

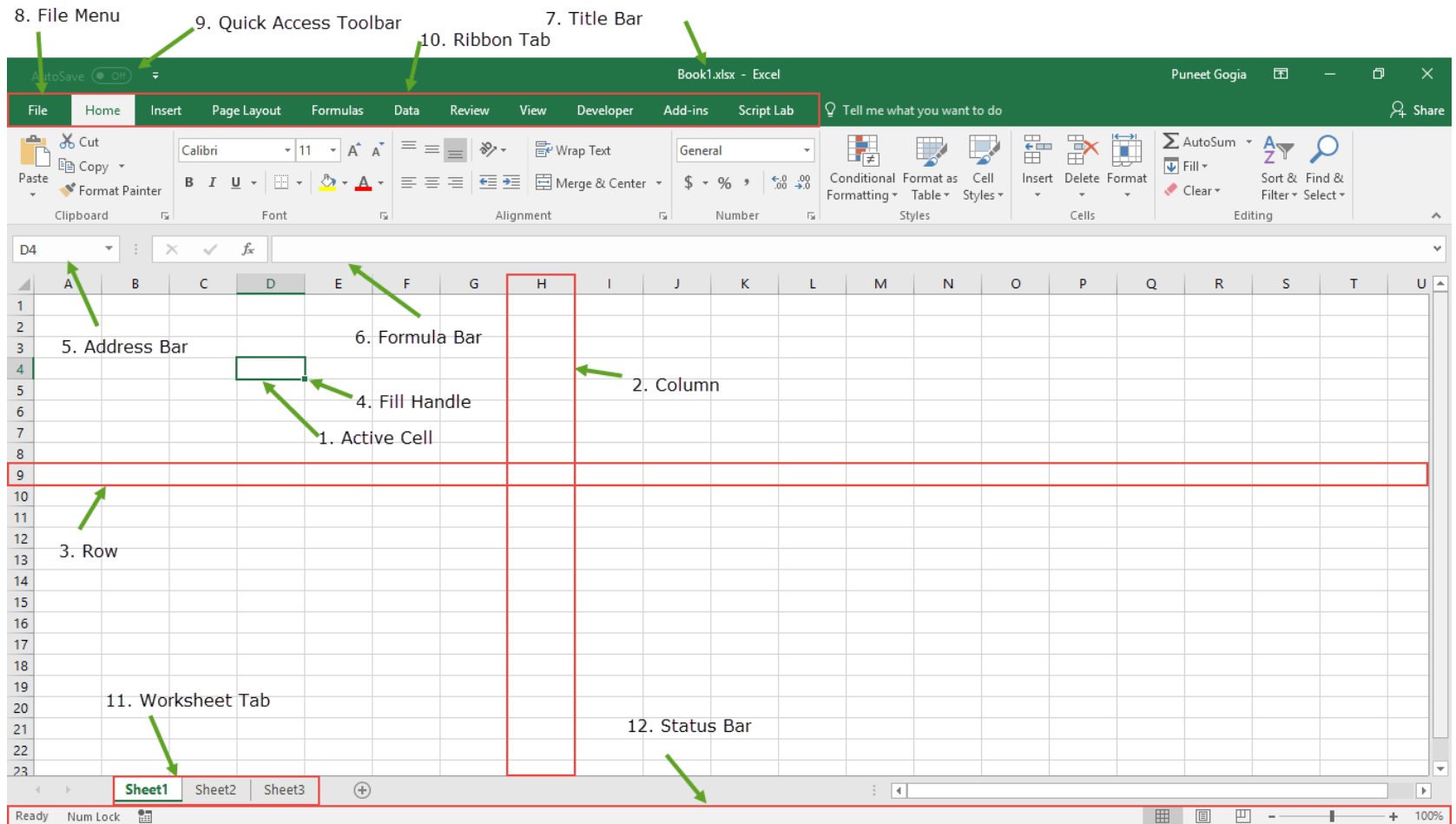
Microsoft Excel for Data Analytics



Introduction to Excel

- Excel is a computer programme used to create electronic spreadsheets.
- Excel helps a user organize data, create charts and perform calculations.
- It consists of **workbooks**, each workbook contain **worksheets** and each worksheet contains **columns** (vertical) and **rows** (horizontal).

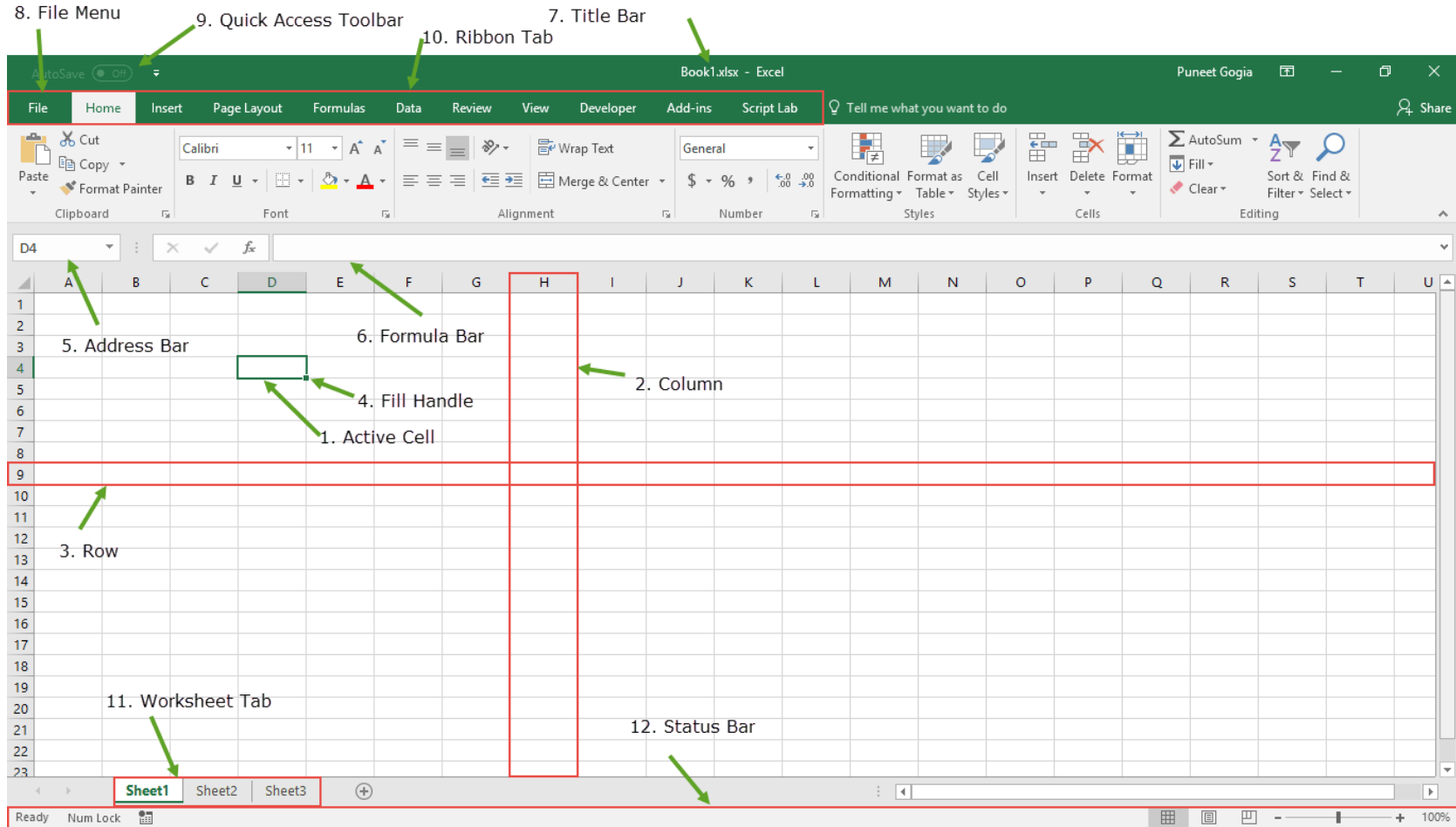
Introduction to Spreadsheets



1. Active Cell:

A cell which is currently selected. It will be highlighted by a rectangular box and its address will be shown in the address bar. You can activate a cell by clicking on it or by using your arrow buttons. To edit a cell, you **double-click** on it or use **F2**.

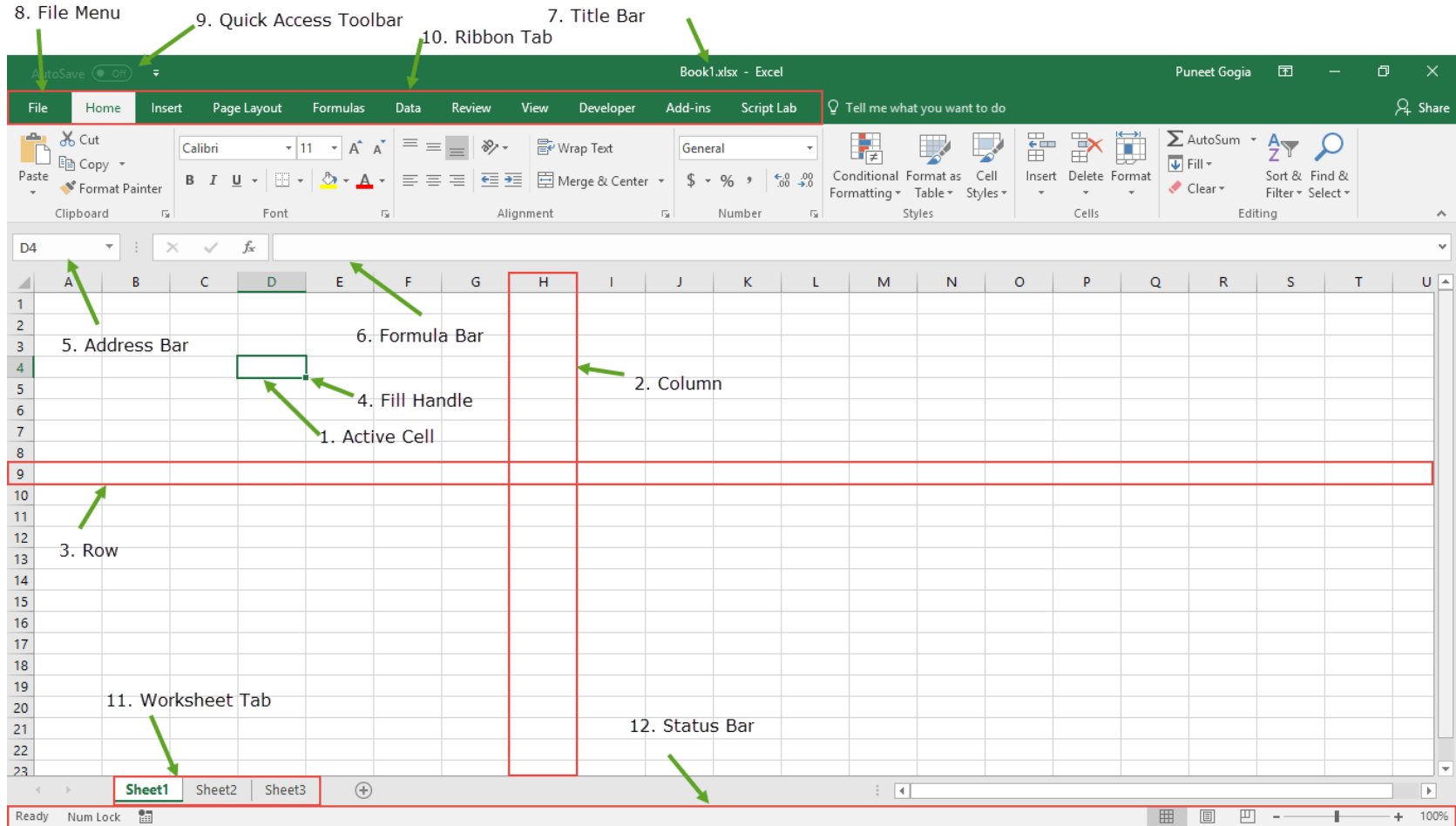
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2. Column:

A column is a **vertical set of cells**. A single worksheet contains **16384** total columns. Every column has its own **alphabet** for identity, from A to XFD. You can select a column clicking on its header. Column Contains **Attributes**

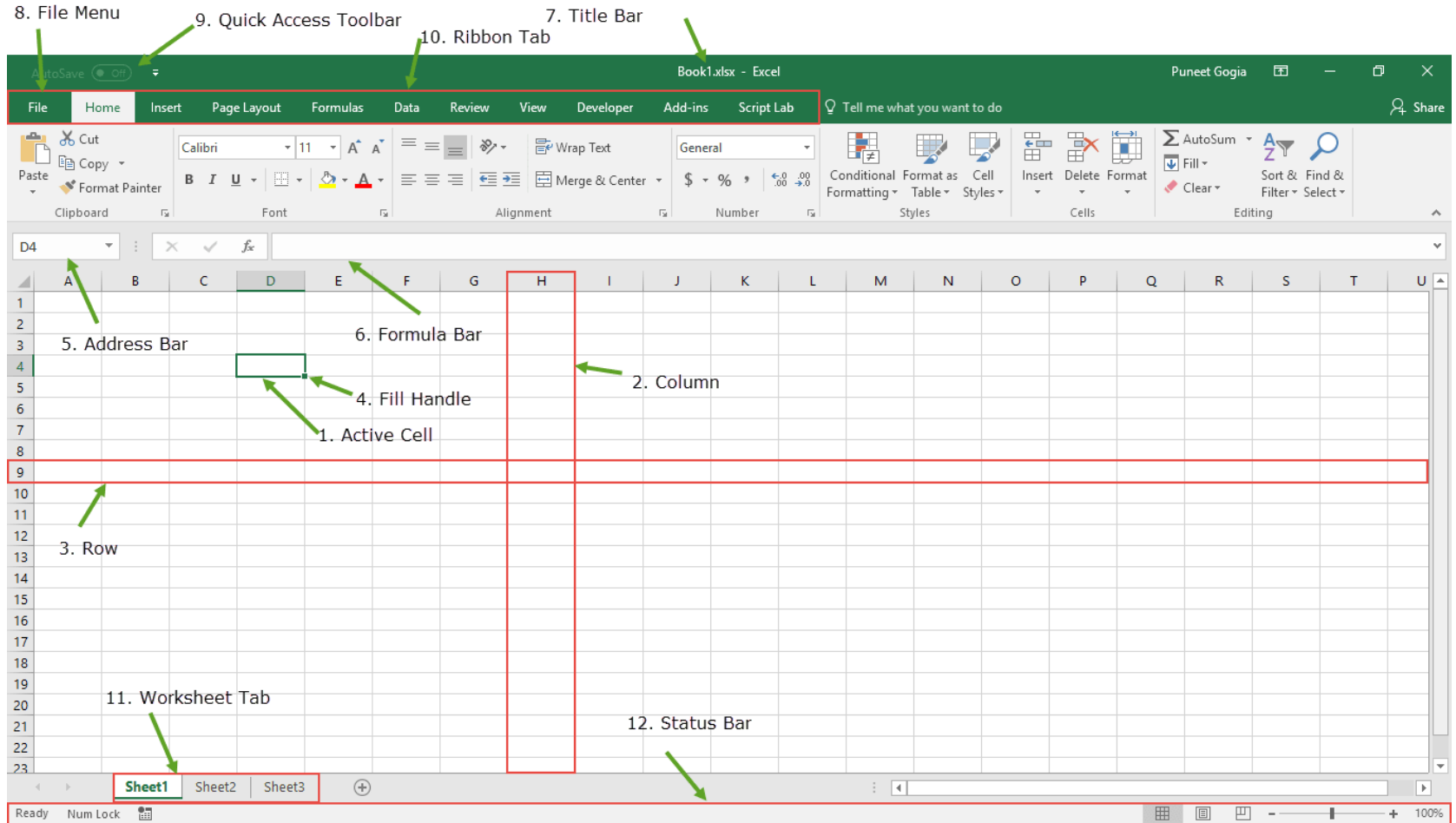
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3. Row:

A row is a **horizontal set of cells**. A single worksheet contains **1048576** total rows. Every row has its own number for identity, starting from 1 to 1048576. You can select a row clicking on the row number marked on the left side of the window. Rows contain **records**

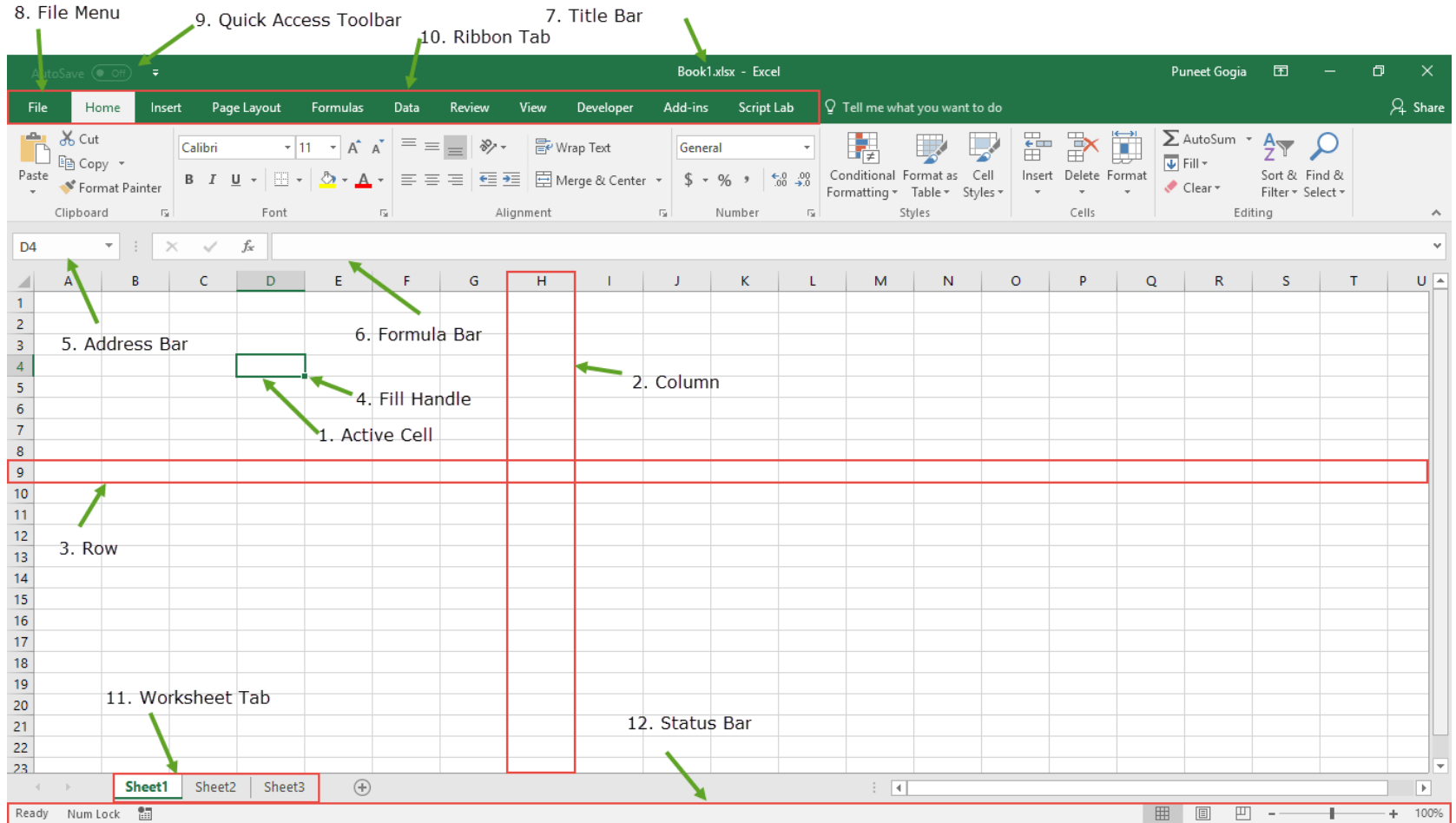
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4. Fill Handle:

It's a **small dot** present on the **lower right corner of the active cell**. It helps you to fill numeric values, text series, insert ranges, insert serial numbers, etc.

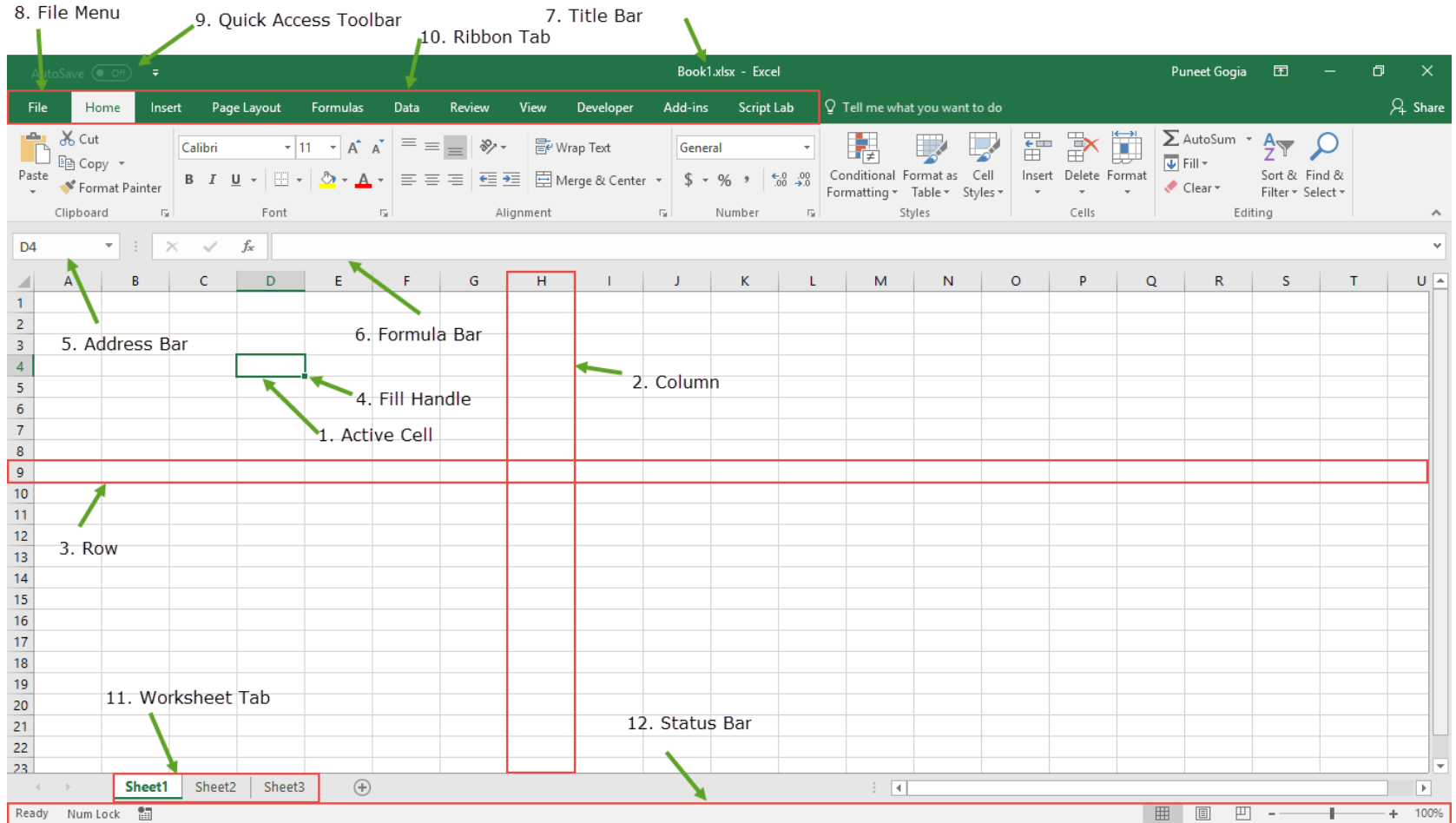
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5. Address Bar:

The address bar is **the small input bar at the left side of the window**. It shows the address of the active cell. If you have selected more than one cell, then it will show the address of the first cell in the range.

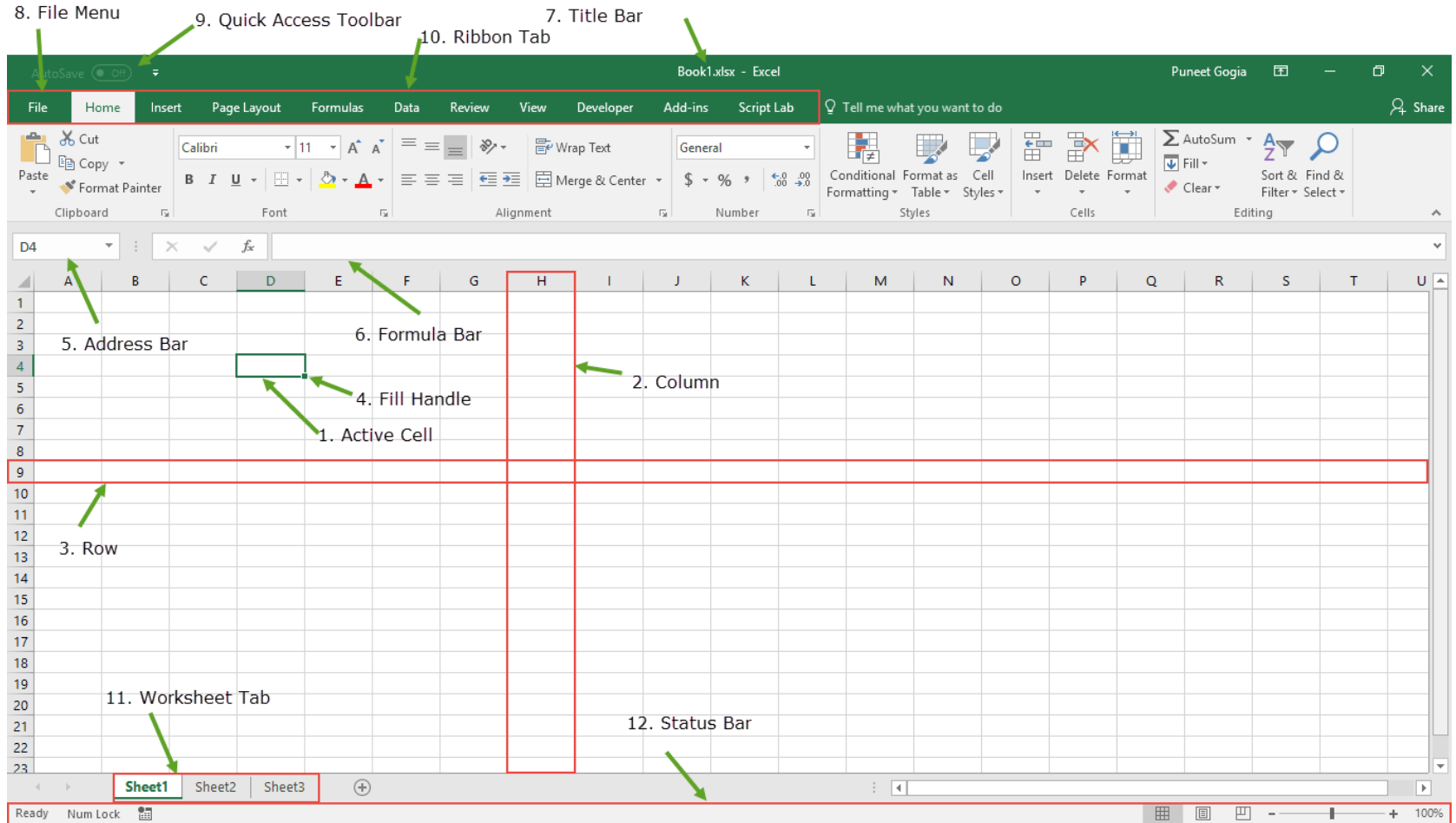
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6. Formula Bar:

Formula bar is an **input bar**, below the ribbon. It shows the content of the **active cell** and you can also use it to enter a formula in a cell.

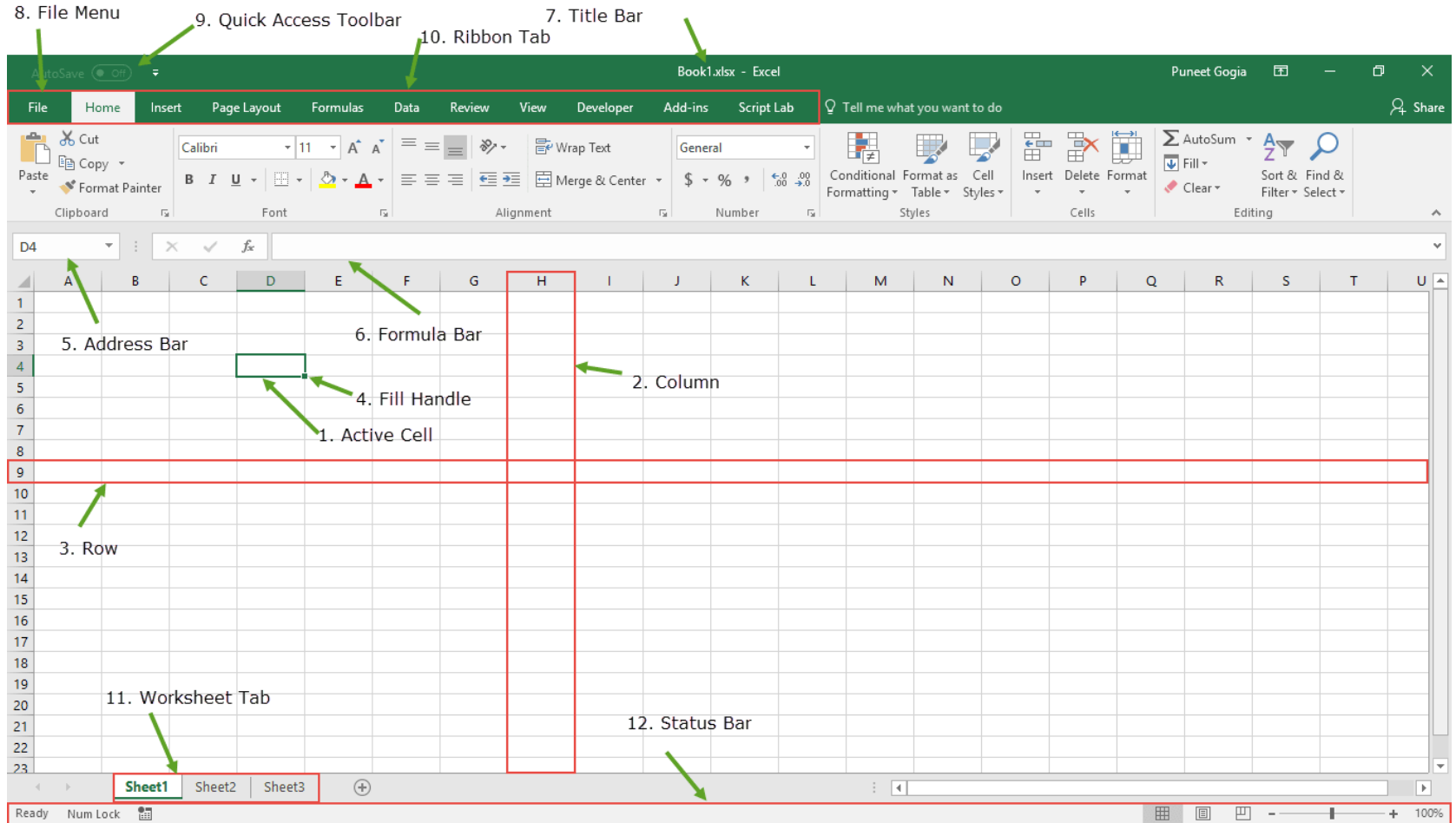
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7. File Menu:

The file menu is a simple menu as like all other applications. It contains options like (Save, Save As, Open, New, Print, Excel Options, Share, etc).

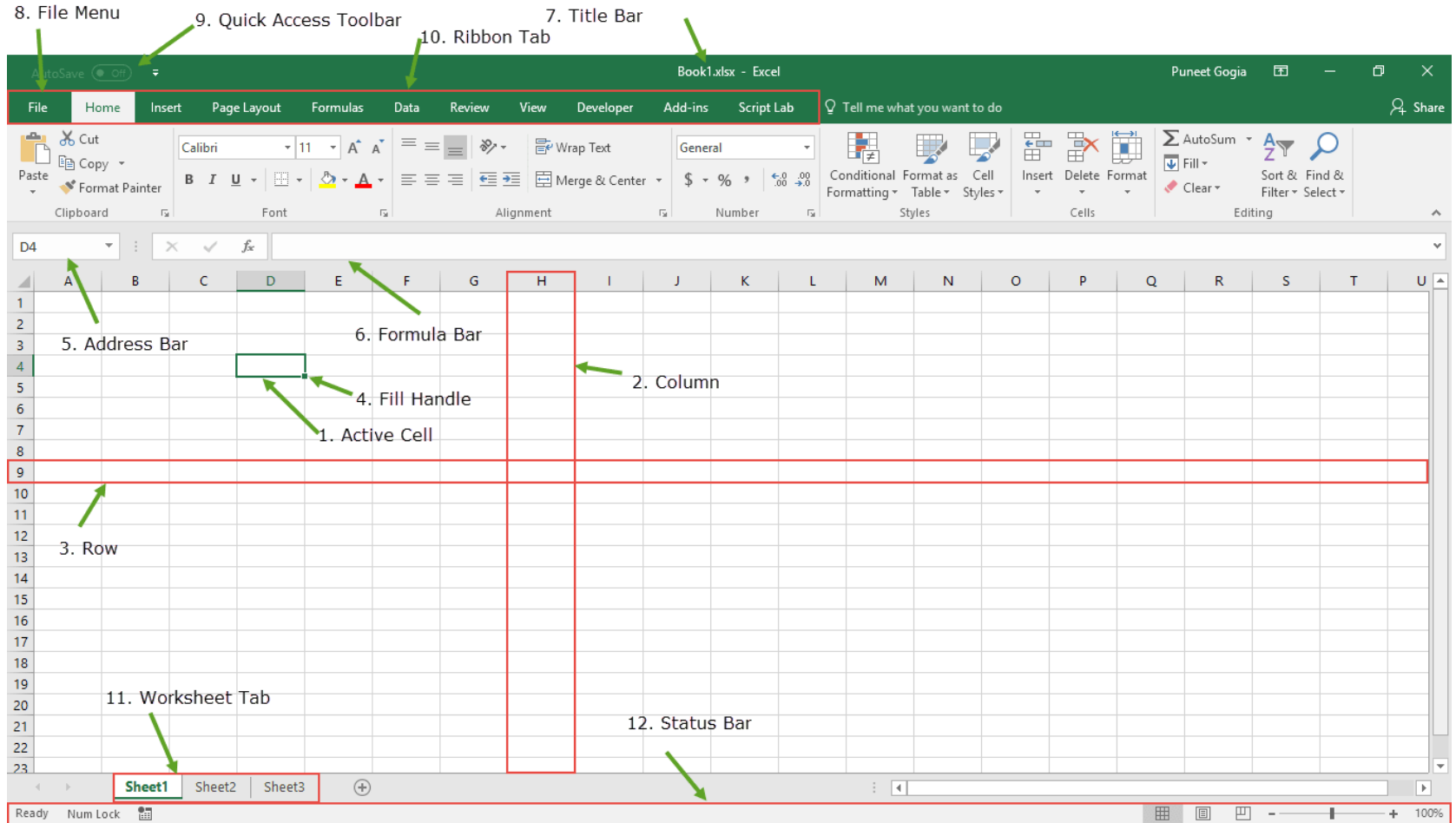
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8. Quick Access Toolbar:

A toolbar to **quickly access the options** which you frequently use. You can add your favourite options by adding new options to quick access toolbar.

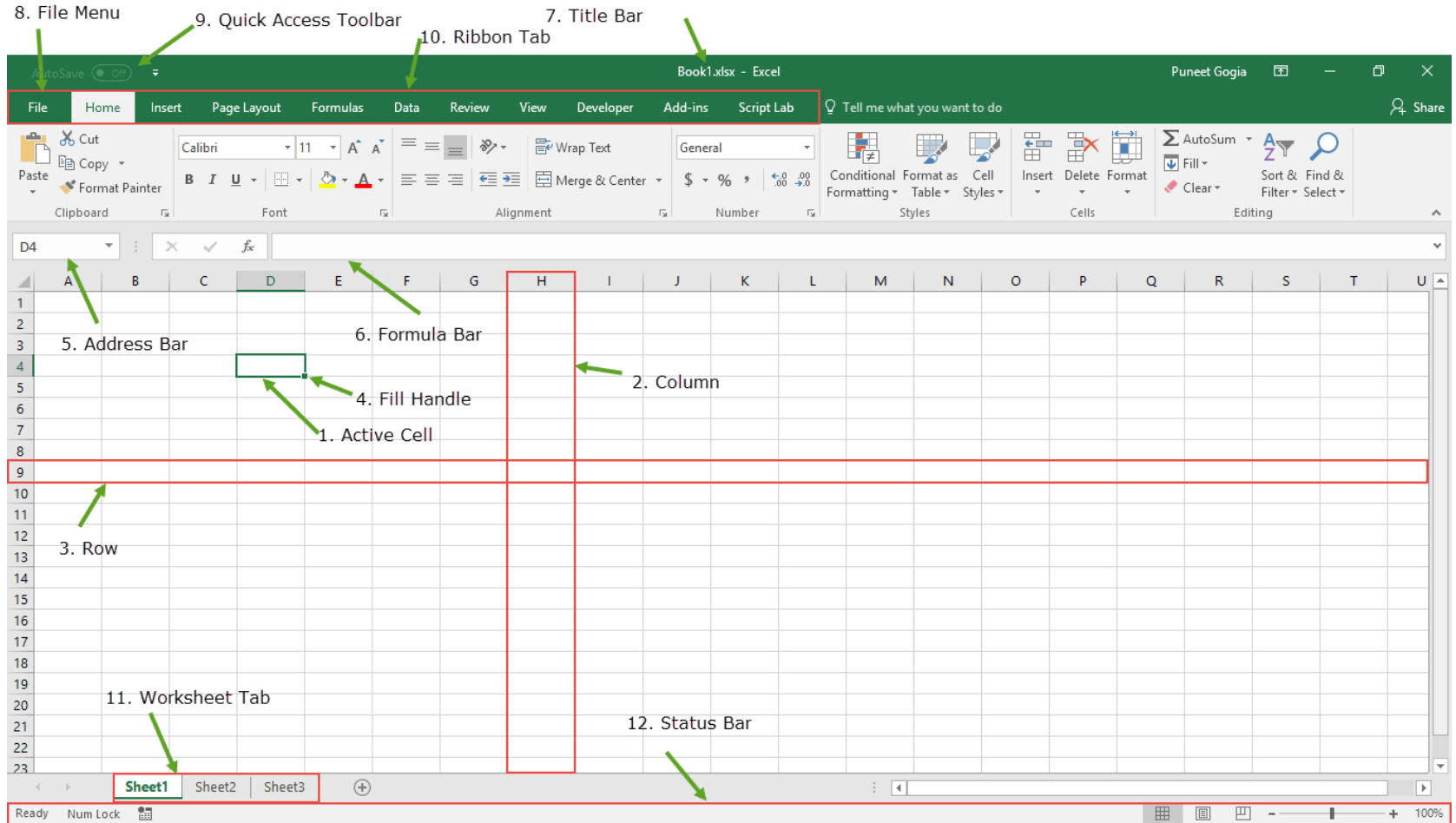
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9. Ribbon Tab:

Starting from the Microsoft Excel 2007, all the options menus are replaced with the ribbons. Ribbon tabs are the bunch of specific option group which further contains option.

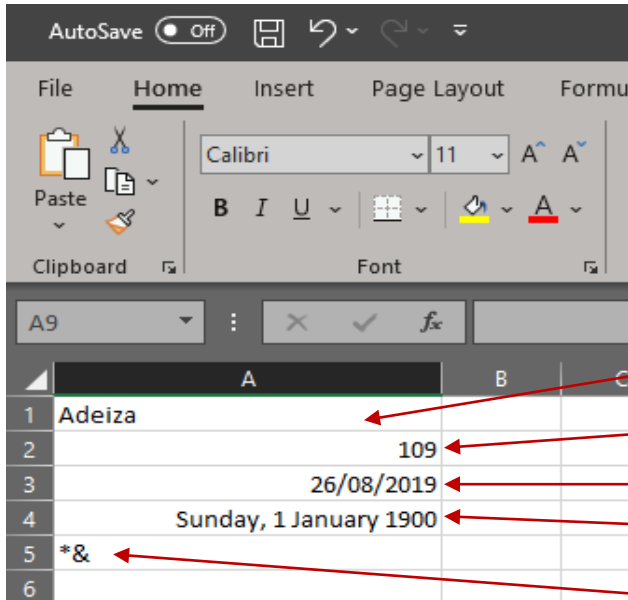
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10. Status Bar:

It is a thin bar at the bottom of the Excel window. It will give you an instant help once you start your working in Excel.

Introduction to Spreadsheets



Texts always align to the left

Numerical Values align to the right

Dates are also numbers and align to the right

This is also a date

Symbols are also related as texts in Excel except when used in a formula

To change the format in Excel use this shortcut: **Ctrl + 1**

Introduction to Spreadsheets

Use Shortcuts (1/2)

- **F2** – Enter into a cell
- **F4** – Repeats last command (or Anchor if within a cell)
- **ESC** – Exit a cell without making any changes
- **Enter** – Moves down a cell
- **Tab** – Moves right a cell
- **Ctrl, Z** – Undo
- **CTRL, D** – Fill Down
- **CTRL, R** – Fill Right
- **Ctrl, (Up, Down, Left or Right)** – Moves to first/last non-empty cell in range
- **Shift, Ctrl (Up, Down, Left or Right)** – Highlights up until last non-empty cell in range
- **Ctrl, Home** – Moves to Cell A1 (unless another home cell has been defined)
- **Ctrl, PgUp/Dn** – Moves between worksheets within workbook
- **Alt, Down** – Opens a drop down list
- **Ctrl, Tab** – Flips between open files of the same program

Introduction to Spreadsheets

Use Shortcuts (2/2)

C	
Shift	Acts as an Anchor
Ctrl	Helps you Accelerate
Alt	Highlights Menu Bar
←↑↓→	Move you around
Tab	Move between tabs
"Spacebar"	Selects a check box
Shift F10	"Right Click"

D

Moving Around

1	Ctrl Home	Go to top of worksheet
2	Ctrl End	Go to end of worksheet
3	Ctrl ↓	Accelerate down to end
4	Ctrl PgDn	Go to next worksheet (Right)
5	Ctrl PgUp	Go to previous worksheet (Left)
6	Ctrl Tab	Flip between Excel workbooks

E

Selecting Things

7	Shift ↓	Highlight in direction of arrow	32
8	Shift Ctrl ↓	Highlight everything until the end	43
9	Shift Ctrl *	Selects a contiguous area	122
10	Ctrl A	Similar (try doing it twice)	
11	Shift Spacebar	Selects an entire ROW	
12	Ctrl Spacebar	Selects an entire COLUMN	

32
43
122

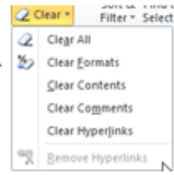
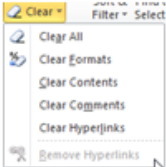
F		Formatting Cells
13	Ctrl 1	Format Cells
14	Alt O E	Format Cells
... Ctrl Tab to move between tabs		
15	Shift Ctrl !	44.00
16	Shift Ctrl @	12:00 AM
17	Shift Ctrl #	13-Feb-00
18	Shift Ctrl \$	\$44.00
19	Shift Ctrl %	4400%
20	Shift Ctrl &	Borders on outside area

Copying and Pasting		
21	Ctrl C or X	Copy.... Or Cut
22	Ctrl V	Paste to selected cells or range
23	Alt E S T	Pastes the format
24	Alt E S V	Pastes values
25	Alt E S F	Pastes formulas
26	Alt E S N	Paste data validation
27	Alt E S M F	Multiply a range
28	Ctrl D	Fill Down
29	Ctrl R	Fill Right

Whilst Keeping Original Format

Whilst Keeping Original Format

H Inserting, Deleting or Changing		
30	Shift Ctrl +	Will insert highlighted cells or rows
31	Ctrl -	Will delete highlighted cells or rows
32	Alt E A F	Clear all formats
33	Alt E A A	Clear all numbers and formats
34	Alt H E	Clear (... then see choices...)
35	Alt H F S	Change Font Size
36	Alt H O R	Rename Sheet
37	Shift Ctrl _	Remove all borders



Paste Special

Introduction to Spreadsheets

Paste Special **Ctrl + Alt + V**

D9*C10 (Copying this cell and pasting here will paste the **formula**, but we need the value

a.) How do you paste the values of a data set?

	10
2	20
4	40
6	60
8	80

2	
4	
6	
8	

To copy the value:

- Copy the cell (**Ctrl C**)
- **Ctrl + Alt + V** (Paste Special)
- Select **Values** and press OK

b.) How do you paste the format of a data set?

	10
2	20
4	40
6	60
8	80

To copy the format:

- Copy the cell (**Ctrl C**)
- **Ctrl + Alt + V** (Paste Special)
- Select **Formats** and press OK

c.) How do you paste the formulas of a data set?

	10
2	20
4	40
6	60
8	80

	10
20	
40	
60	
80	

To copy the formulas:

- Copy the cell (**Ctrl C**)
- **Ctrl + Alt + V** (Paste Special)
- Select **Formulas** and press OK

Introduction to Spreadsheets

Advanced Paste Special **Ctrl + Alt + V**

	January	February	March	April	May
Revenue	-\$184,790	-\$103,998	-\$96,732	-\$234,550	-\$78,376
COGS	\$123,809	\$69,679	\$64,810	\$157,149	\$52,512
Gross Profit	-\$60,981	-\$34,319	-\$31,922	-\$77,402	-\$25,864

Using the Paste Special multiply feature,
change the sign of the Revenue & COGS row

(1)
1,000



1. Copy negative 1
2. Select the values in Revenue and COGS
3. Open Paste Special **Ctrl + Alt + V**
4. Select the **multiply option**
5. Press **Ok**

Introduction to Spreadsheets

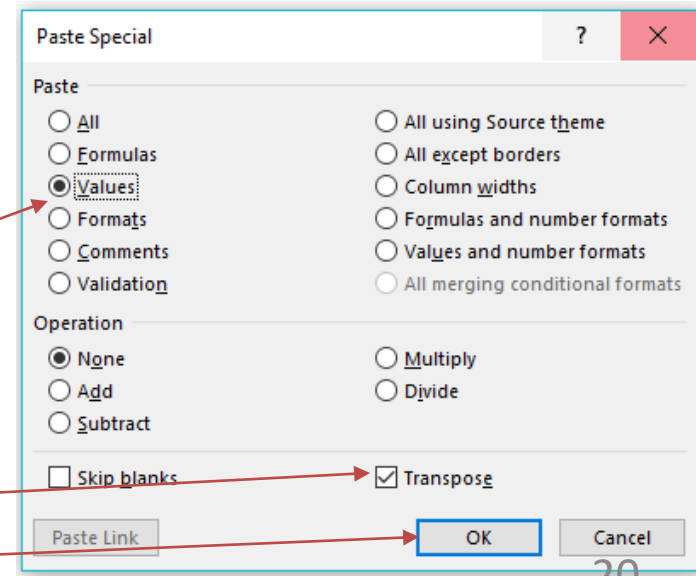
Advanced Paste Special **Ctrl + Alt + V**

You have the months listed in Column F, but you want to transpose the months to Row 87

January
February
March
April
May

\$184,790	\$103,998	\$96,732	\$234,550	\$78,376

1. Copy the months
2. Click on the cell where you want to paste
3. Open Paste Special **Ctrl + Alt + V**
4. Select the **values**
5. Select the **transpose**
6. Press **OK**



Cell Referencing

Cell Referencing

Relative cell references

It does not contain dollar signs in a row or column, e.g. A2

Relative cell references type in excel change when a formula is copied or dragged to another cell, In Excel, cell referencing is relative by default, it is most commonly used cell reference in the formula.

Cell Referencing

Relative cell references

To calculate the total sales for each item, I need to multiply the price of each item with the quantity




The formula in cell F10 would be multiplication in excel – **D10*E10**.

	C	D	E	F
9	PRODUCT	QUANTITY	PRICE	TOTAL_SALES_VALUE
10	CROCIN	144	55	
11	DOLO	133	64	
12	CALPOL	90	49	
13	PACIMOL	140	53	
14	SUMO	101	64	
15	FEPANIL	97	51	
16	PYRIGESIC	64	50	
17				

Cell Referencing

Relative cell references

It returns the total sales value.

F10	:	  	=D10*E10	
	C	D	E	F
9	PRODUCT	QUANTITY	PRICE	TOTAL_SALES_VALUE
10	CROCIN	144	55	7920
11	DOLO	133	64	
12	CALPOL	90	49	
13	PACIMOL	140	53	
14	SUMO	101	64	
15	FEPANIL	97	51	
16	PYRIGESIC	64	50	
17				

Cell Referencing

Relative cell references

To check a relative reference, select any of the cells of Total sales value in column F and you can view the formula in the formula bar

F14

fx

=D14*E14

	C	D	E	F
9	PRODUCT	QUANTITY	PRICE	TOTAL_SALES_VALUE
10	CROCIN	144	55	7920
11	DOLO	133	64	8512
12	CALPOL	90	49	4410
13	PACIMOL	140	53	7420
14	SUMO	101	64	6464
15	FEPANIL	97	51	4947
16	PYRIGESIC	64	50	3200
17				

Cell Referencing

Absolute cell references

In the below mentioned Pharma product table, it contains medicine products in column H (H6:H12) and its old price in column I (I6:I12) & New price in column J which I need to find out with the help of Absolute Cell Reference.

	H	I	J
5	PRODUCT	OLD_PRICE	NEW_PRICE
6	CROCIN	55	
7	DOLO	64	
8	CALPOL	49	
9	PACIMOL	53	
10	SUMO	64	
11	FEPANIL	51	
12	PYRIGESIC	50	
13			

Cell Referencing

Absolute cell references

The rate increase for each product is 5% effective from Jan 2020 and is listed in cell “K3”.

K3				5%	
	H	I	J	K	
2				PERCENTAGE OF RATE INCREASE FROM JAN_2019	
3				5%	
4					
5	PRODUCT	OLD_PRICE	NEW_PRICE		
6	CROCIN	55			
7	DOLO	64			
8	CALPOL	49			
9	PACIMOL	53			
10	SUMO	64			
11	FEPANIL	51			
12	PYRIGESIC	50			
13					

Cell Referencing

Absolute cell references

To calculate the new price for each item, I need to multiply the old price of each item with the percentage price increase (5%) and add old price to it.

Let check out for the first item, For the first item, the formula in cell J6 would be $=I6*\$K\$3+I6$, where it returns new price




	H	I	J	K
2				PERCENTAGE OF RATE INCREASE FROM JAN_2019
3				5%
4				
5	PRODUCT	OLD_PRICE	NEW_PRICE	
6	CROCIN	55	=I6*\$K\$3+I6	
7	DOLO	64		
8	CALPOL	49		
9	PACIMOL	53		
10	SUMO	64		
11	FEPANIL	51		
12	PYRIGESIC	50		
13				

Cell Referencing

Absolute cell references

Here the percentage rate increase for each product is 5%, which is a common factor. Therefore, we have to add dollar symbol, in front of the row and column number for the cell “K3”, to make it absolute reference i.e. \$K\$3, it can be added by clicking function+f4 key once.

Here dollar sign for the cell “K3” fixes the reference to a given cell, where it remains unchanged no matter when you copy or apply a formula to other cells.

J6	:				=I6*\$K\$3+I6
	H	I	J	K	
2				PERCENTAGE OF RATE	
3				INCREASE FROM JAN_2019	
4				5%	
5	PRODUCT	OLD_PRICE	NEW_PRICE		
6	CROCIN	55	57.75		
7	DOLO	64			
8	CALPOL	49			
9	PACIMOL	53			
10	SUMO	64			
11	FEPANIL	51			
12	PYRIGESIC	50			
13					

Cell Referencing

Mixed cell references




In the below-mentioned table. I have values in each row (D22, D23 & D24) & columns (E21, F21 & G21), here I have to multiply Each column with each row with the help of Mixed Cell Reference Type in Excel.

	D	E	F	G
21		1	2	3
22	1			
23	2			
24	3			
25				
26				

Cell Referencing

Mixed cell references

There are two types of mixed cell references can be used here to get the desired output

		:	  	= \$D22 * E\$21
	D	E	F	G
21		1	2	3
22	1	= \$D22 * E\$21		
23	2			
24	3			
25				

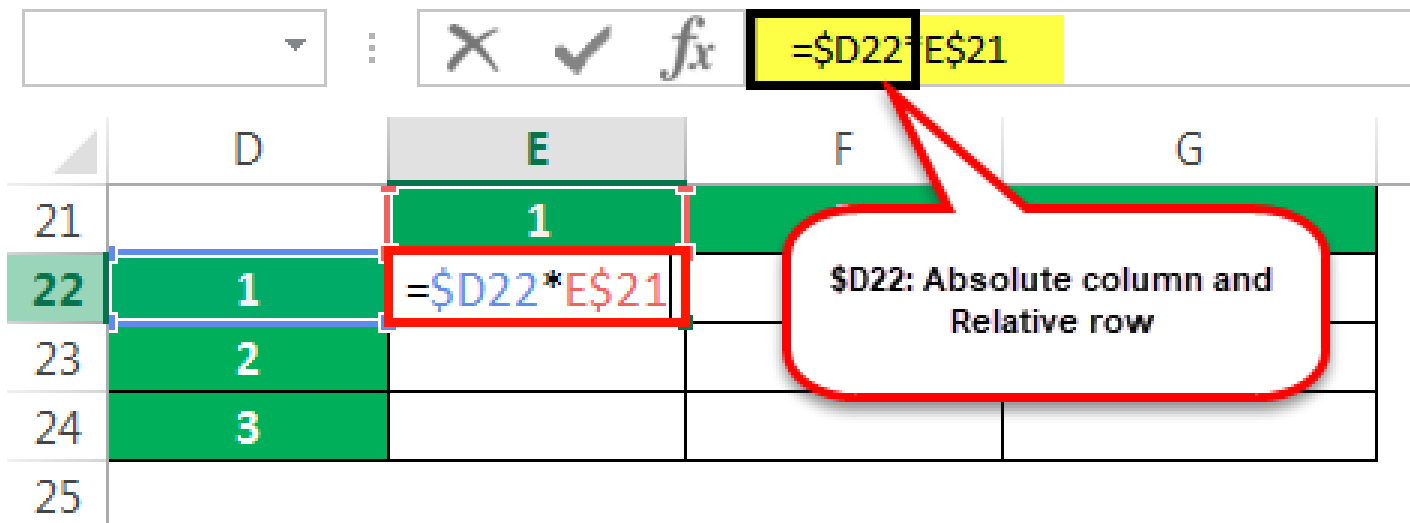
Cell Referencing

Mixed cell references

\$D22: Absolute column and Relative row

Here dollar sign before column D indicates, only row number can change, whereas the column letter D is fixed, it doesn't change.

when you copy the formula to the right side, the reference will not change because it is locked, but When you copy it down, the row number will change, because it is not locked



The image shows an Excel spreadsheet with columns D, E, F, and G, and rows 21 through 25. Column D contains values 1, 2, 3 in rows 22, 23, and 24 respectively. Column E contains the value 1 in row 21. The formula bar at the top shows the formula `=D22*E21` for cell F21. A red box highlights the formula in cell E22, which is `=D22*E21`. A red callout box points to the `$D22` part of the formula, explaining that the dollar sign before the column letter D indicates an absolute column reference, while the row number 22 is relative.

	D	E	F	G
21		1		
22	1	<code>=D22*E21</code>		
23	2			
24	3			
25				

Cell Referencing

Mixed cell references

E\$21: Absolute row and Relative column

Here dollar sign right before the row number, indicates only column letter E can change, whereas the row number is fixed, it doesn't change.

when you copy the formula down, the row number will not change, because it is locked but When you copy the formula to the right side, the column alphabet will change, because it is not locked

The image shows an Excel spreadsheet with columns D, E, F, and G, and rows 21 through 25. Cell E21 contains the value 1, and cell F21 contains the value 2. Cell E22 contains the formula `=D22*E$21`. The formula bar at the top shows `=D22*E$21`. A red callout box points to the `E$21` part of the formula, containing the text "E\$21: Absolute row and Relative column".

	D	E	F	G
21		1	2	
22	1	<code>=D22*E\$21</code>		
23	2			
24	3			
25				