23	23		
3	24	24		
4	25			
5	26			
6				

With relative referencing, when you copy a formula (which references other cells), and paste it to a new cell, the referred cells in the formula automatically adjust themselves. That’s why our wage calculation worked!

10. Let’s explore absolute referencing.
 - a. Select cell C1
 - b. Enter the formula and type “=A1” and then click F4 and click Enter. Notice both A1 and C1 have the value **22** in them.
 - c. Copy the formula in **C1** and paste it in the cells **C2** to **C5**. Notice that all the cells contain the value **22**.

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	A	B	C	D	E
1	22	22	22		
2	23	23	22		
3	24	24			
4	25				
5	26	26	22		
6					

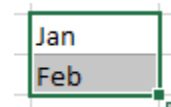
When you are creating formulas which use cells, you can ensure some (all) cells in the formula are always used regardless where you copy and move your formula by entering the cell in the formula and then immediately clicking F4.

11. Go to the **Wage Calculator** tab.
12. Click on cell **B24** and enter **15**.
13. In cell **D27**, start entering **=B24** and then click **F4**. Complete the formula by typing ***C27**.
14. If you copy and paste this formula into **D28** and **D29**, you will see that the formula always uses cell **B24** (the hourly wage) but changes the other cell (hours/week).

Using the Auto-fill Feature

A time-saving feature in Excel is the Autofill feature. If Excel can detect a pattern in your data or formulas, it can automatically fill in the cells immediately below (or across).

15. Switch to the **“Autofill”** Tab.
16. Highlight cells **B2 and B3**.
17. Click on the bottom right of the highlighted box and drag down to fill out the remaining months of the year.
18. Highlight cells **D2 and E2**.
19. Click on the bottom right of the highlighted box and drag across to fill out the days of the week.



Challenge Q1:

Open the sheet named **Challenge1**. In this sheet we will work with some data provided by a local coffee shop. They sell French Vanilla coffee for \$2.50 per cup. Their

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average sales each day are provided in the second column. Using only absolute referencing, relative referencing and autofill, complete the table. Ensure the data is presented in good format.

Naming Cells or Ranges

Excel's name ranging feature makes it easy for us to refer to a cell or a range (group of cells) by giving them a custom name. This is useful when you calculate something (ie. Weekly Wages) and don't want to use cell references (ie. B10)

20. Go to **Example 4** of the "**Wage Calculator**" tab
21. Define the name of the cell **F24** by:
 - a. Select cell **F24**. Enter the value **15**.
 - b. Right click on the selected cell and select Define Name.
 - c. Enter "**Hourly_Wage**" for the Name and click "**OK**".
 - d. In **H27**, calculate the weekly wage using **=Hourly_Wage*G27**

Note: If you ever want to delete a name you have already created, you can move to the "**Formulas**" tab and select "**Name Manager**". You can choose to delete any previously created name.

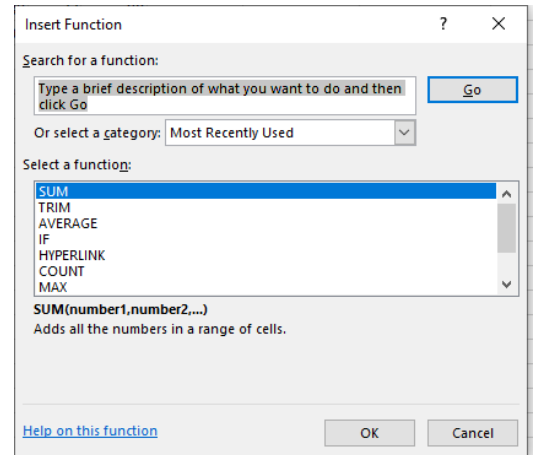
Using Excel Formulas

To avoid using tedious basic math operations, Excel has a series of built-in formulas to help users analyze data. Let's explore some of these.

22. Go to the **Class Data** tab. This tab has student test scores in three courses.
23. In cell G3, let's calculate the total score for each student. Click on fx

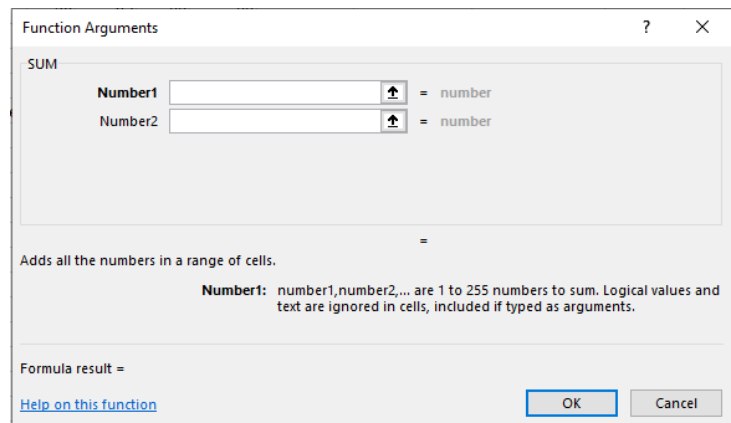
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24. In the Insert function window, there are several functions to choose from. Select the function **“Sum”**



25. In the **Function Arguments** window, you are required to enter everything the function needs to work. In this case, it needs the data that we want to sum.

You can enter all the cells with the data you want to sum in the **“Number 1”** field. Enter **D3, E3, F3** or **D3:F3**.



26. Use the autofill feature or copy paste the function to cells G4 to G7.

27. Using the function builder, f_x , we will now use the **“count”** (or **“counta”**) and **“average”** functions to fill in the values for cells **K2** to **K3**.

28. Sometimes we want to ignore values when calculating an average or a count. For our last calculation, we want to calculate the average English score if the student intends to be an Arts major. We can use the **“averageif”** formula for this.

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29. When using the function builder, you'll notice that there are a few more fields to fill. We need to enter the cells which contain the criteria which we are going to use to determine if we include our score or not. **Enter D3:D16 for the Range**

30. For the **Criteria**, we must enter the criteria we are looking for. Since we are looking for only Arts students, we will enter **“Arts”** here. (Note: this has to be written in quotations).

31. For the **Average_range**, indicate the cells which you will be taking the figures you wish to average. Please enter **E3:E16**.

Challenge Q2:

In the **Challenge 2** tab, use the class data to calculate:

1. Each student's average score. There should be no more than two decimal places in each answer.
2. Report the highest math score in cell **C19**.
3. Using the **Total Test Marks** (provided in **L2**), calculate the percent each student scored in Column **I**. Use relative and absolute referencing. Use percentage formatting with one decimal place.
4. Use an excel formula in cell **C20** to count the number of male students.
5. Use an excel formula in cell **C21** to calculate the average score for female students.

(Hint: You must use the functions **=countif** and **=averageif** for part 4 and 5. Cell M2 has the total the exam is out of)