Zakho Technical Institute

4. Microsoft Excel - Working with Data and Function- Freezing Panes and View Options

Lecturer:

Sipan M. Hameed

https://www.sipan.dev/

2025-2026

Table of Contents

4. Most-Used Excel Functions

Below is a **detailed explanation of the 30 most-used Excel functions**, using **realistic datasets** (Sales, Students, and Employees).
Each function includes:

- 📊 Dataset reference
- 🧮 Formula
- ✅ Explanation of the result

📊 DATASET 1: Student Grades

ID	Name	Math	Physics	English	Status
101	Ali	85	78	90	Pass
102	Sara	45	60	55	Fail
103	Omar	72	88	79	Pass
104	Lina	91	94	89	Pass
105	Zain	50	48	52	Fail

🔢 1. SUM

Total Math marks:

=SUM(C2:C6)

✅ Adds all Math scores.

---

2. AVERAGE

=AVERAGE(C2:C6)

✅ Returns average Math score.

---

3. COUNT

=COUNT(C2:C6)

✅ Counts numeric cells (5 students).

---

4. COUNTA

=COUNTA(B2:B6)

✅ Counts non-empty names.

---

5. COUNTBLANK

=COUNTBLANK(C2:C6)

✅ Counts empty cells (returns 0).

---

6. COUNTIF

Count students who passed:

=COUNTIF(F2:F6,"Pass")

✅ Result: 3

---

7. COUNTIFS

Count students who passed AND Math > 80:

=COUNTIFS(F2:F6,"Pass",C2:C6,">80")

✅ Result: 2

---

8. SUMIF

Total Math marks for students who passed:

=SUMIF(F2:F6,"Pass",C2:C6)

---

9. SUMIFS

Sum Math where Status = Pass AND Physics > 80:

=SUMIFS(C2:C6,F2:F6,"Pass",D2:D6,">80")

---

10. MAX

=MAX(C2:C6)

✅ Highest Math score (91)

---

11. MIN

=MIN(C2:C6)

✅ Lowest Math score (45)

---

12. ROUND

=ROUND(AVERAGE(C2:C6),2)

✅ Rounds average to 2 decimals.

---

13. ABS

If a student got -5 bonus:

=ABS(-5)

✅ Returns 5

---

14. SUBTOTAL

=SUBTOTAL(9,C2:C6)

(9 = SUM)
✅ Ignores filtered rows.

🏢 DATASET 2: Sales Report

Product	Region	Sales	Month
Laptop	North	1200	Jan
Mouse	South	300	Jan
Laptop	North	1500	Feb
Keyboard	East	400	Jan
Laptop	West	1100	Jan

---

15. IF

=IF(C2>=1000,"High","Low")

✅ Classifies sales.

---

16. IFS

=IFS(C2>=1500,"Excellent",C2>=1000,"Good",C2<1000,"Low")

---

17. AND

=AND(C2>=1000,B2="North")

---

18. OR

=OR(C2>=1000,B2="South")

---

19. NOT

=NOT(C2>=1000)

---

20. IFERROR

=IFERROR(C2/D2,"Error")

👨‍💼 **DATASET 3: Employees**

ID	Name	Department	Salary
201	Ahmed	IT	900
202	Noor	HR	700
203	Sami	Finance	1000
204	Rana	IT	850

---

21. VLOOKUP

Find salary by ID:

=VLOOKUP(202,A2:D5,4,FALSE)

✅ Returns 700

---

22. HLOOKUP

If arranged horizontally:

=HLOOKUP("Salary",A1:D2,2,FALSE)

---

23. XLOOKUP (Modern & Best)

=XLOOKUP(203,A2:A5,D2:D5)

✅ Returns 1000

Advantages:

- Can lookup left
- More flexible
- Safer than VLOOKUP

---

24. INDEX

=INDEX(D2:D5,3)

✅ Returns 1000

---

25. MATCH

=MATCH(203,A2:A5,0)

✅ Returns 3

---

26. OFFSET

=OFFSET(A2,2,3)

Moves 2 rows down and 3 columns right.

📝 **DATASET 4: Text Data**

First Name	Last Name
Ali	Hassan
Sara	Ahmed

---

27. CONCAT

=CONCAT(A2," ",B2)

Ali Hassan

---

28. LEFT

=LEFT(A2,3)

Ali

RIGHT

=RIGHT(B2,3)

MID

=MID(A2,2,2)

---

29. LEN

=LEN(A2)

Ali → 3

---

30. TRIM

If cell contains extra spaces:

=TRIM(A2)

Removes extra spaces.

🎓 **Most Important for University Exams**

🔥 High Priority:

- IF / IFS
- SUMIF / SUMIFS
- COUNTIF / COUNTIFS
- XLOOKUP
- INDEX + MATCH
- IFERROR
- SUBTOTAL

---

5. 🔢 Function Numbers (Very Important)

SUBTOTAL has **two groups of function numbers**:

- 1️⃣ **Includes manually hidden rows**

Function	Code
AVERAGE	1
COUNT	2
COUNTA	3
MAX	4
MIN	5
SUM	9

- 2️⃣ **Ignores manually hidden rows (Recommended)**

Function	Code
AVERAGE	101
COUNT	102
COUNTA	103
MAX	104
MIN	105
SUM	109

- 🔥 **Most Used Codes**
- 9 → SUM
- 1 → AVERAGE
- 2 → COUNT
- 109 → SUM (ignores hidden rows)

- 🎯 **Why SUBTOTAL is Important?**

Regular SUM	**SUBTOTAL**
Counts all rows	Ignores filtered rows
Not dynamic with filters	Dynamic
Basic reports	Professional dashboards

---

4. Working with Data - Freezing Panes and View Options

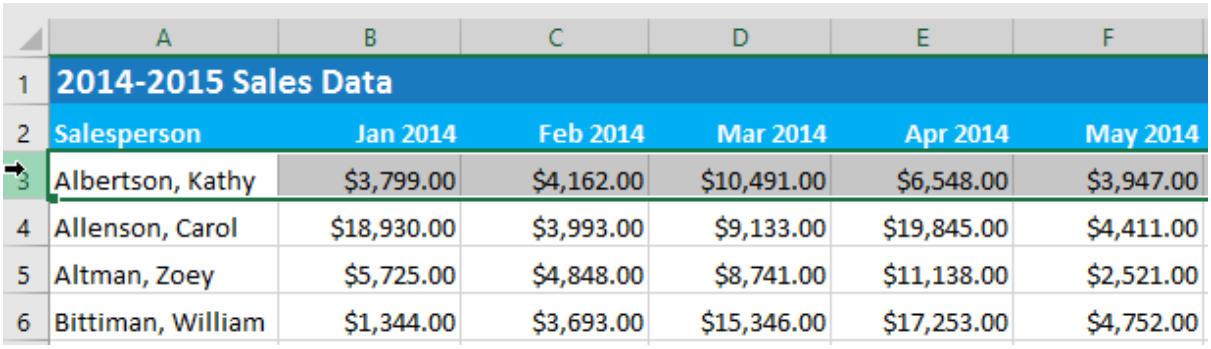
4.1. Introduction

Whenever you're working with a lot of data, it can be difficult to **compare** information in your workbook. Fortunately, Excel includes several tools that make it easier to view content from different parts of your workbook at the same time, including the ability to **freeze panes** and **split** your worksheet.

4.2. To freeze rows:

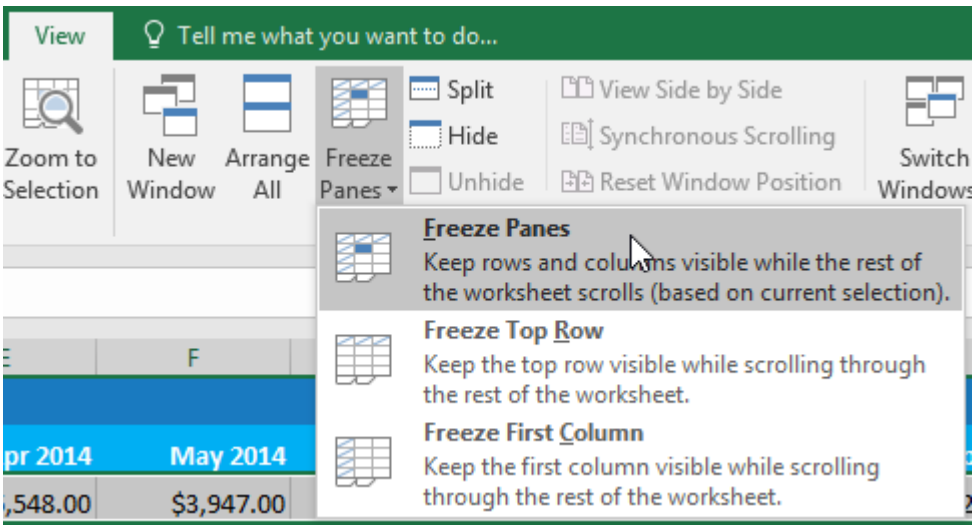
You may want to see certain rows or columns all the time in your worksheet, especially **header cells**. By **freezing** rows or columns in place, you'll be able to scroll through your content while continuing to view the frozen cells.

1. Select the **row** below the row(s) you want to **freeze**. In our example, we want to freeze rows **1** and **2**, so we'll select row **3**.

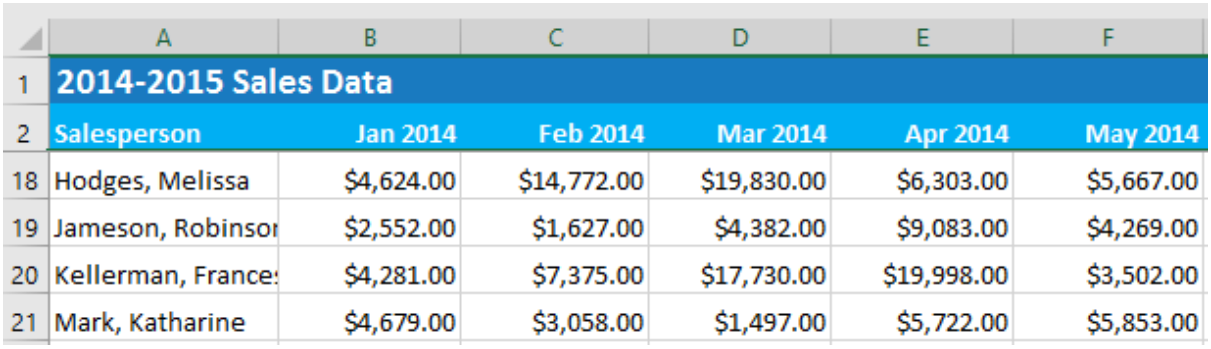


	A	B	C	D	E	F
1	2014-2015 Sales Data					
2	Salesperson	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014
3	Albertson, Kathy	$3,799.00	$4,162.00	$10,491.00	$6,548.00	$3,947.00
4	Allenson, Carol	$18,930.00	$3,993.00	$9,133.00	$19,845.00	$4,411.00
5	Altman, Zoey	$5,725.00	$4,848.00	$8,741.00	$11,138.00	$2,521.00
6	Bittiman, William	$1,344.00	$3,693.00	$15,346.00	$17,253.00	$4,752.00

2. On the **View** tab, select the **Freeze Panes** command, then choose **Freeze Panes** from the drop-down menu.



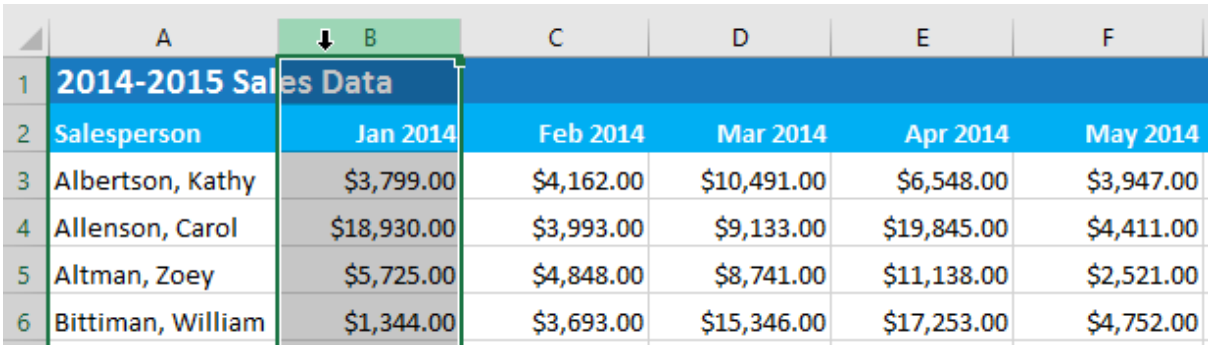
3. The rows will be **frozen** in place, as indicated by the **gray line**. You can **scroll down** the worksheet while continuing to view the frozen rows at the top. In our example, we've scrolled down to row **18**.



	A	B	C	D	E	F
1	2014-2015 Sales Data					
2	Salesperson	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014
18	Hodges, Melissa	$4,624.00	$14,772.00	$19,830.00	$6,303.00	$5,667.00
19	Jameson, Robinsor	$2,552.00	$1,627.00	$4,382.00	$9,083.00	$4,269.00
20	Kellerman, France:	$4,281.00	$7,375.00	$17,730.00	$19,998.00	$3,502.00
21	Mark, Katharine	$4,679.00	$3,058.00	$1,497.00	$5,722.00	$5,853.00

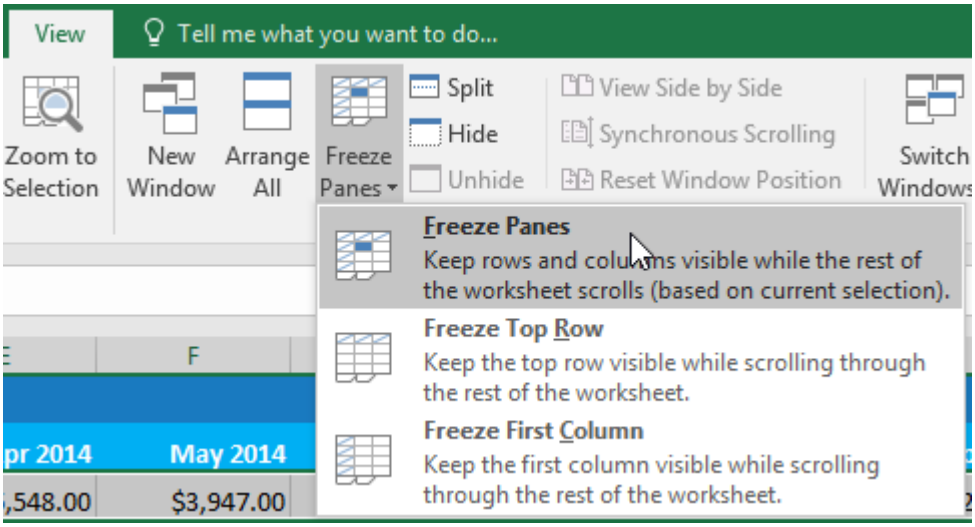
4.3. To freeze columns:

1. Select the **column** to the right of the column(s) you want to **freeze**. In our example, we want to freeze **column A**, so we'll select column **B**.



	A	B	C	D	E	F
1	2014-2015 Sales Data					
2	Salesperson	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014
3	Albertson, Kathy	$3,799.00	$4,162.00	$10,491.00	$6,548.00	$3,947.00
4	Allenson, Carol	$18,930.00	$3,993.00	$9,133.00	$19,845.00	$4,411.00
5	Altman, Zoey	$5,725.00	$4,848.00	$8,741.00	$11,138.00	$2,521.00
6	Bittiman, William	$1,344.00	$3,693.00	$15,346.00	$17,253.00	$4,752.00

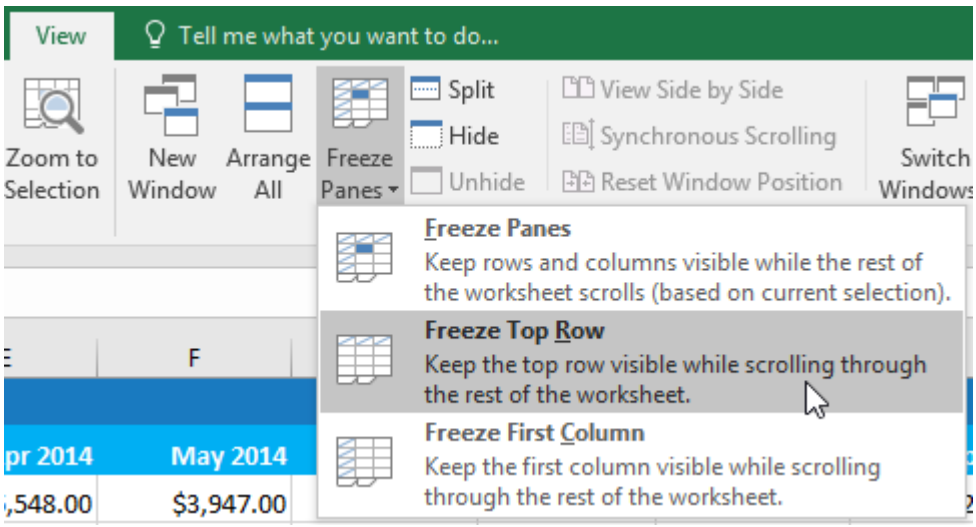
2. On the **View** tab, select the **Freeze Panes** command, then choose **Freeze Panes** from the drop-down menu.



3. The column will be **frozen** in place, as indicated by the **gray line**. You can **scroll across** the worksheet while continuing to view the frozen column on the left. In our example, we've scrolled across to column **E**.

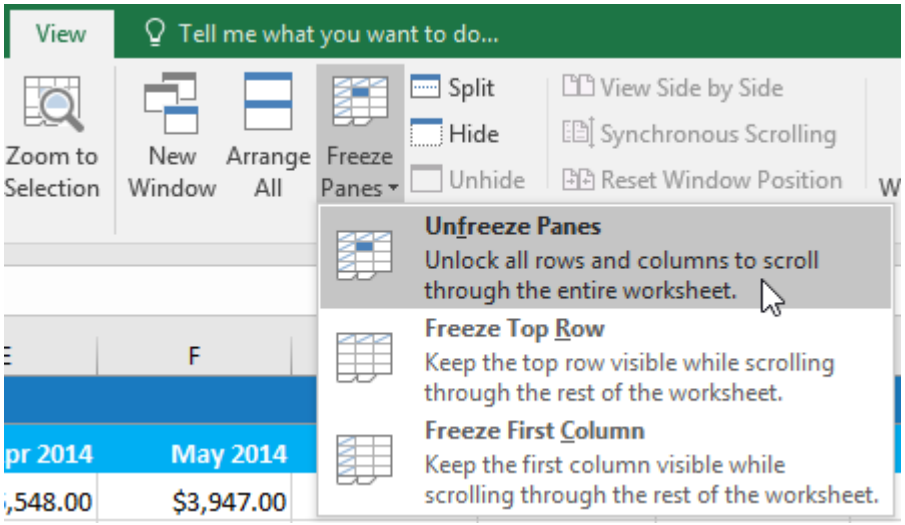
	A	E	F	G	H	I
1	2014-2015 Sal					
2	Salesperson	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014
3	Albertson, Kathy	$6,548.00	$3,947.00	$557.00	$3,863.00	$1,117.00
4	Allenson, Carol	$19,845.00	$4,411.00	$1,042.00	$9,355.00	$1,100.00
5	Altman, Zoey	$11,138.00	$2,521.00	$3,072.00	$6,702.00	$2,116.00
6	Bittiman, William	$17,253.00	$4,752.00	$3,755.00	$4,415.00	$1,089.00

If you only need to freeze the **top row** (row 1) or **first column** (column A) in the worksheet, you can simply select **Freeze Top Row** or **Freeze First Column** from the drop-down menu.



4.4. To unfreeze panes:

If you want to select a different view option, you may first need to reset the spreadsheet by unfreezing panes. To **unfreeze** rows or columns, click the **Freeze Panes** command, then select **Unfreeze Panes** from the drop-down menu.



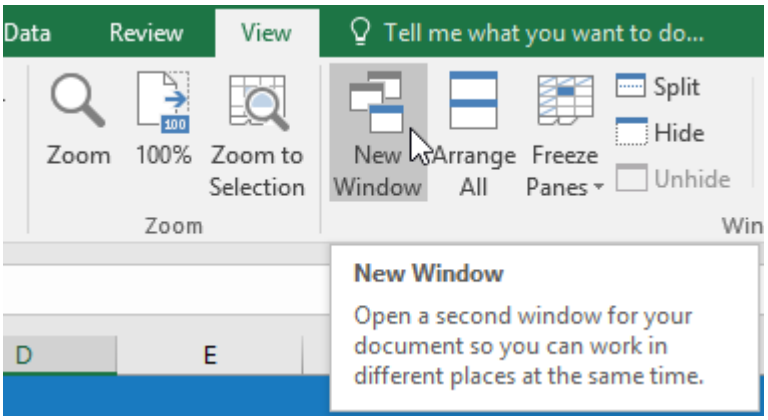
4.5.Other view options

If your workbook contains a lot of content, it can sometimes be difficult to compare different sections. Excel includes additional options to make your workbooks easier to view and compare. For example, you can choose to **open a new window** for your workbook or **split a worksheet** into separate panes.

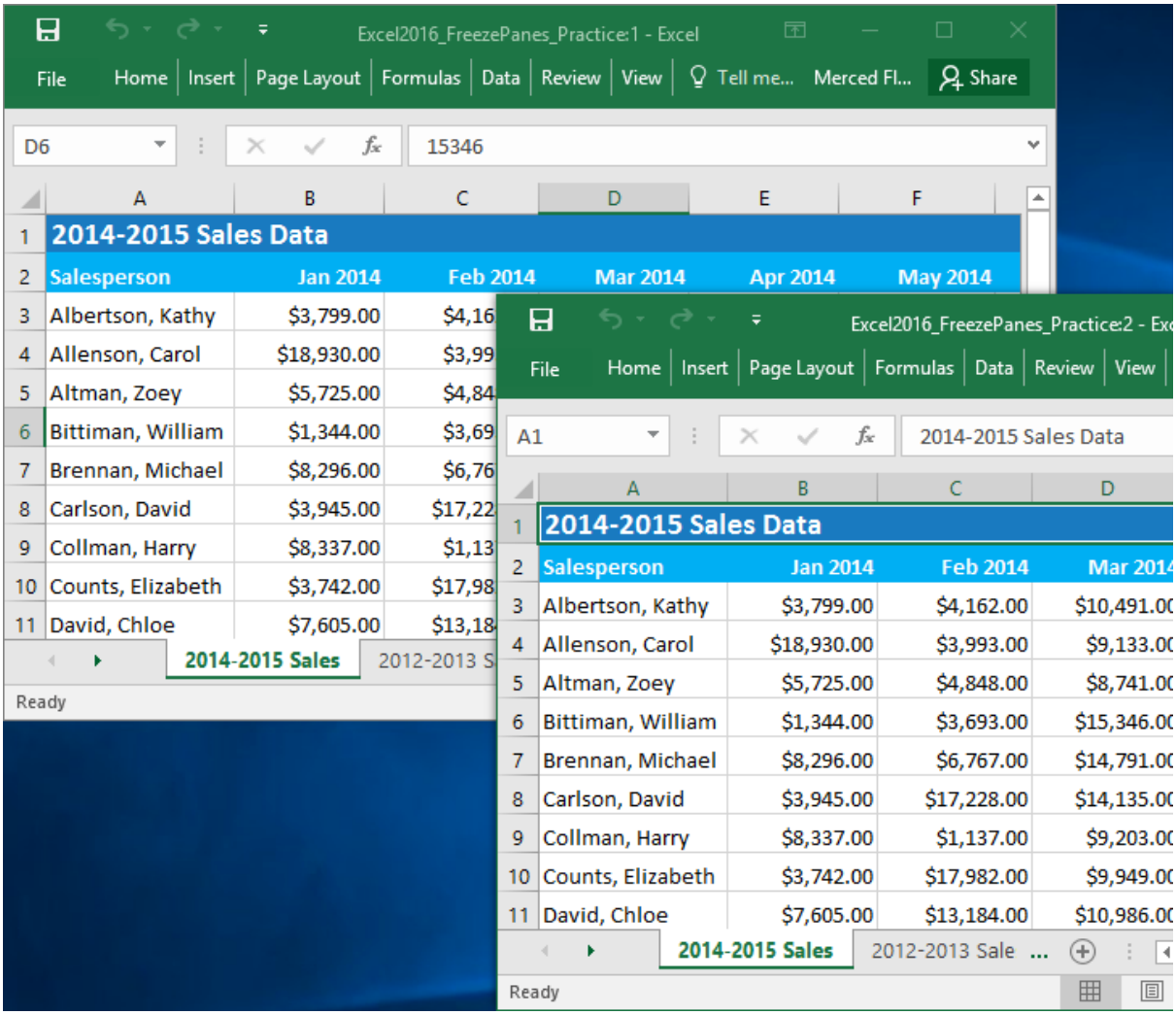
4.5.1. To open a new window for the current workbook:

Excel allows you to open **multiple windows** for a single workbook at the same time. In our example, we'll use this feature to compare two different **worksheets** from the same workbook.

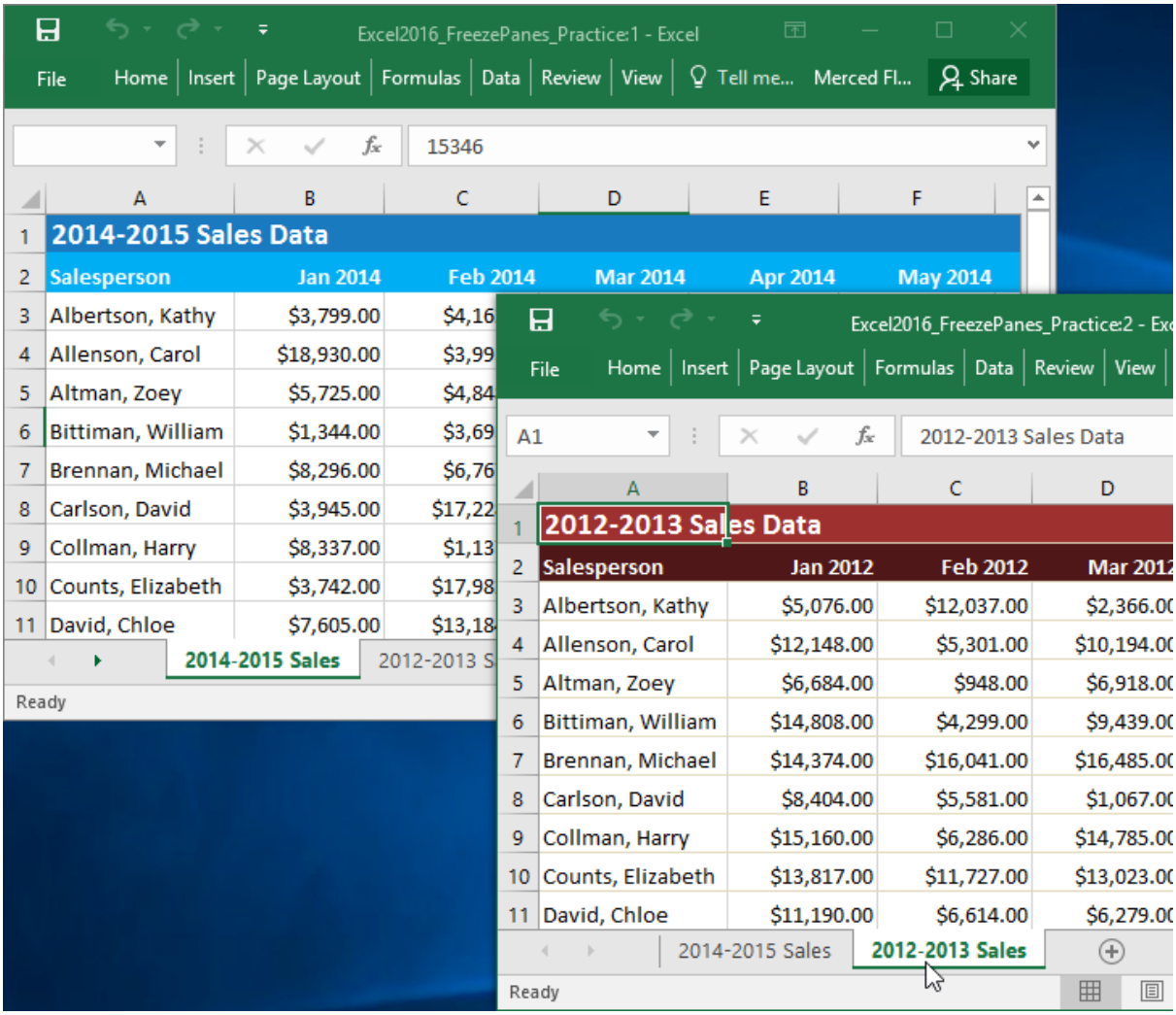
1. Click the **View** tab on the **Ribbon**, then select the **New Window** command.



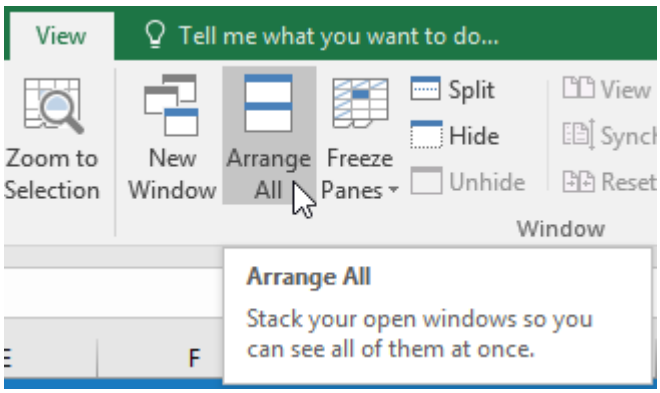
2. A **new window** for the workbook will appear.



3. You can now compare different worksheets from the same workbook across windows. In our example, we'll select the **2013 Sales Detailed View** worksheet to compare **2012** and **2013** sales.



If you have several windows open at the same time, you can use the **Arrange All** command to rearrange them quickly.



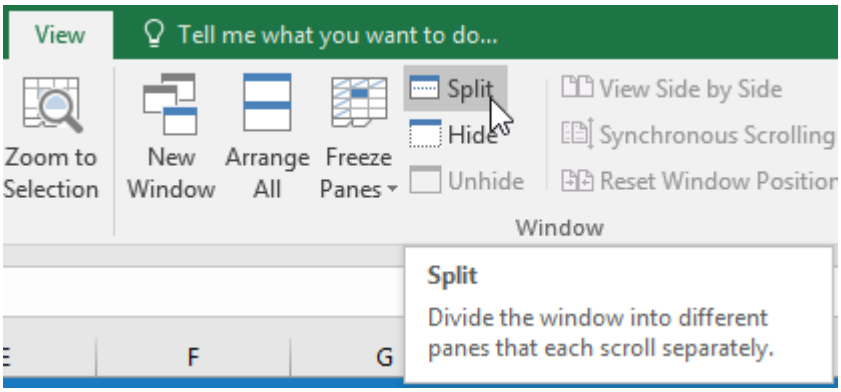
4.5.2. To split a worksheet:

Sometimes you may want to compare different sections of the same workbook without creating a new window. The **Split** command allows you to **divide** the worksheet into multiple panes that scroll separately.

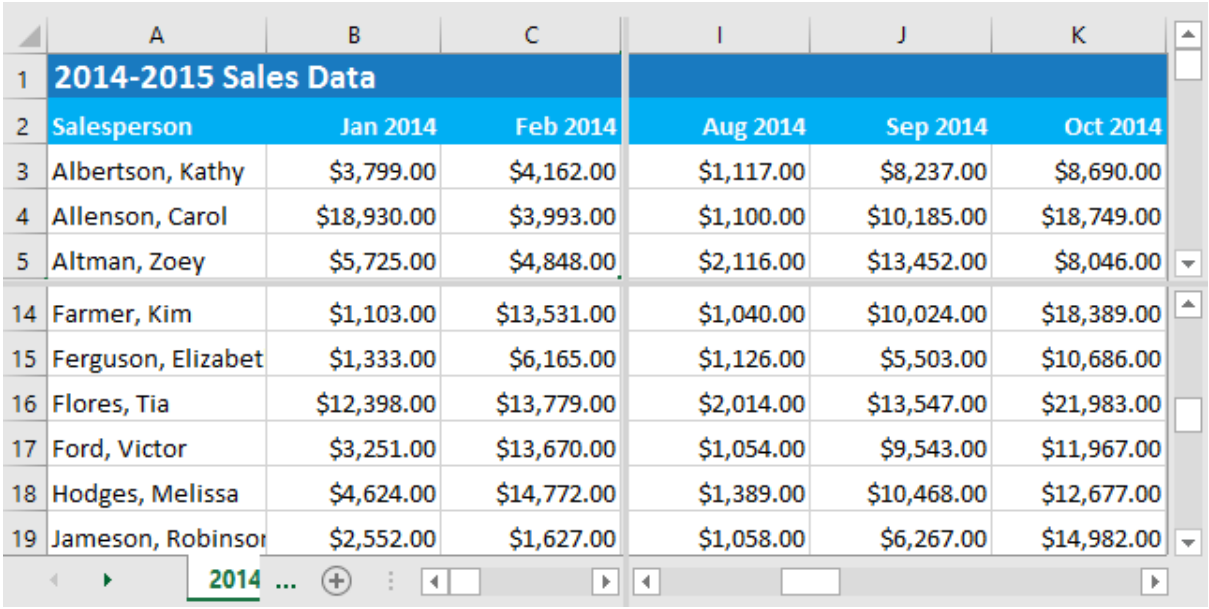
1. Select the **cell** where you want to split the worksheet. In our example, we'll select cell **D6**.

	A	B	C	D	E	F
1	2014-2015 Sales Data					
2	Salesperson	Jan 2014	Feb 2014	Mar 2014	Apr 2014	May 2014
3	Albertson, Kathy	$3,799.00	$4,162.00	$10,491.00	$6,548.00	$3,947.00
4	Allenson, Carol	$18,930.00	$3,993.00	$9,133.00	$19,845.00	$4,411.00
5	Altman, Zoey	$5,725.00	$4,848.00	$8,741.00	$11,138.00	$2,521.00
6	Bittiman, William	$1,344.00	$3,693.00	$15,346.00	$17,253.00	$4,752.00
7	Brennan, Michael	$8,296.00	$6,767.00	$14,791.00	$14,130.00	$4,964.00
8	Carlson, David	$3,945.00	$17,228.00	$14,135.00	$19,306.00	$2,327.00
9	Collman, Harry	$8,337.00	$1,137.00	$9,203.00	$2,302.00	$3,967.00
10	Counts, Elizabeth	$3,742.00	$17,982.00	$9,949.00	$17,075.00	$4,670.00
11	David, Chloe	$7,605.00	$13,184.00	$10,986.00	$5,401.00	$3,379.00

2. Click the **View** tab on the **Ribbon**, then select the **Split** command.



3. The workbook will be **split** into different **panes**. You can scroll through each pane separately using the **scroll bars**, allowing you to compare different sections of the workbook.



	A	B	C	I	J	K
1	2014-2015 Sales Data					
2	Salesperson	Jan 2014	Feb 2014	Aug 2014	Sep 2014	Oct 2014
3	Albertson, Kathy	$3,799.00	$4,162.00	$1,117.00	$8,237.00	$8,690.00
4	Allenson, Carol	$18,930.00	$3,993.00	$1,100.00	$10,185.00	$18,749.00
5	Altman, Zoey	$5,725.00	$4,848.00	$2,116.00	$13,452.00	$8,046.00
14	Farmer, Kim	$1,103.00	$13,531.00	$1,040.00	$10,024.00	$18,389.00
15	Ferguson, Elizabet	$1,333.00	$6,165.00	$1,126.00	$5,503.00	$10,686.00
16	Flores, Tia	$12,398.00	$13,779.00	$2,014.00	$13,547.00	$21,983.00
17	Ford, Victor	$3,251.00	$13,670.00	$1,054.00	$9,543.00	$11,967.00
18	Hodges, Melissa	$4,624.00	$14,772.00	$1,389.00	$10,468.00	$12,677.00
19	Jameson, Robinsor	$2,552.00	$1,627.00	$1,058.00	$6,267.00	$14,982.00

2014 ...

4. After creating a split, you can click and drag the vertical and horizontal dividers to change the size of each section.

To remove the split, click the **Split** command again.