

Through this lecture students will be able to:

Be **familiar** with
Microsoft Excel
Basics

Perform all tasks
related to **editing**
worksheet

Apply formatting for
cells and sheets

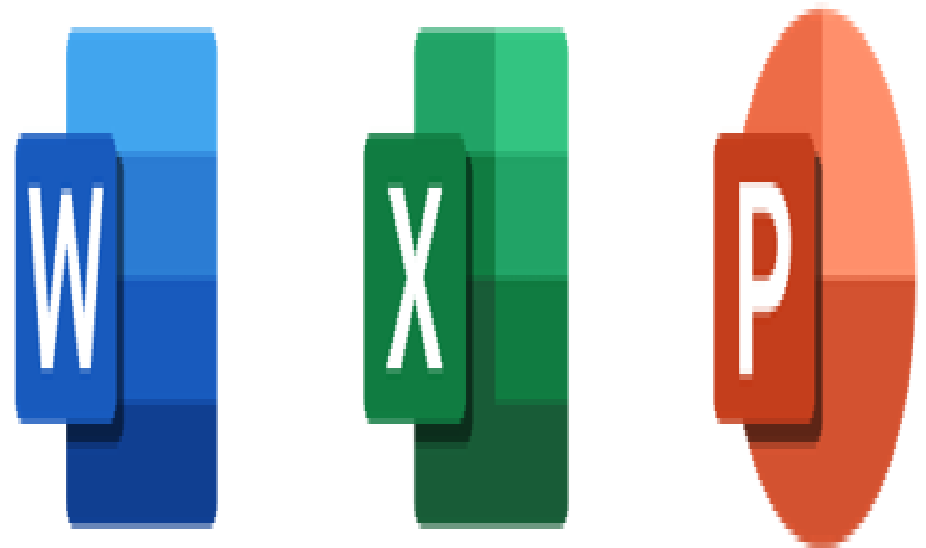
Lecture - 1: 3rd Year Dent. Tech. Dept.

Microsoft Office 2019

MS Office include many applications



Mainly it include the three popular applications



Office applications

Microsoft Excel

Microsoft Word

Microsoft PowerPoint

Microsoft OneNote

Microsoft Outlook

Microsoft Publisher

Microsoft Access

Microsoft InfoPath



Microsoft applications

تتكون تطبيقات Microsoft بشكل أساسي من مجموعة تطبيقات Office التي تدعم الاحتياجات الإنتاجية المختلفة على أنظمة تشغيل: Microsoft Windows ,Mac OS

Microsoft applications are comprised of mainly the Office **suite** of applications that support various productivity needs on both Microsoft Windows and Mac OS operating systems.

نبدأ أولاً بأحد التطبيقات المهمة (The Excel)

MS Excel Basics

1. Identify general needed **shortcuts**
2. Explore MS excel window
3. **Navigate** between different cells
4. Manage the workbook
5. Formatting for **cells** and **sheets** (paper)

سيتمكن الطلبة من :

1. معرفة الاختصارات العامة المطلوبة

Shortcut

2. التعامل مع نافذة مايكروسوفت اكسل

3. كيفية التنقل بين الخلايا المختلفة

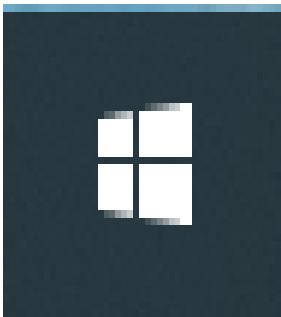
4. إدارة المصنف Workbook

5. تنسيق الخلايا والأوراق

How to pin Microsoft Excel to taskbar?

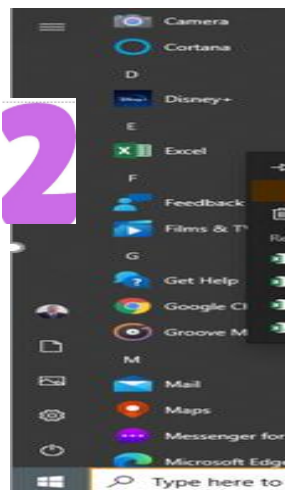
1. Click the **Start button**.
2. Locate the application you want to pin to the taskbar and **right-click** on it.
3. In the menu that appears, hover your cursor over "**More**"
4. Click on "**Pin to taskbar**"

1

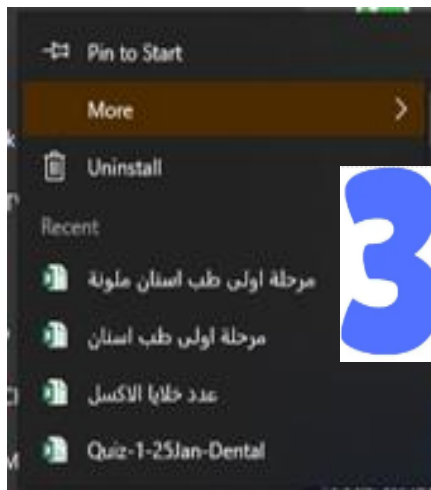


Start button

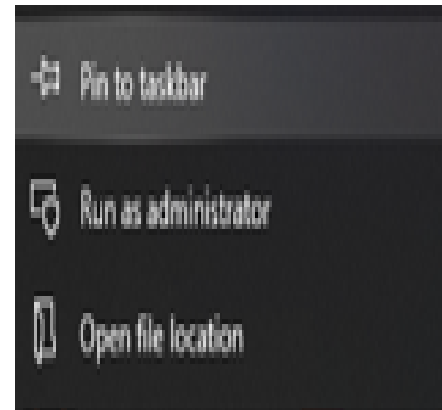
2



3



4



How to start Microsoft Excel?

1. Click on Microsoft Excel.
2. Select desired option
(NEW = Ctrl + N
or OPEN = Ctrl + O)

Excel

Recent

Pinned

Pin files you want to easily find later. Click the pin icon that appears when you hover over a file.

Today



عدد خلايا الاكسل

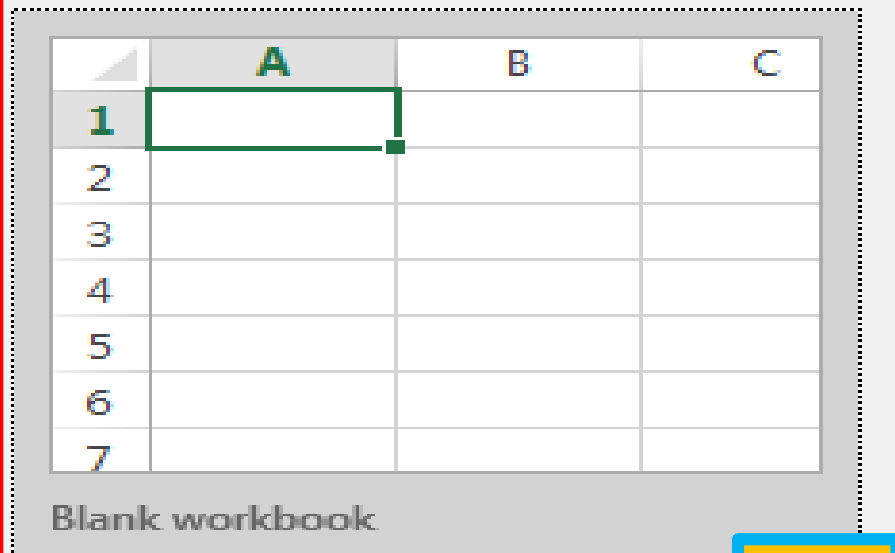
F: » 2022 » اول اشعة وسونار » المحاضرة الخامسة »

Yesterday



iraqflaq

F: » 2022 » اول اشعة وسونار » المحاضرة الخامسة »



Keyboard Shortcuts

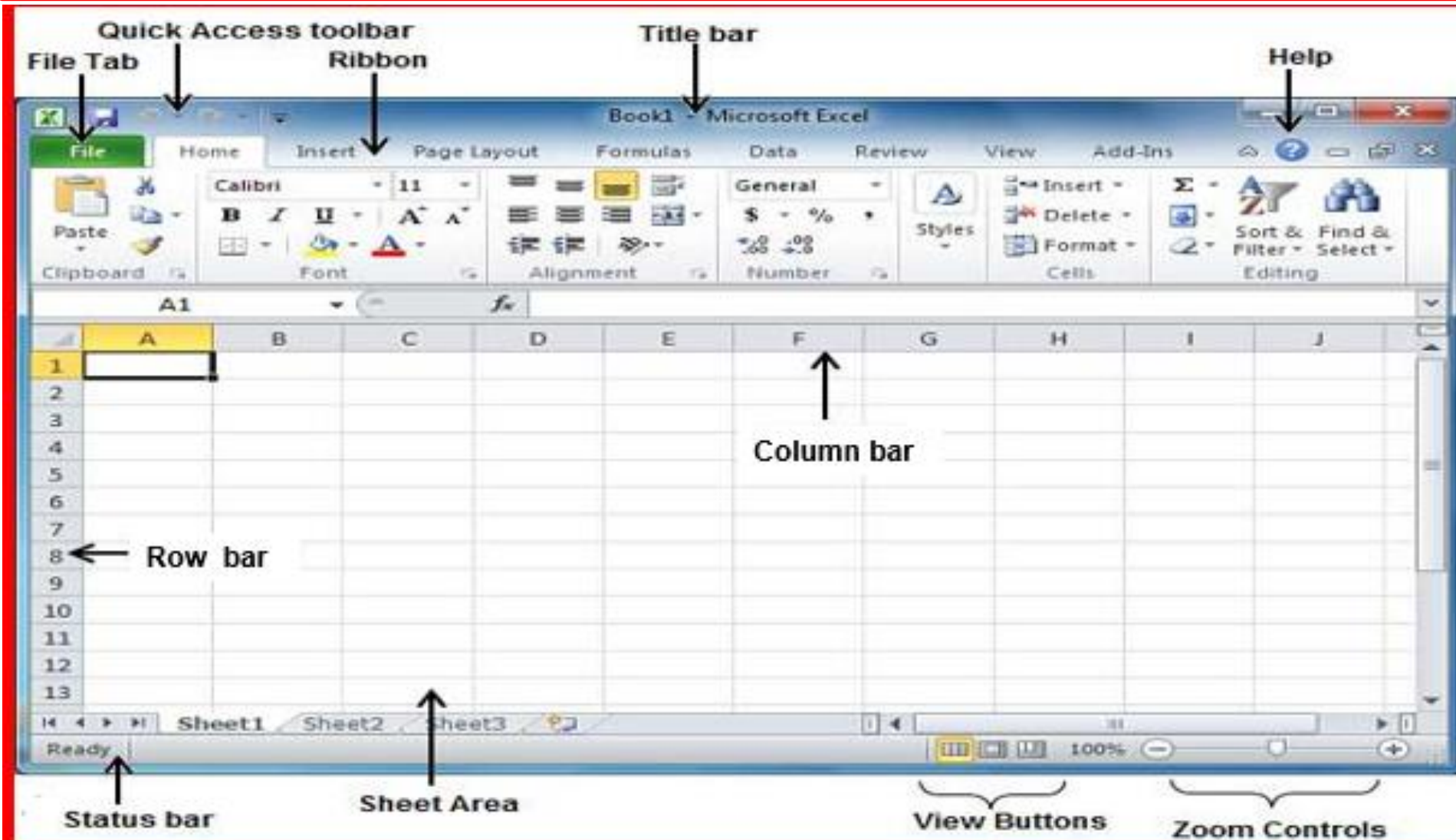
❑ General :

- ❖ New Workbook (**Ctrl+N**)
- ❖ Open a Workbook (**Ctrl+O**)
- ❖ Save a Workbook (**Ctrl+S**)
- ❖ Print a Workbook (**Ctrl+P**)
- ❖ Close a Workbook (**Ctrl+W**)
- ❖ Undo (**Ctrl+Z**)
- ❖ Redo (**Ctrl+Y**)
- ❖ Switch between apps (**Alt + Tab**)

❑ Editing:

- ❖ Cut (**Ctrl+X**)
- ❖ Copy (**Ctrl+C**)
- ❖ Paste (**Ctrl+V**)

Learning MS Excel Basics: Explore Window

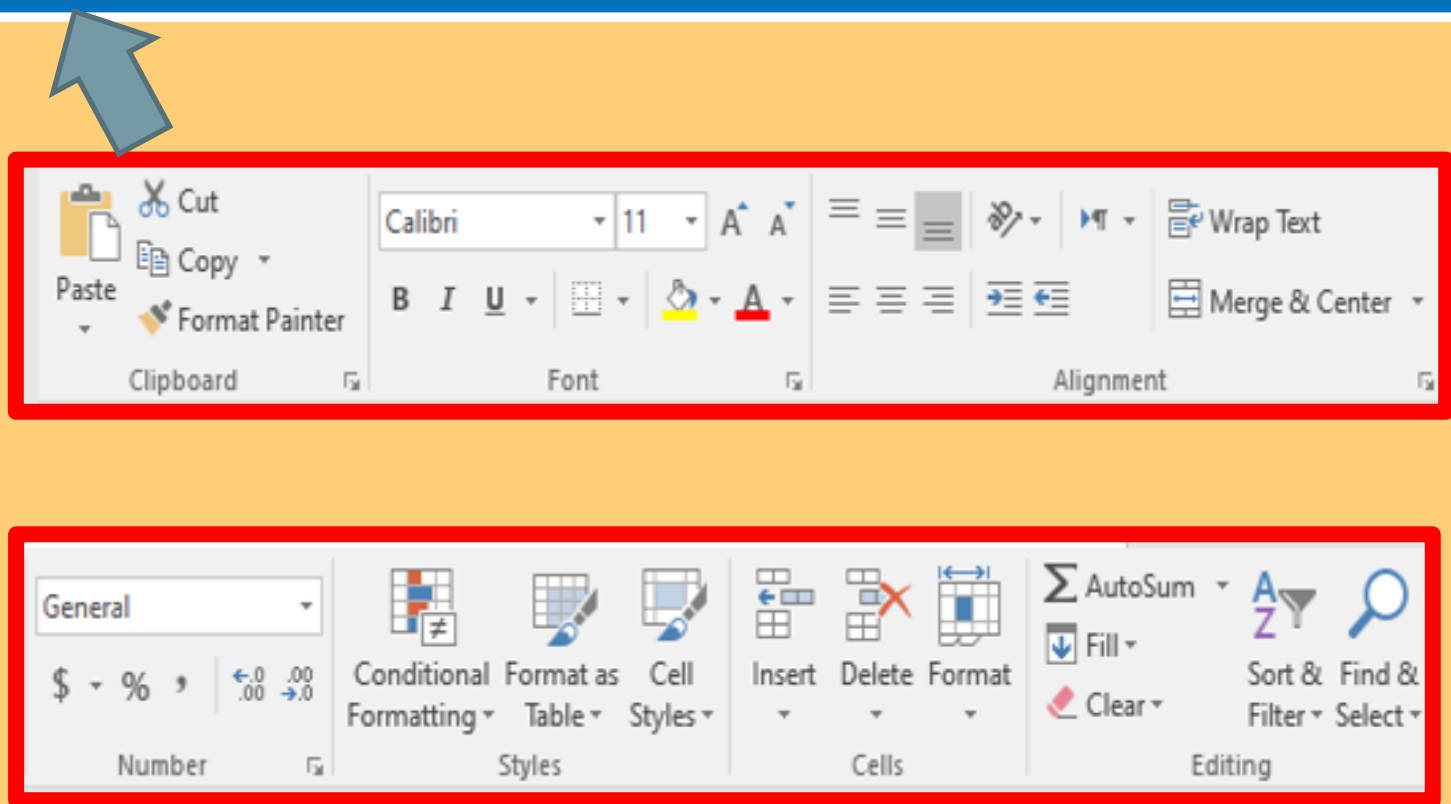
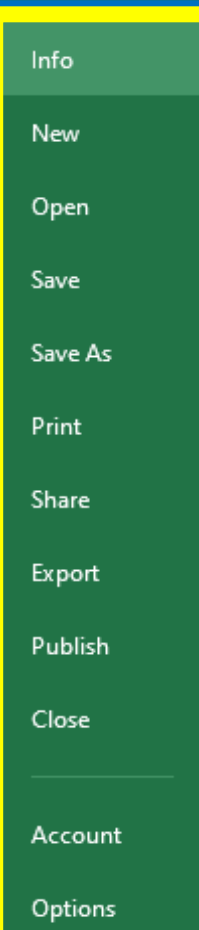


The Ribbon

Microsoft Excel Ribbon is the row of **tabs** and **icons** at the top of the Excel window. It allows you to quickly find and use **commands** for completing a certain task. It looks like a kind of complex Toolbar.

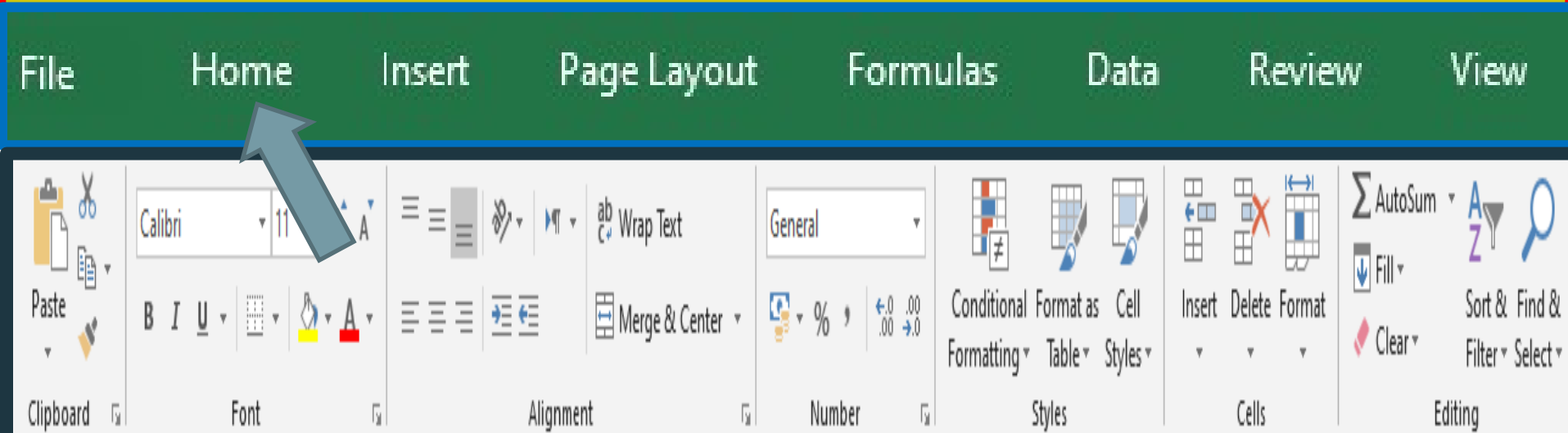
The Home contain the following Icon

File Home Insert Page Layout Formulas Data Review View



واجهة ال Home

Ribbon contain the following Icon



1. Clipboard (CUT, COPY, PASTE)
2. Font
3. Alignment
4. Number
5. Style
6. Cell
7. Editing

واجهة ال Home

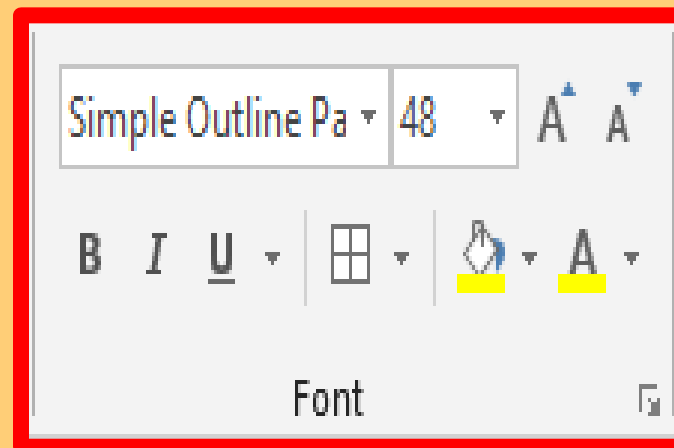
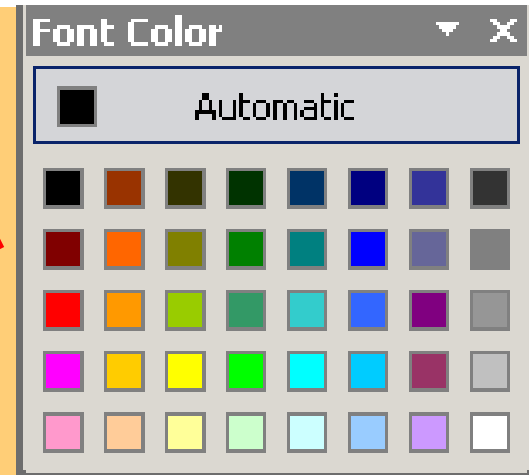
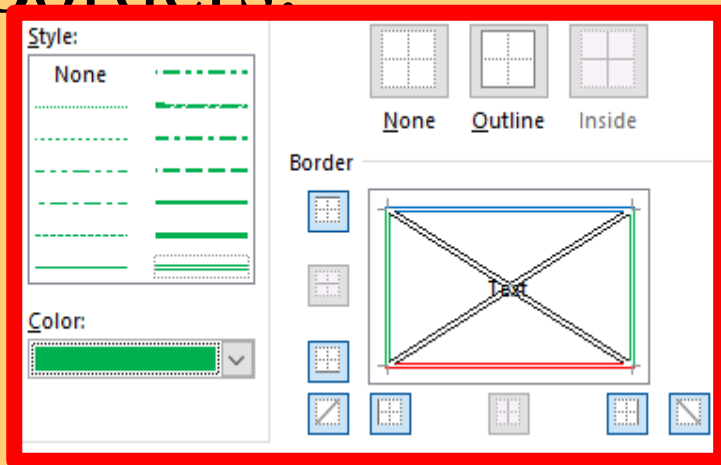
Font Attributes

Font (type and size)

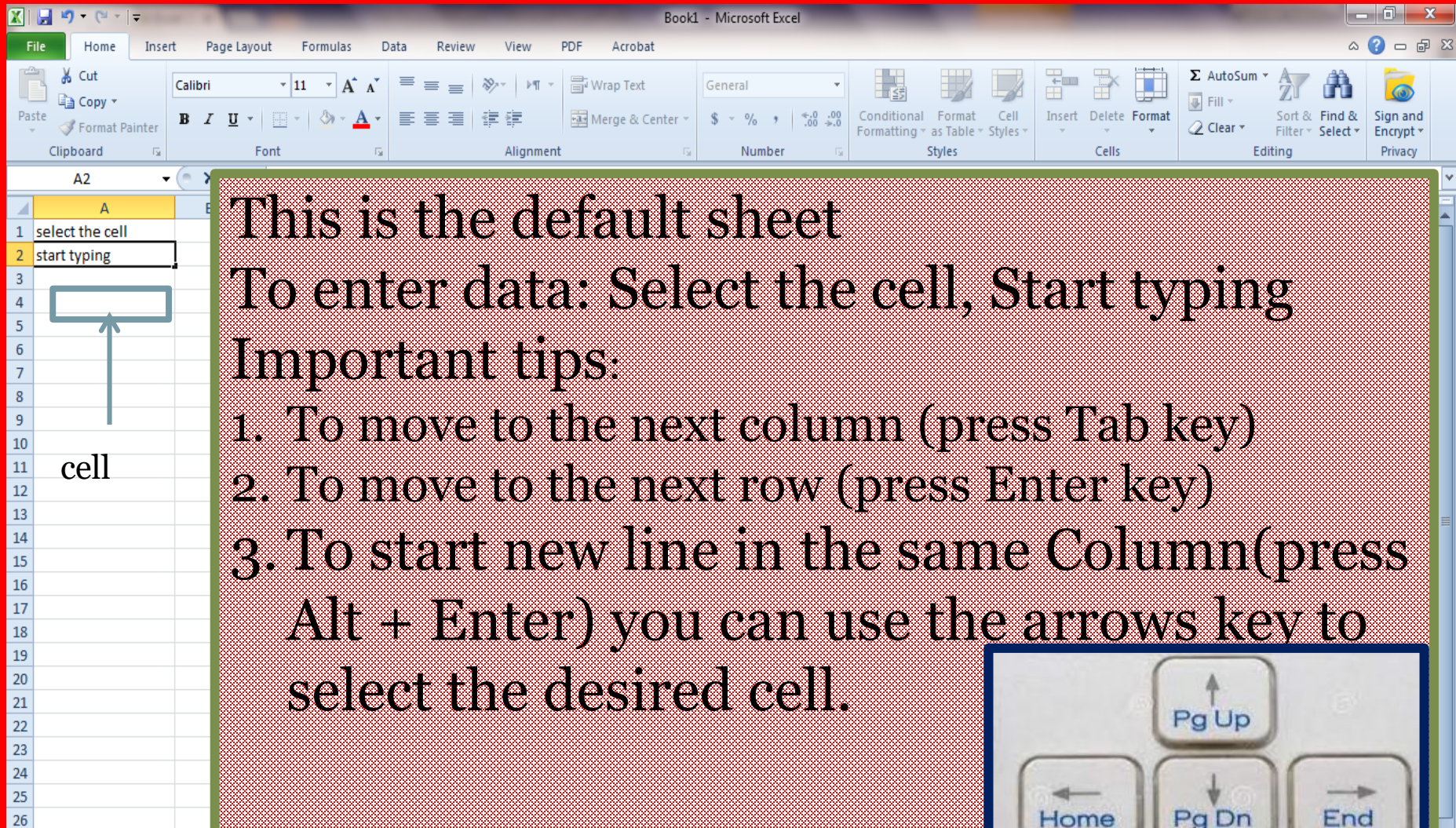
Style (**U**nderline, **I**talics, and **B**old) or (Ctrl+U), (Ctrl+I), (Ctrl+B)

Colours(fill colours)

Borders:



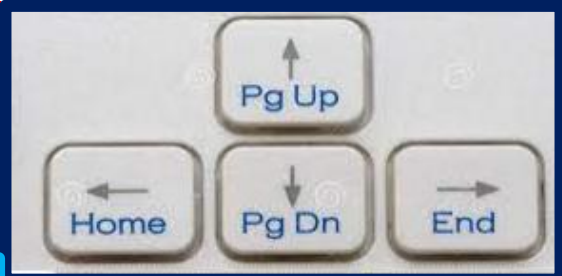
Learning MS Excel Basics: Entering Value



The screenshot shows the Microsoft Excel application window titled 'Book1 - Microsoft Excel'. The 'Home' tab is selected in the ribbon, showing options for Clipboard, Font, Alignment, Number, Styles, Cells, and Editing. In the worksheet, cell A2 is selected and contains the text 'start typing'. A blue arrow points to this cell with the label 'cell'.

This is the default sheet
To enter data: Select the cell, Start typing
Important tips:

1. To move to the next column (press Tab key)
2. To move to the next row (press Enter key)
3. To start new line in the same Column (press Alt + Enter) you can use the arrows key to select the desired cell.



A diagram showing four navigation keys: 'Pg Up' (up arrow), 'Pg Dn' (down arrow), 'Home' (left arrow), and 'End' (right arrow).

Learning MS Excel Basics:

Saving Workbook:

- **File** > **save as** > specify the location and modify the file's name if required.

Closing Workbook: **CTRL+W** or
 CTRL+F4

Open workbook: **CTRL+O**

Managing worksheets

For Worksheets we can:

1. Insert one or more Worksheet
2. Rename it
3. Change its Tab color
4. Rearrange them in any required order
5. Delete unrequired one
6. Duplicate (copy) or move it before / after any Worksheet or at the end
7. Hid and Unhide certain Worksheet.

MS Excel Basics

1. Identify general needed shortcuts
2. Explore MS excel window
3. Navigate between different cells
4. Manage the workbook
5. Formatting for cells and sheets

Getting started

Cell : can contain a **Number**, **Logic Date**, **text** or **formula**

Worksheet: a **single** spreadsheet that contains **cells** organized by **rows** and **columns**

Workbook :
Excel file that contains one or more **worksheets**

Learning MS Excel Basics:

Saving Workbook:

- File > save as > specify the location and modify the file's name if required.

Closing Workbook: CTRL+W

Open workbook: CTRL+O

Managing worksheets

1. Identify how to manage worksheet
2. Editing worksheets

Formula in Excel (Insert data)

- Activate the cell and add data
- Insert formula:

أوجد معدل السعي السنوي

كلية النور الجامعة							1
تقنيات صناعة الاسنان المرحلة الثالثة (2022-2023)							2
ت	الشعبة	الاسم	درجة الفصل الاول	نصف السنة	درجة الفصل الثاني	درجة السعي	3
1	A	احمد مصباح مجيد جاسم	9	18	8	=D4+E4+J3	4
2	B	ابتهال بشار عبد فتاح	8.5	15.5	7		5
3	B	اسراء احمد قاسم يحيى	7.5	17	8		6
4	A	اسراء خالد الياس خضر	8	16	9		7
5	B	امنة فارس حمودي يحيى	7	19	7		8

Formula Bar:
Any formula
should start
with = sign

Editing Worksheet:

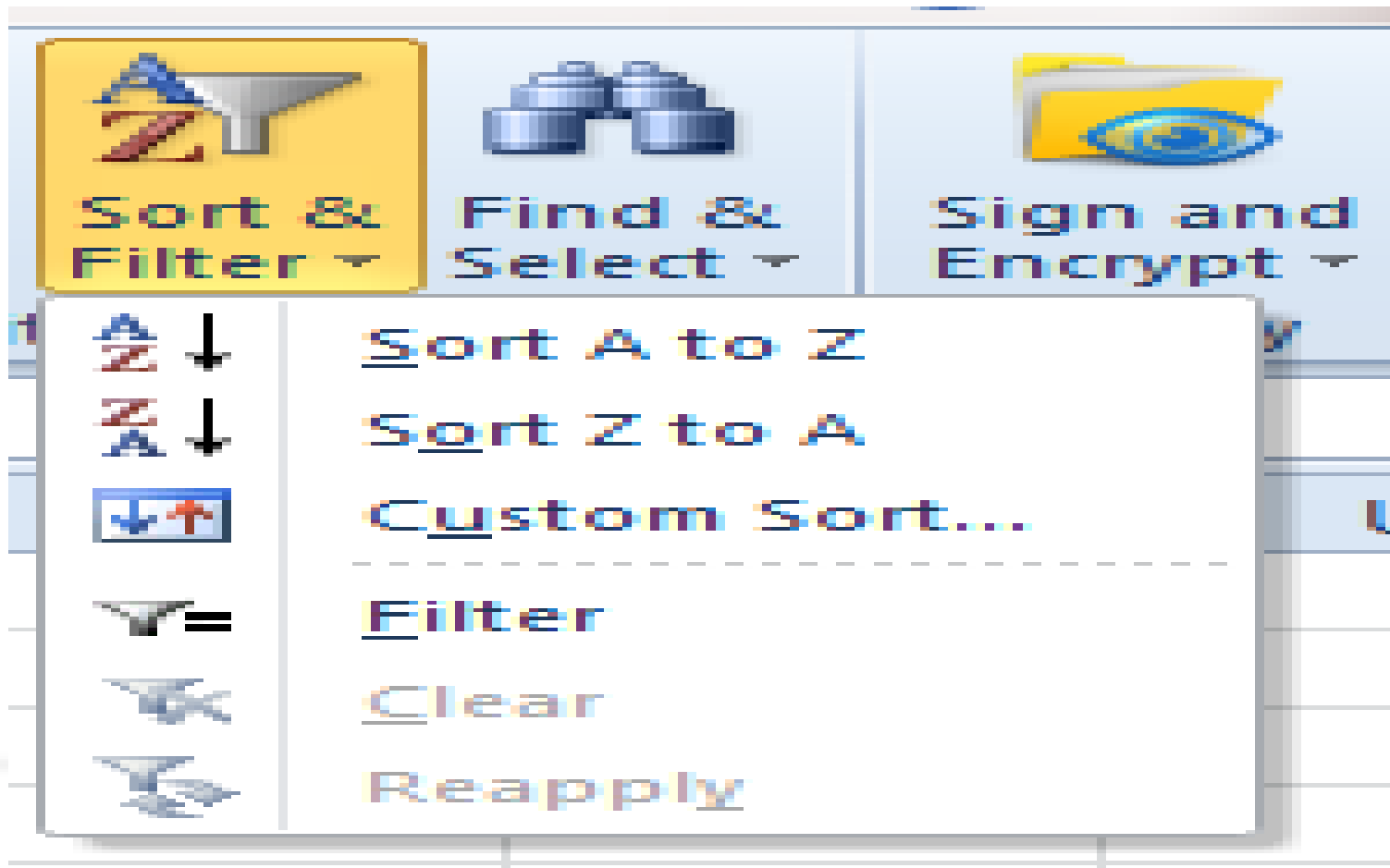
كلية النور الجامعة					
تقنيات صناعة الاسنان المرحلة الثالثة (2022-2023)					
ت	الشعبة	الاسم	الفصل	الدرجة	درجة السعي
1	A	احمد مصطفى	9	15.5	=D4+E4+J3
2	B	ابتهال بشار عبد	8.5	15.5	
3	B	اسراء احمد قاسم	7.5	17	
4	A	اسراء خالد الياس خضر	8	16	9
5	B	امنة فارس حمودي يحيى	7	19	7

Select CUT & Paste
تستخدم لنقل البيانات (مقطع)

تستخدم لحذف البيانات
Delete

Editing Worksheet: Sorting Cells

- Sorting in ascending , descending numeric order



MS Excel Basics (worksheets):

Creating new Worksheet:

- How many sheet are provided in the workbook by default
- Now in order to add more sheets:
 - Right-click on sheet tabs
 - Select Insert
 - An insert dialog will display with selected worksheet

Copy Worksheet:

- Right click on sheet name,
- Select move or copy
 - HINT: you need to add some data to check the copying perfectly

Hiding and Unhide Worksheet:

- Find how can we hide worksheet and unhide it

Deleting Worksheet:

- Find how can we delete worksheet

Editing Worksheet: Rows and Columns

The screenshot shows the Microsoft Excel interface with the following data in the worksheet:

	A	B	C	D	E	F	G	H	I	J
1		Sales calculating								
2	Products price	Sale percentage	Total							
3	30	0.15	4.5							
4	50	0.5	25							
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										

Annotations in the image:

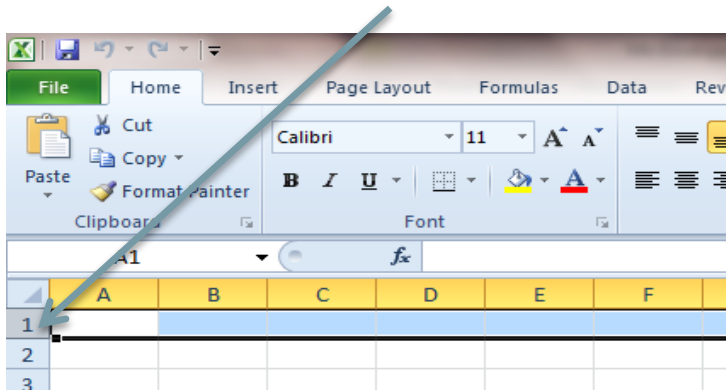
- Rows run horizontally
- MS Excel is providing rows From 1 to 104876
- Columns run vertically
- MS Excel is providing columns From A to XFD
- Cell can be identified using columns and rows
- What is the value of the Cell A3 ? 30

Footer information:

- 10/12/2022
- 3rd Year Dent. Tech. Dept.
- 25

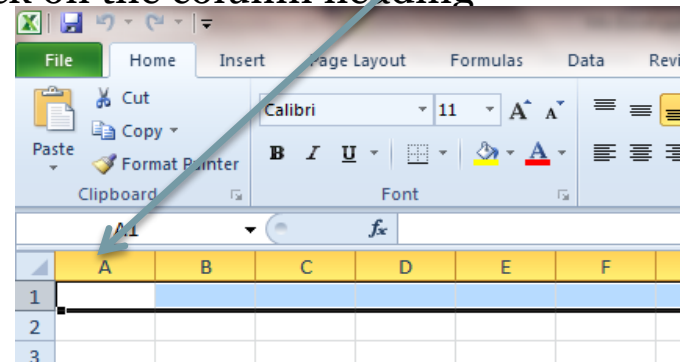
Editing Worksheet: Select Rows and Columns

- To select Row
 - Click on the row heading



- **To select a range of adjacent rows**
 - Click on the first row heading.
 - Drag to highlight through to the last row heading
- **To select a range of non-adjacent rows**
 - Click on the first row heading or range of rows.
 - Hold the Ctrl key down and continue highlighting additional row headings.

- To select column
- Click on the column heading



- **To select a range of adjacent columns**
 - Click on the first column heading.
 - Drag to highlight through to the last column heading
- **To select a range of non-adjacent columns**
 - Click on the first column heading or range of columns.
 - Hold the Ctrl key down and continue highlighting additional column headings

Editing Worksheet: Modify Rows height and Columns width

- To modify the Column width
 - Click on the column heading(s) to modify.
 - On the Home tab, in the Cells group, click the Format button.
 - To modify column width to a specified value, click Column Width and enter a width, then click OK.
 - To modify column width to optimal width, click Auto-fit Column Width.
- To modify the Row height
 - Click on the row heading(s) to modify.
 - On the Home tab, in the Cells group, click the Format button.
 - To modify row height to a specified value, click Row Height and enter a row height, then click OK.
 - To modify row height to optimal height, click Auto-fit Row Height.

Editing Worksheet: Freeze column title

- Why ?
 - To keep column headings visible regardless of where you scroll in your sheet.
- How ?
 - Select the column immediately to the right of the column to freeze.
 - On the View tab, in the Window group, click the Freeze Panes arrow.
 - Click the Freeze Panes button

Exercise:

- Students should create their first excel sheet by adding a table as the following and find the total using the formula bar

Name	Marks scored in Computer	Marks scored in medical chemistry	Total
Mohammed	78	90	
Ahmed	80	90	
Omar	96	100	
Ali	86	92	
Mazin	49	89	

Formatting Cells: Setting Cell type

Book1 - Microsoft Excel

Insert Page Layout Formulas Data Review View PDF Acrobat

Calibri 11 A A

B I U

Font

Alignment

Wrap Text

Merge & Center

89.2

C D E F G H

4:00:00 AM \$89.20 12:00:00 AM 1.25E+01

\$ 9.50

The list is showing the different types that cell can handle .

In order to modify the cell type, select the cell

And then number group in the home tab

ABC 123

General No specific format

12 Number 89.20

Currency \$89.20

Accounting \$89.20

Short Date 3/29/1900

Long Date Thursday, March 29, 1900

Time 4:48:00 AM

Percentage 8920.00%

Fraction 89 1/5

Scientific 8.92E+01

More Number Formats...

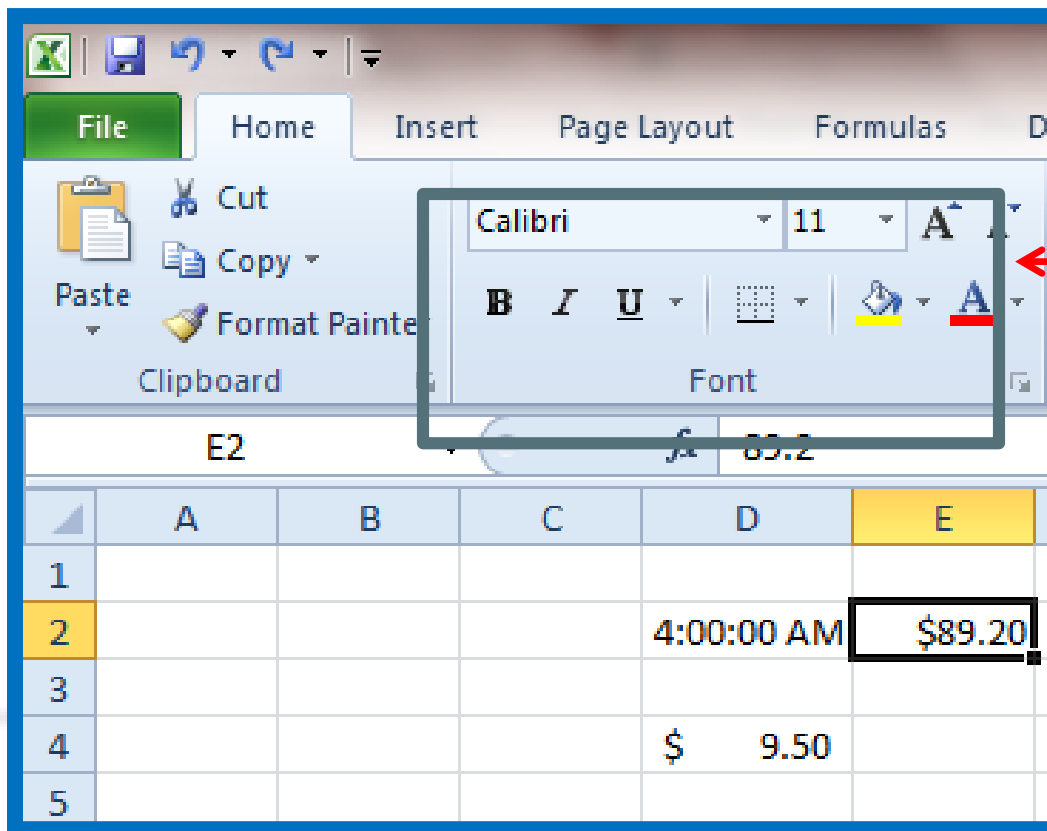
10/12/2022

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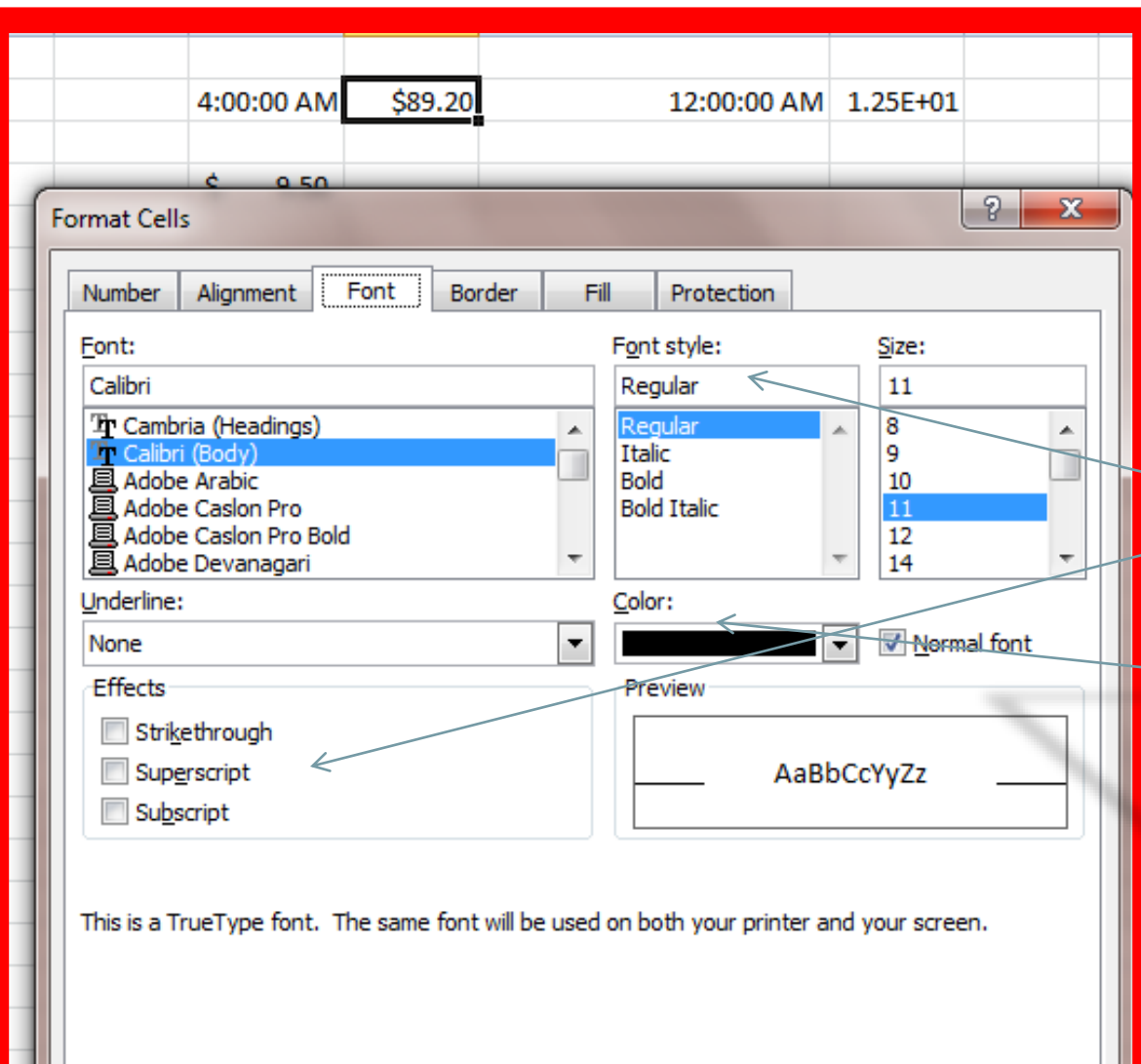
30

Formatting Cells: Setting fonts

- Select text,
- Modify the font type and size from **Font Group**



Formatting Cells: Text-decoration and setting text color



- To get the Format Cell Dialog:
Right click on cell and select **format cell , font tab**

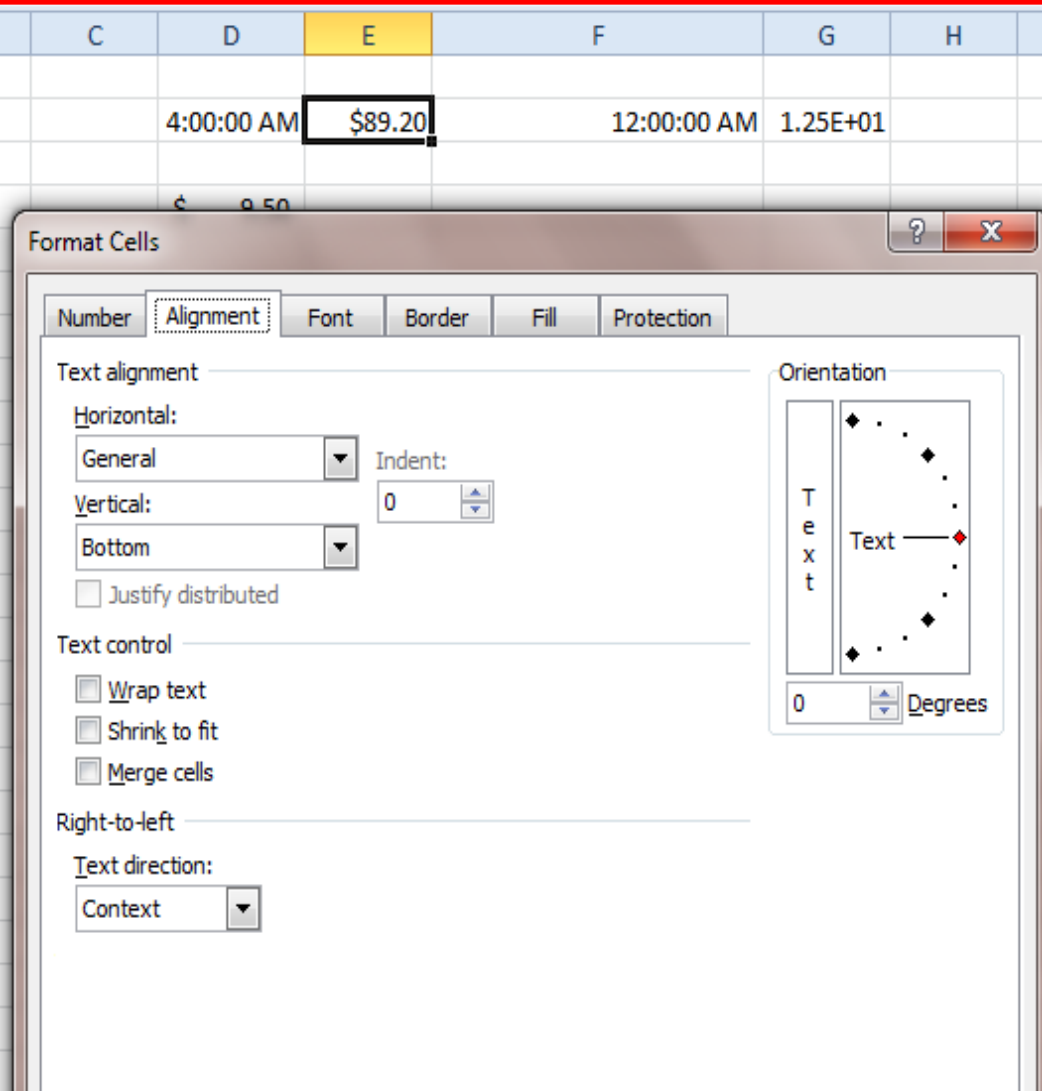
1. **Modify font style**
2. **Effects**

- Change the text color

Formatting Cells: Rotate Cells

- To rotate A cell:
 - Display the same format cell dialog
 - Select alignment tab
 - Modify the orientation

Change the text alignment :



Formatting Cells: Setting Colors

- To change the background color:

- Display the format cell
- Go to Fill tab

\$98.0

- To add borders:

- Display the format cell
- Go to Border tab

\$98.0

Formatting Cells: Merge Cells

- Is to combine two or more cells into a single cell.
- How ? Select and merge

Book1 - Mi

File Home Insert Page Layout Formulas Data Review View PDF Acrobat

Clipboard: Cut, Copy, Paste, Format Painter

Font: Calibri, 11, Bold, Italic, Underline, Text Color, Background Color

Alignment: Merge & Center, Merge Across, Merge Cells, Unmerge Cells

Formula Bar: F2, 5/19/4350 12:00:00 AM

	A	B	C	D	E	F
1						
2				4:00:00 AM	\$89.20	12:00:00 AM
3						
4				\$ 9.50		
5						
6						
7						

10/12/2022

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Formatting Cells: Wrap text

- Problem?



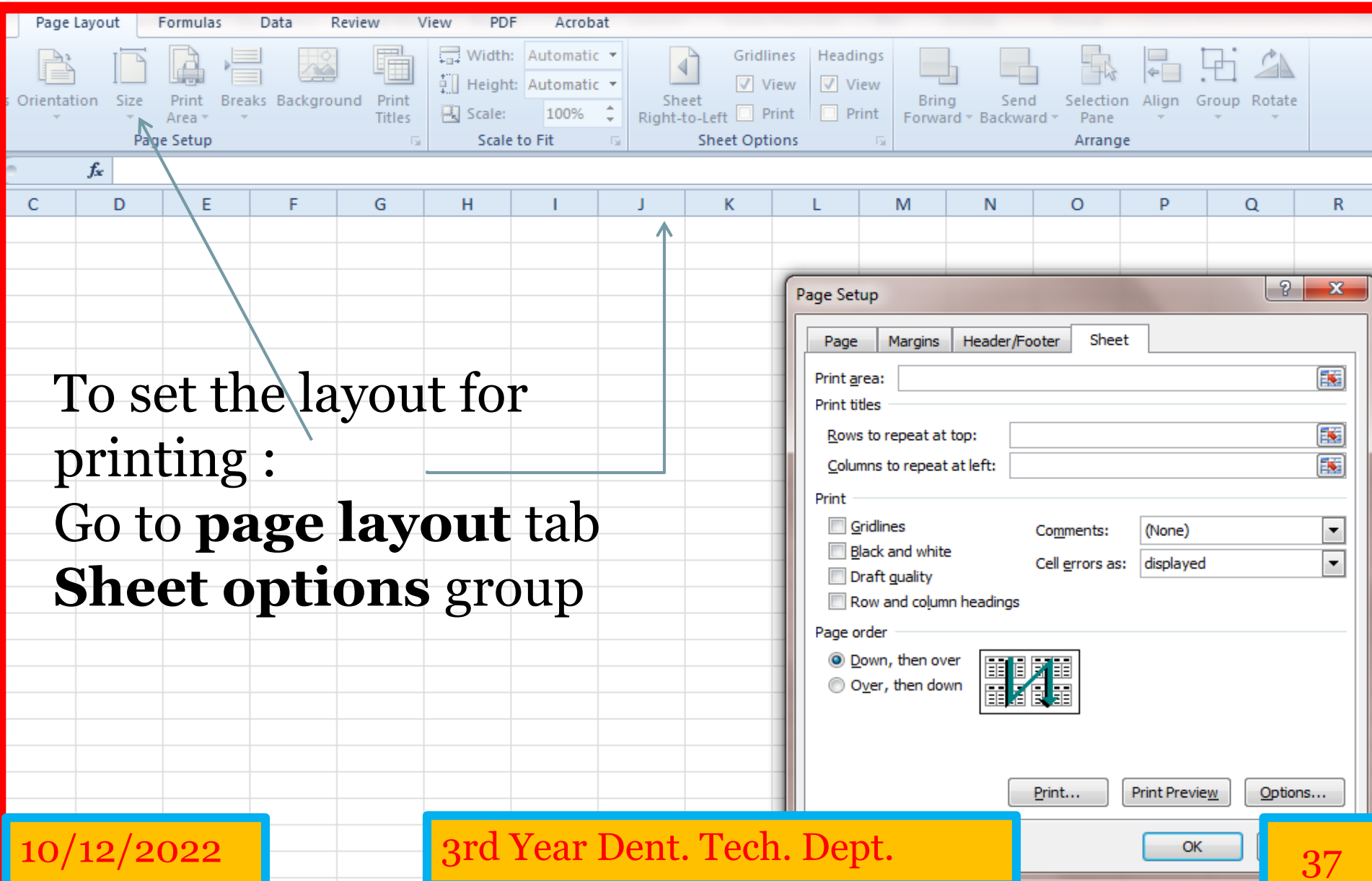
The cell content is :
Ahmed Abdullah Ali
HOWEVER , the cell is only displaying (Ahmed A)

- ❖ Merge cells
- ❖ Wrap text
- ❖ Shrink to fit



Format cell dialog
Alignment Tab
Control Text

Formatting Sheets: Options for printing purpose



The image shows the Microsoft Excel interface with the **Page Layout** tab selected. The **Page Setup** group is highlighted, and the **Sheet Options** group is also visible. A blue arrow points from the text "To set the layout for printing : Go to **page layout** tab **Sheet options** group" to the **Page Setup** group in the ribbon. Another blue arrow points from the same text to the **Sheet** tab in the **Page Setup** dialog box. The dialog box is open, showing the **Sheet** tab with options for **Print area**, **Print titles**, **Print** (Gridlines, Black and white, Draft quality, Row and column headings), **Comments**, **Cell errors as**, and **Page order** (Down, then over; Over, then down). The **Print** button is highlighted in the dialog box.

To set the layout for printing :
Go to **page layout** tab
Sheet options group

10/12/2022

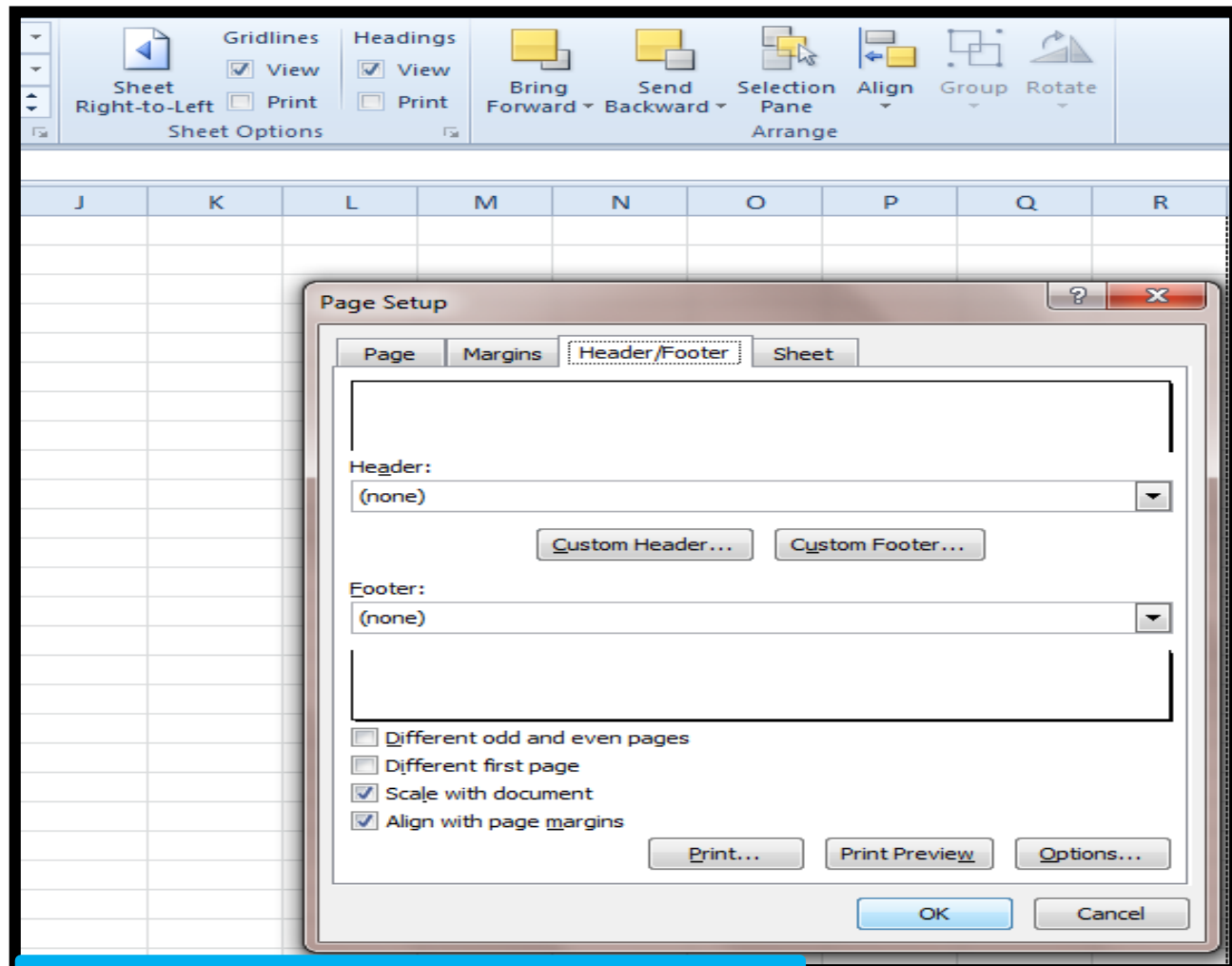
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Formatting Sheets: add header and footer

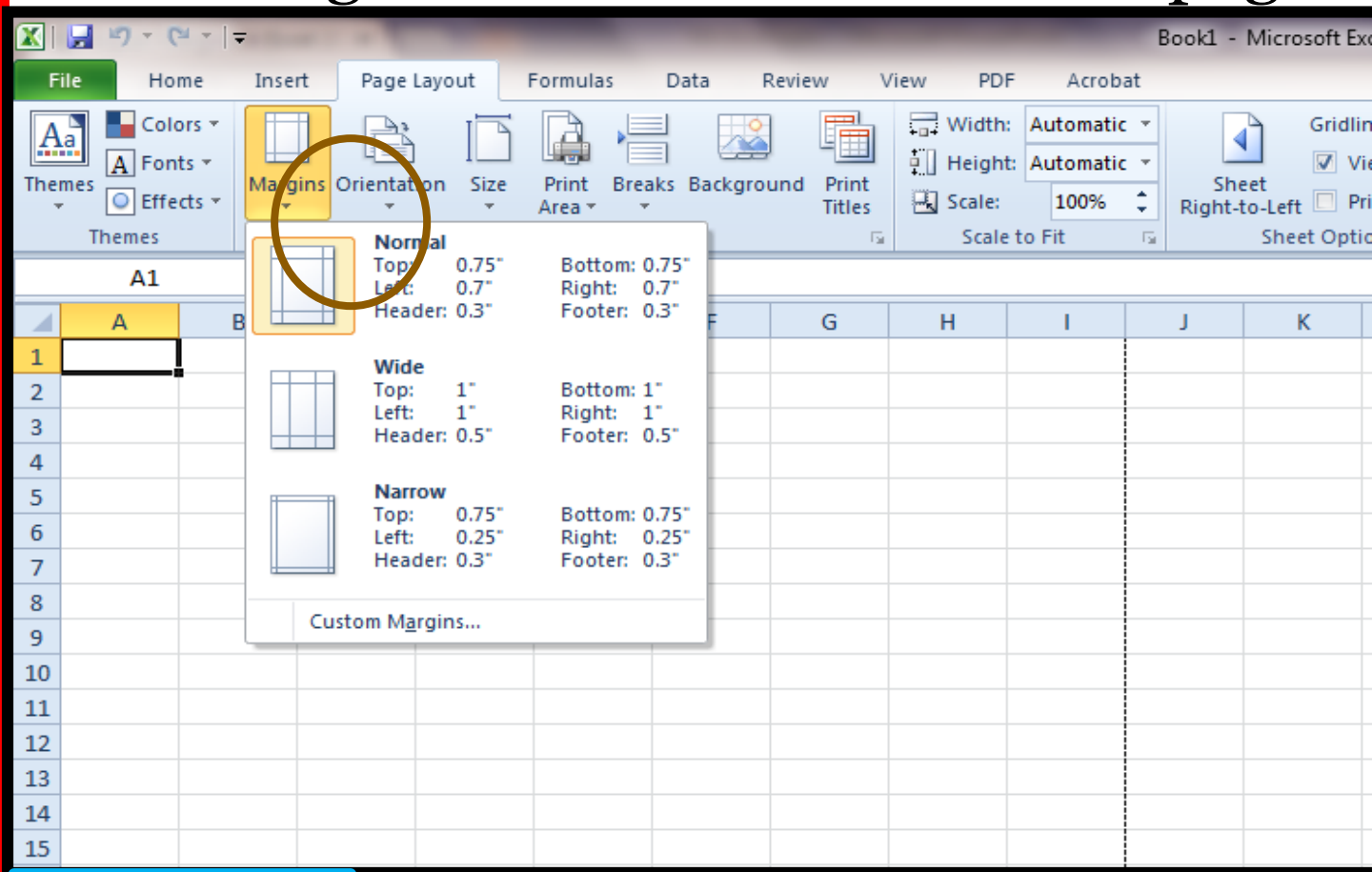
- Add header and footer to add information to the workbook.

Page layout
Sheet options
Header/footer



Formatting Sheets: Set Margins and page orientation

- Margins : are the unprinted area the page sides
- All margins are fixed for the same pages.



Change page orientation,

1. Portrait
2. landscape

- Page break: Identify the printed part of each page
- Background for the entire worksheet
- How ?

Formatting Sheets: Conditional Formatting

- enables you to format a range of values so that values outside certain limits, are automatically formatted.

The screenshot shows the Microsoft Excel interface with the 'Conditional Formatting' menu open. The menu options include: Highlight Cells Rules, Top/Bottom Rules, Data Bars, Color Scales, Icon Sets, New Rule..., Clear Rules, Manage Rules..., Greater Than..., Less Than..., Between..., Equal To..., Text that Contains..., A Date Occurring..., and Duplicate Values... The spreadsheet shows column A with values 10, 3326, 2351, 565, 222, and 22. The cell A6 (565) is selected. A text box is overlaid on the spreadsheet with the text: 'Select the column in which you want to apply the conditional formatting'.

Book1 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View PDF Acrobat

Clipboard: Cut, Copy, Paste, Format Painter

Font: Calibri, 11, Bold, Italic, Underline, Text Color, Background Color

Alignment: Wrap Text, Merge & Center

Number: General, Currency, Percentage, Decimals, Rounding

Conditional Formatting: Highlight Cells Rules, Top/Bottom Rules, Data Bars, Color Scales, Icon Sets, New Rule..., Clear Rules, Manage Rules...

Greater Than..., Less Than..., Between..., Equal To..., Text that Contains..., A Date Occurring..., Duplicate Values...

Select the column in which you want to apply the conditional formatting

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3	10											
4	3326											
5	2351											
6	565											
7	222											
8	22											
9												
10												
11												

10/12/2022

3rd Year Dent. Tech. Dept.

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References :

- ICS skills, New Ecdl Syllabi , 2013

Through this lecture students will be able to:

Be **familiar** with
Microsoft Excel
Basics

Perform all tasks
related to **editing**
worksheet

Apply formatting for
cells and sheets

Lecture - 1: 3rd Year Dent. Tech. Dept.

Microsoft Office 2019

MS Office include many applications



Mainly it include the three popular applications



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Microsoft PowerPoint

Microsoft OneNote

Microsoft Outlook

Microsoft Publisher

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Microsoft InfoPath



Microsoft applications

تتكون تطبيقات Microsoft بشكل أساسي من مجموعة تطبيقات Office التي تدعم الاحتياجات الإنتاجية المختلفة على أنظمة تشغيل: Microsoft Windows ,Mac OS

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1. معرفة الاختصارات العامة المطلوبة

Shortcut

2. التعامل مع نافذة مايكروسوفت اكسل

3. كيفية التنقل بين الخلايا المختلفة

4. إدارة المصنف Workbook

5. تنسيق الخلايا والأوراق

How to pin Microsoft Excel to taskbar?

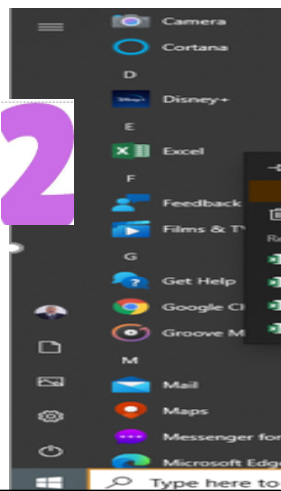
1. Click the **Start button**.
2. Locate the application you want to pin to the taskbar and **right-click** on it.
3. In the menu that appears, hover your cursor over "**More**"
4. Click on "**Pin to taskbar**"

1

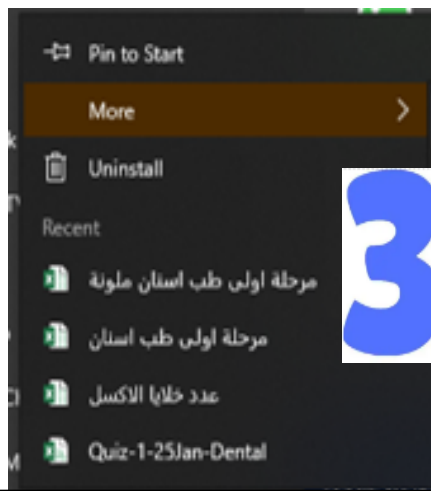


Start button

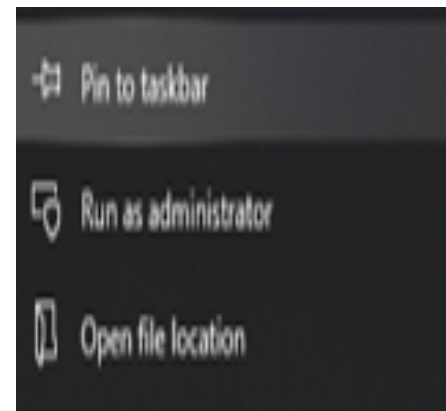
2



3



4



How to start Microsoft Excel?

1. Click on Microsoft Excel.
2. Select desired option
(NEW = Ctrl + N
or OPEN = Ctrl + O)

Excel

Recent

Pinned

Pin files you want to easily find later. Click the pin icon that appears when you hover over a file.

Today



عدد خلايا الاكسل

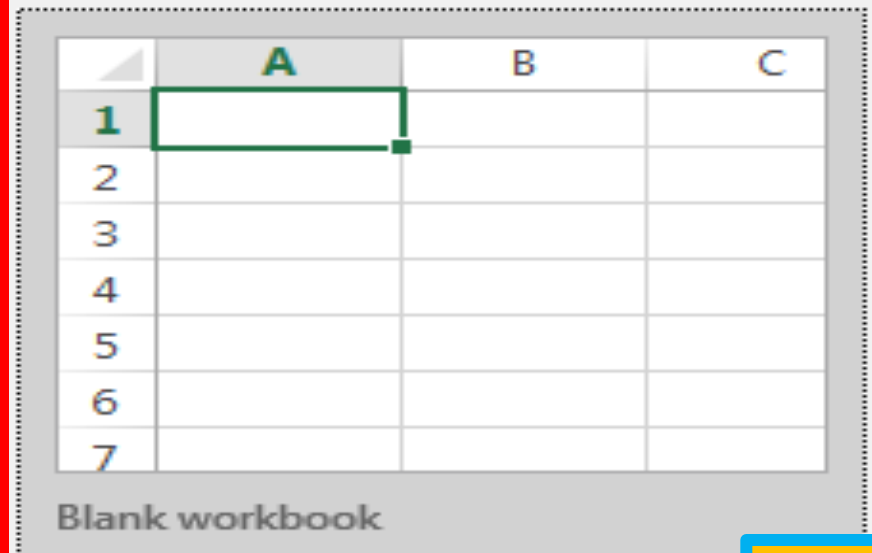
F: » 2022 » اول اشعة وسونار » المحاضرة الخامسة

Yesterday



iraqflaq

F: » 2022 » اول اشعة وسونار » المحاضرة الخامسة



Keyboard Shortcuts

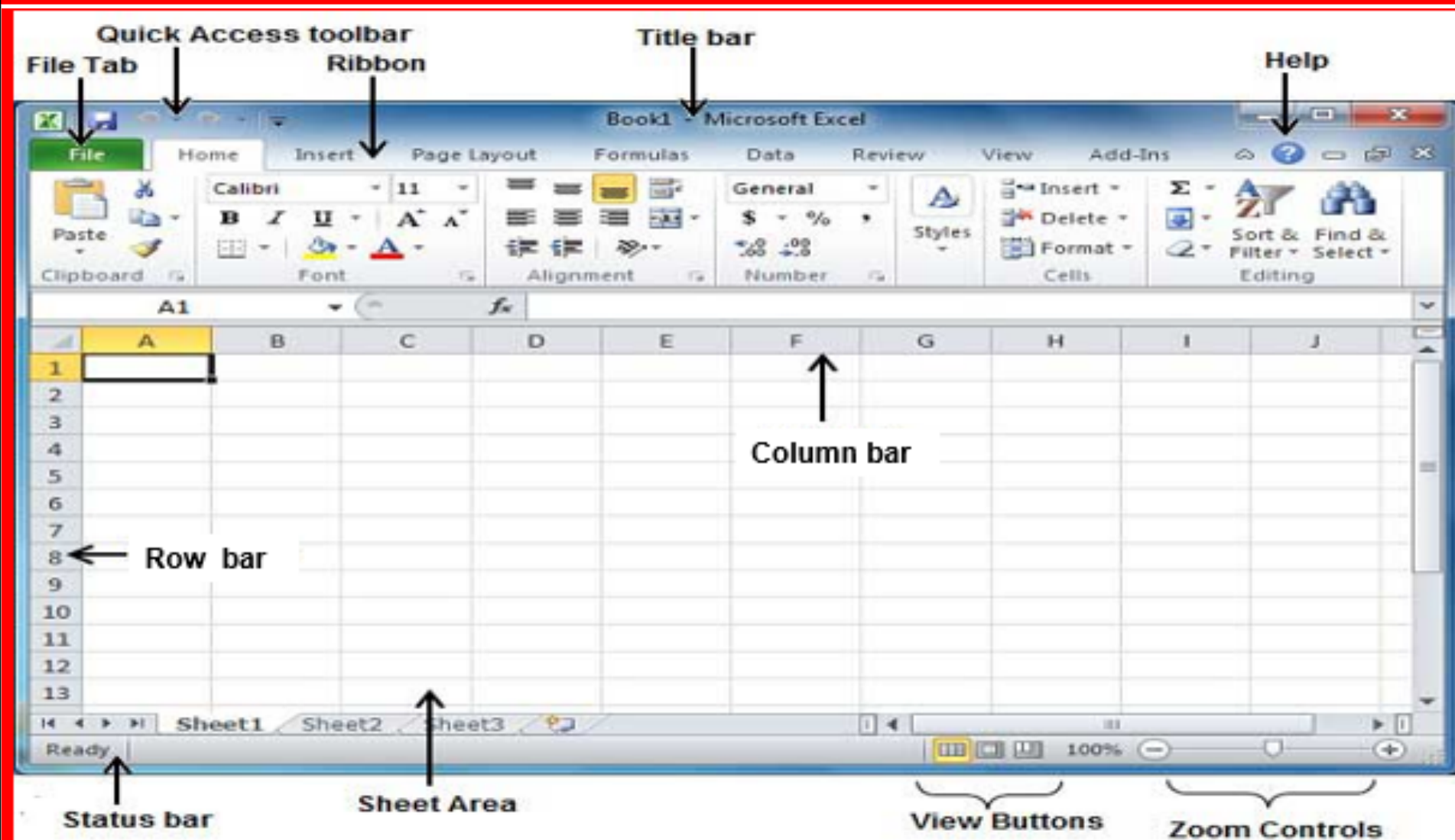
☐ General :

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- ❖ Open a Workbook (**Ctrl+O**)
- ❖ Save a Workbook (**Ctrl+S**)
- ❖ Print a Workbook (**Ctrl+P**)
- ❖ Close a Workbook (**Ctrl+W**)
- ❖ Undo (**Ctrl+Z**)
- ❖ Redo (**Ctrl+Y**)
- ❖ Switch between apps (**Alt + Tab**)

☐ Editing:

- ❖ Cut (**Ctrl+X**)
- ❖ Copy (**Ctrl+C**)
- ❖ Paste (**Ctrl+V**)

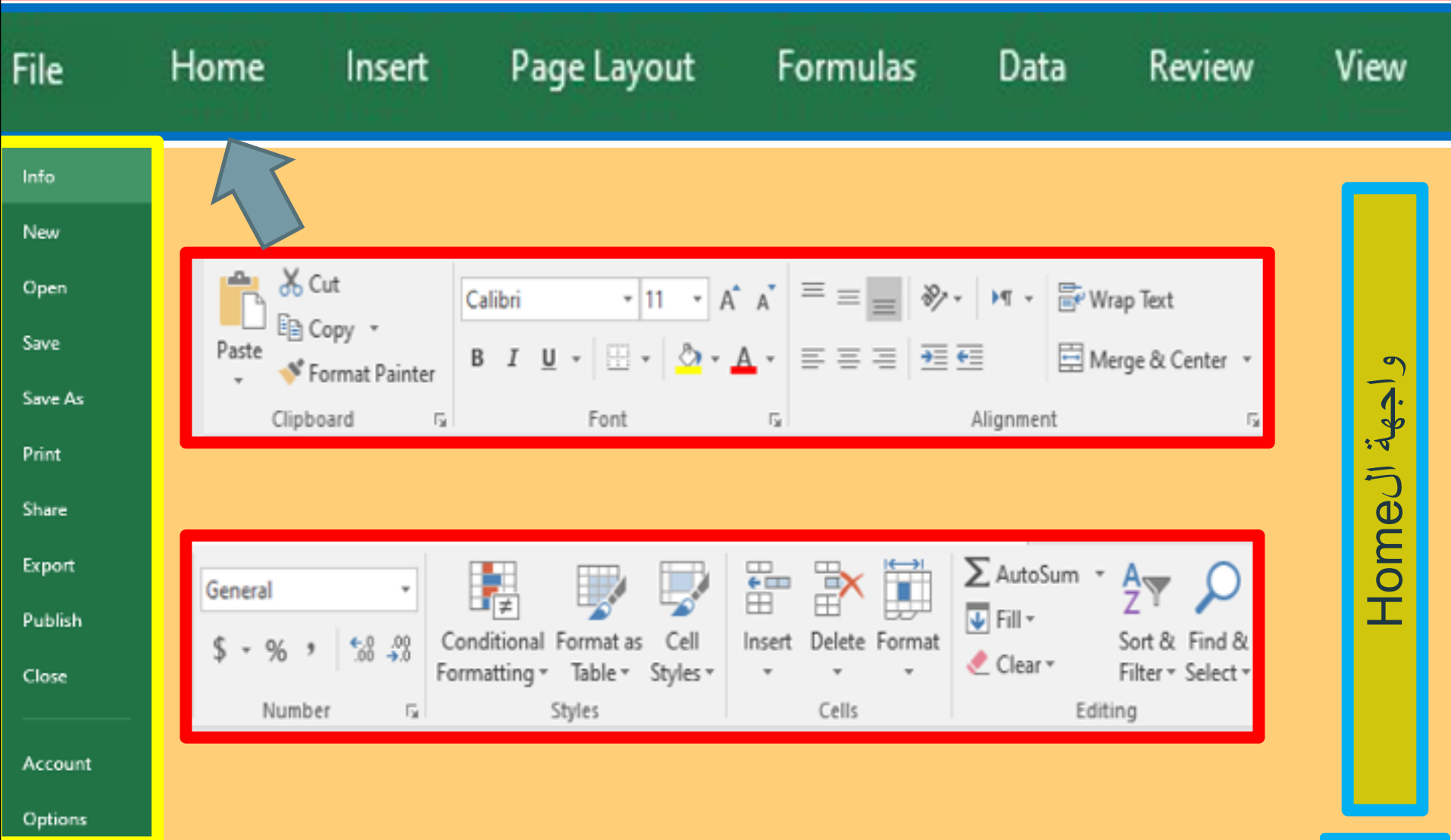
Learning MS Excel Basics: Explore Window



The Ribbon

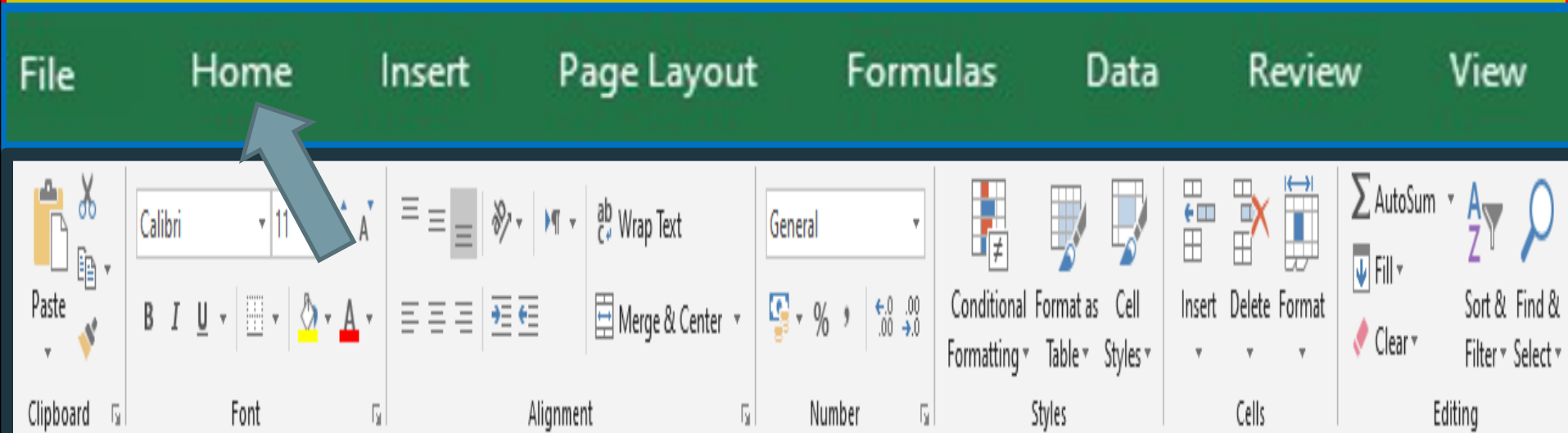
Microsoft Excel Ribbon is the row of **tabs** and **icons** at the top of the Excel window. It allows you to quickly find and use **commands** for completing a certain task. It looks like a kind of complex Toolbar.

The Home contain the following Icon



واجهة ال Home

Ribbon contain the following Icon



1. Clipboard (CUT, COPY, PASTE)
2. Font
3. Alignment
4. Number
5. Style
6. Cell
7. Editing

واجهة ال Home

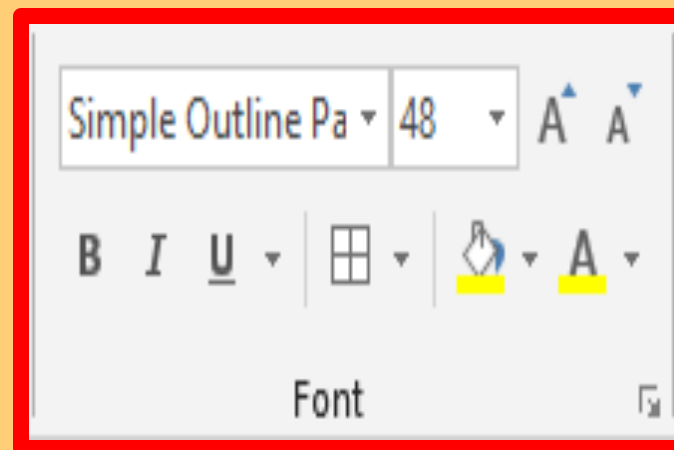
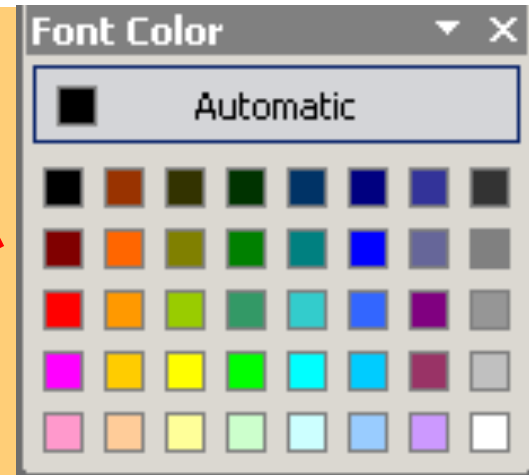
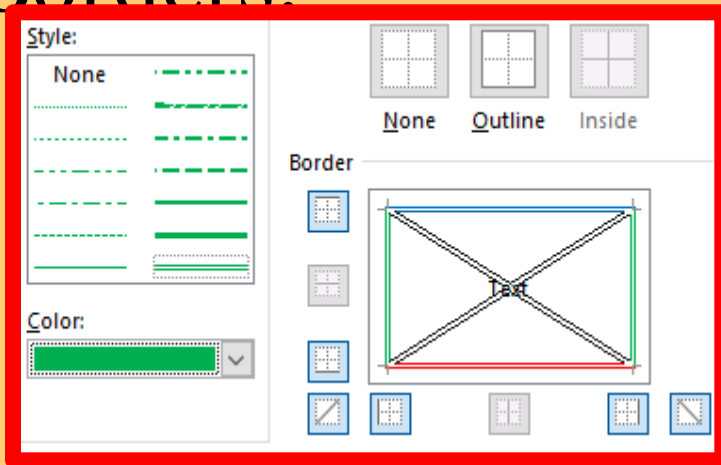
Font Attributes

Font (type and size)

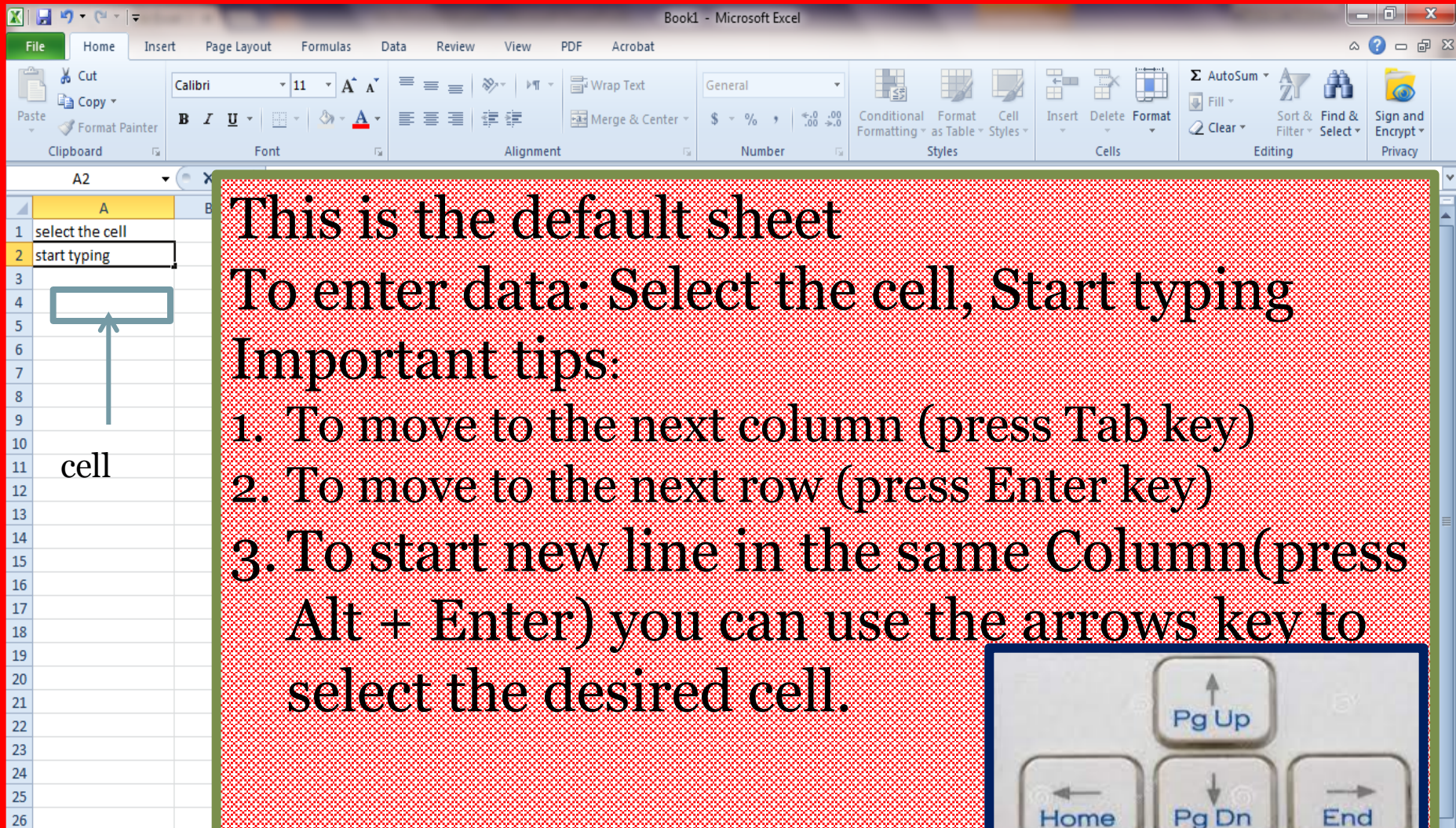
Style (**U**nderline, **I**talics, and **B**old) or (Ctrl+U), (Ctrl+I), (Ctrl+B)

Colours(fill colours)

Borders:



Learning MS Excel Basics: Entering Value




The screenshot shows the Microsoft Excel application window titled 'Book1 - Microsoft Excel'. The 'Home' tab is active, displaying various ribbon groups like Clipboard, Font, Alignment, Number, Styles, Cells, and Editing. In the worksheet area, cell A2 is selected and contains the text 'start typing'. A blue rectangular selection box is drawn around cell A2, and a blue arrow points from the word 'cell' to this box. The text 'A2' is visible in the top-left corner of the worksheet grid.

This is the default sheet

To enter data: Select the cell, Start typing

Important tips:

1. To move to the next column (press Tab key)
2. To move to the next row (press Enter key)
3. To start new line in the same Column (press Alt + Enter) you can use the arrows key to select the desired cell.



A diagram showing four navigation keys: 'Pg Up' (up arrow), 'Pg Dn' (down arrow), 'Home' (left arrow), and 'End' (right arrow).

Learning MS Excel Basics:

Saving Workbook:

- **File** > **save as** > specify the location and modify the file's name if required.

Closing Workbook: **CTRL+W** or
 CTRL+F4

Open workbook: **CTRL+O**

Managing worksheets

For Worksheets we can:

1. Insert one or more Worksheet
2. Rename it
3. Change its Tab color
4. Rearrange them in any required order
5. Delete unrequired one
6. Duplicate (copy) or move it before / after any Worksheet or at the end
7. Hid and Unhide certain Worksheet.

MS Excel Basics

1. Identify general needed shortcuts
2. Explore MS excel window
3. Navigate between different cells
4. Manage the workbook
5. Formatting for cells and sheets

Getting started

Cell : can contain a **Number**, **Logic Date**, **text** or **formula**

Worksheet: a **single** spreadsheet that contains **cells** organized by **rows** and **columns**

Workbook :
Excel file that contains one or more **worksheets**

Learning MS Excel Basics:

Saving Workbook:

- File > save as > specify the location and modify the file's name if required.

Closing Workbook: CTRL+W

Open workbook: CTRL+O

Managing worksheets

1. Identify how to manage worksheet
2. Editing worksheets

Formula in Excel (Insert data)

- Activate the cell and add data
- Insert formula:

أوجد معدل السعي السنوي

كلية النور الجامعة							1
تقنيات صناعة الاسنان المرحلة الثالثة (2022-2023)							2
ت	الشعبة	الاسم	درجة الفصل الاول	نصف السنة	درجة الفصل الثاني	درجة السعي	3
1	A	احمد مصباح مجيد جاسم	9	18	8	=D4+E4+J3	4
2	B	ابتهال بشار عبد فتاح	8.5	15.5	7		5
3	B	اسراء احمد قاسم يحيى	7.5	17	8		6
4	A	اسراء خالد الياس خضر	8	16	9		7
5	B	امنة فارس حمودي يحيى	7	19	7		8

Formula Bar:
Any formula
should start
with = sign

Editing Worksheet:

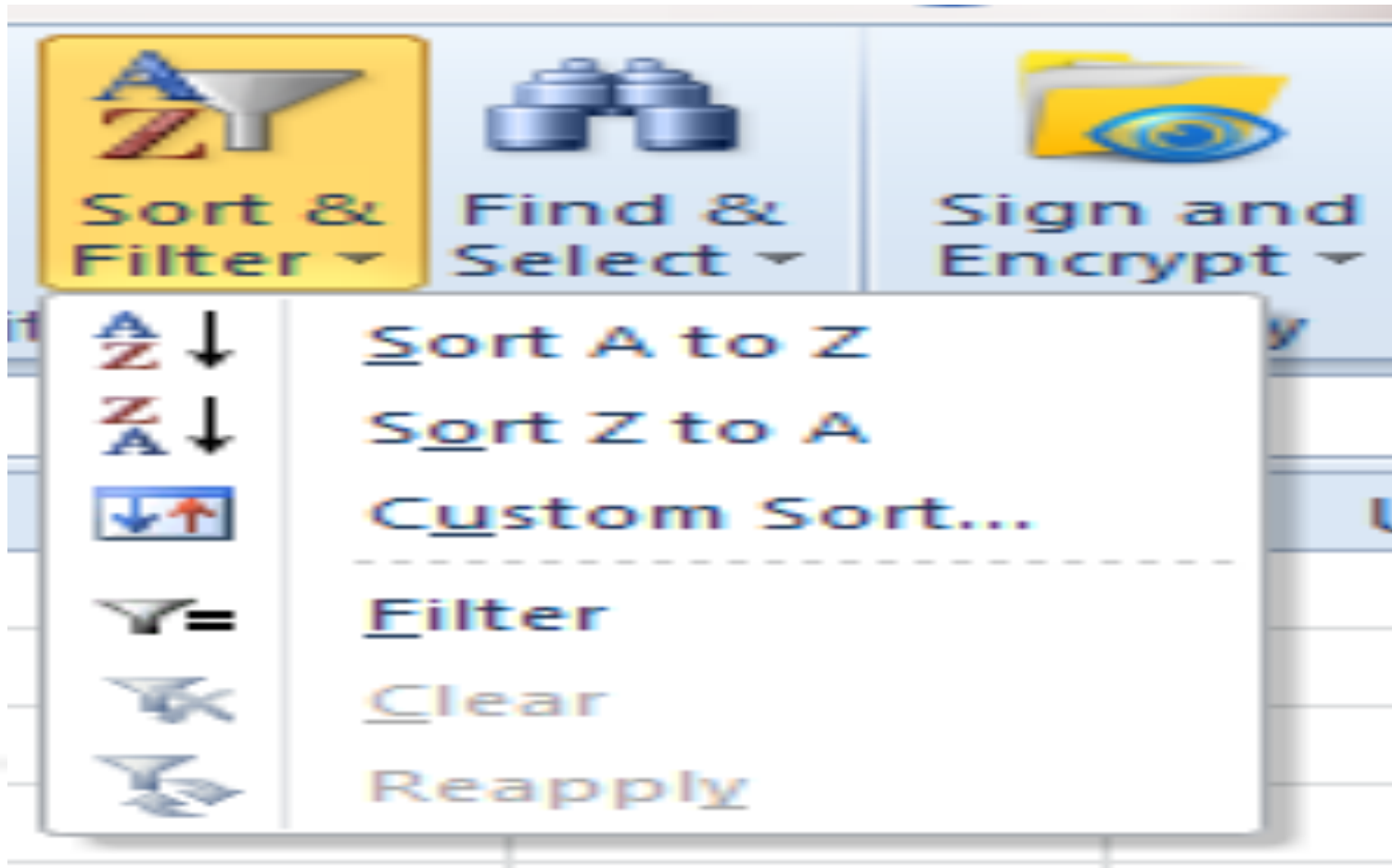
كلية النور الجامعة					
تقنيات صناعة الاسنان المرحلة الثالثة (2022-2023)					
ت	الشعبة	الاسم	الفصل	السنة	درجة الفصل الثاني
1	A	احمد مصطفى عبد جاسم	9	15.5	9
2	B	ابتهال بشار عب	8.5	17	9
3	B	اسراء احمد قاسم يحيى	7.5	16	7
4	A	اسراء خالد الياس خضر	8	19	7
5	B	امنة فارس حمودي يحيى	7		

Select CUT & Paste
تستخدم لنقل البيانات (مقطع)

تستخدم لحذف البيانات
Delete

Editing Worksheet: Sorting Cells

- Sorting in ascending , descending numeric order



MS Excel Basics (worksheets):

Creating new Worksheet:

- How many sheet are provided in the workbook by default
- Now in order to add more sheets:
 - Right-click on sheet tabs
 - Select Insert
 - An insert dialog will display with selected worksheet

Copy Worksheet:

- Right click on sheet name,
- Select move or copy
 - HINT: you need to add some data to check the copying perfectly

Hiding and Unhide Worksheet:

- Find how can we hide worksheet and unhide it

Deleting Worksheet:

- Find how can we delete worksheet

Editing Worksheet: Rows and Columns

Book1 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View PDF Acrobat

Clipboard Font Alignment Number Styles Cells Editing Privacy

B1 Sales calculating

	A	B	C	D	E	F	G	H	I	J
1		Sales calculating								
2	Products price	Sale percentage	Total							
3	30	0.15	4.5							
4	50	0.5	25							
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										

Rows run horizontally

MS Excel is providing rows From 1 to 104876

Columns run vertically

MS Excel is providing columns From A to XFD

Cell can be identified using columns and rows

What is the value of the Cell A3 ? 30

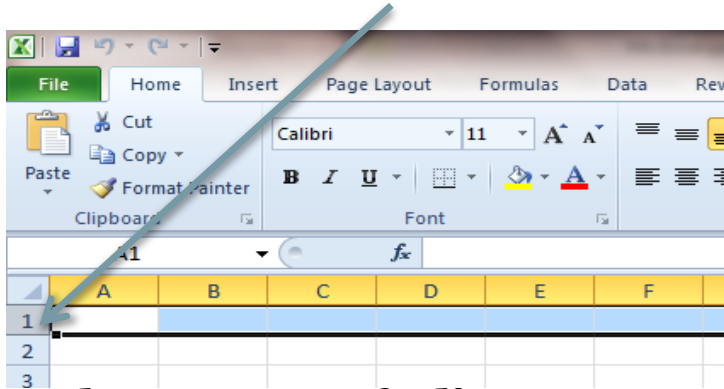
11/2/22

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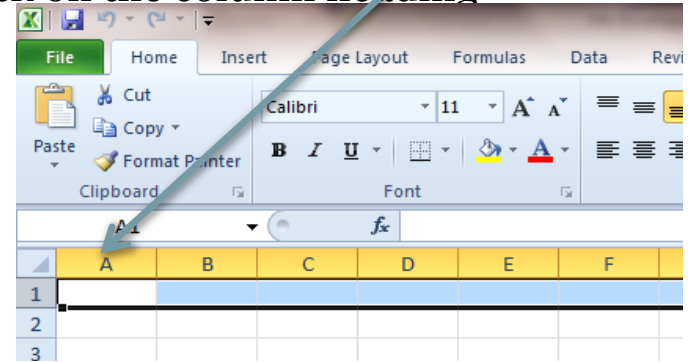
Editing Worksheet: Select Rows and Columns

- To select Row
 - Click on the row heading



- **To select a range of adjacent rows**
 - Click on the first row heading.
 - Drag to highlight through to the last row heading
- **To select a range of non-adjacent rows**
 - Click on the first row heading or range of rows.
 - Hold the Ctrl key down and continue highlighting additional row headings.

- To select column
- Click on the column heading



- **To select a range of adjacent columns**
 - Click on the first column heading.
 - Drag to highlight through to the last column heading
- **To select a range of non-adjacent columns**
 - Click on the first column heading or range of columns.
 - Hold the Ctrl key down and continue highlighting additional column headings

Editing Worksheet: Modify Rows height and Columns width

- To modify the Column width
 - Click on the column heading(s) to modify.
 - On the Home tab, in the Cells group, click the Format button.
 - To modify column width to a specified value, click Column Width and enter a width, then click OK.
 - To modify column width to optimal width, click Auto-fit Column Width.
- To modify the Row height
 - Click on the row heading(s) to modify.
 - On the Home tab, in the Cells group, click the Format button.
 - To modify row height to a specified value, click Row Height and enter a row height, then click OK.
 - To modify row height to optimal height, click Auto-fit Row Height.

Editing Worksheet: Freeze column title

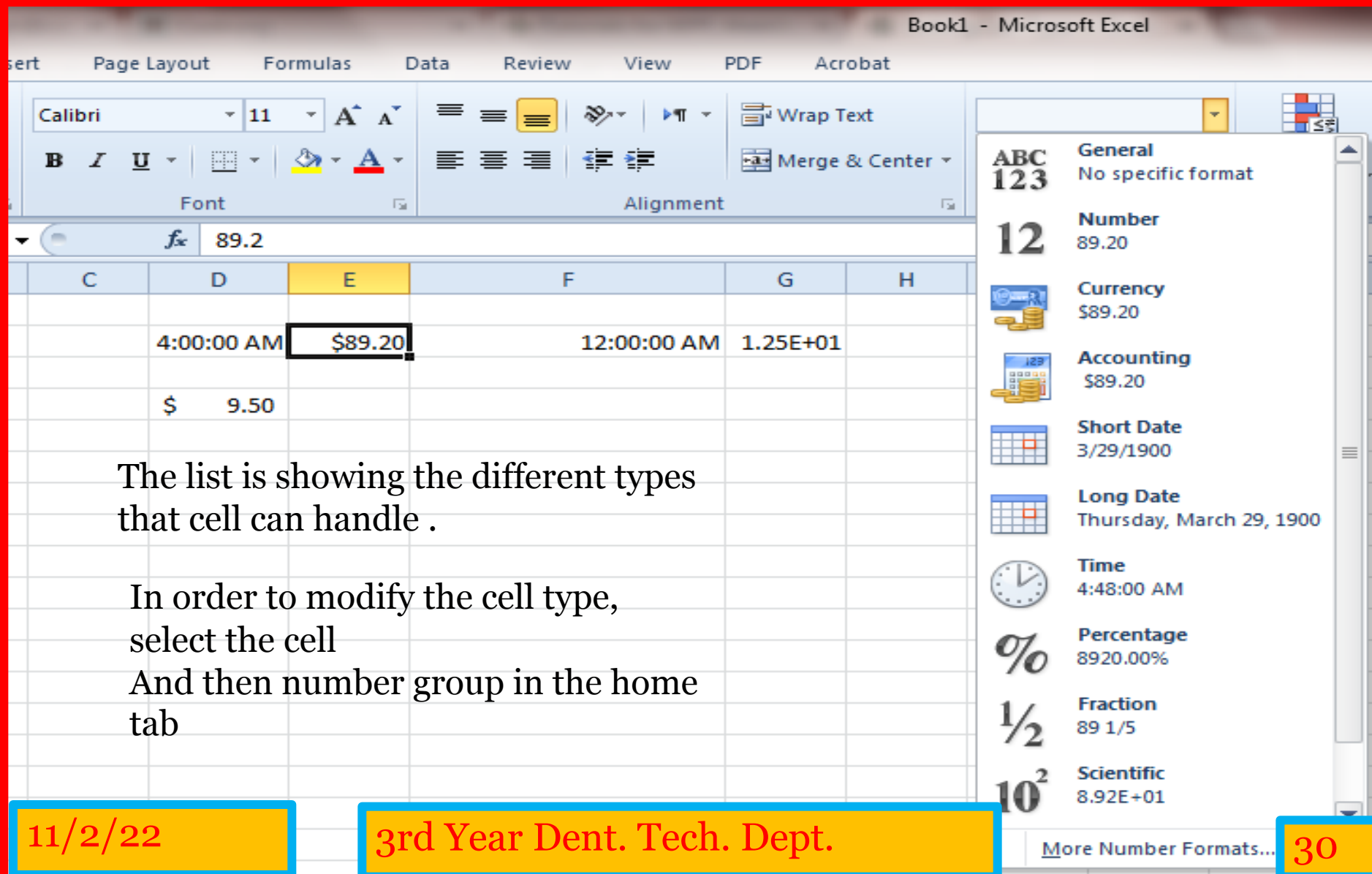
- Why ?
 - To keep column headings visible regardless of where you scroll in your sheet.
- How ?
 - Select the column immediately to the right of the column to freeze.
 - On the View tab, in the Window group, click the Freeze Panes arrow.
 - Click the Freeze Panes button

Exercise:

- Students should create their first excel sheet by adding a table as the following and find the total using the formula bar

Name	Marks scored in Computer	Marks scored in medical chemistry	Total
Mohammed	78	90	
Ahmed	80	90	
Omar	96	100	
Ali	86	92	
Mazin	49	89	

Formatting Cells: Setting Cell type



The list is showing the different types that cell can handle .

In order to modify the cell type,
select the cell
And then number group in the home tab

C	D	E	F	G	H
	4:00:00 AM	\$89.20	12:00:00 AM	1.25E+01	
	\$ 9.50				

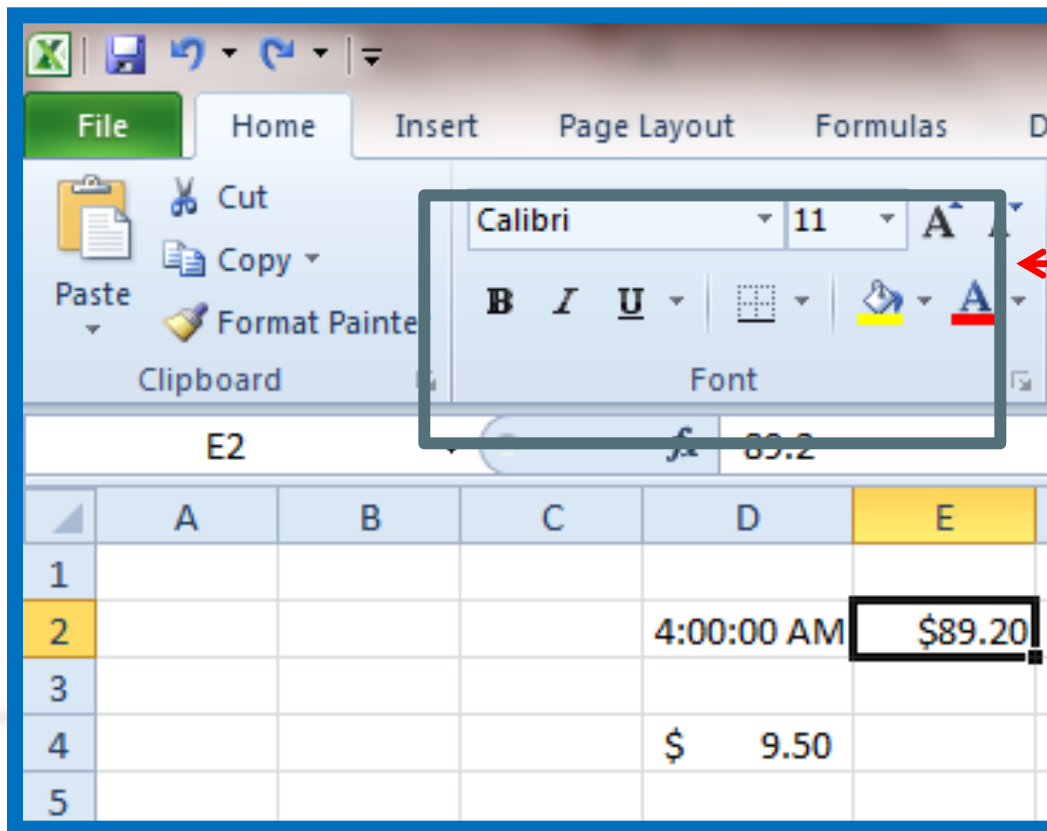
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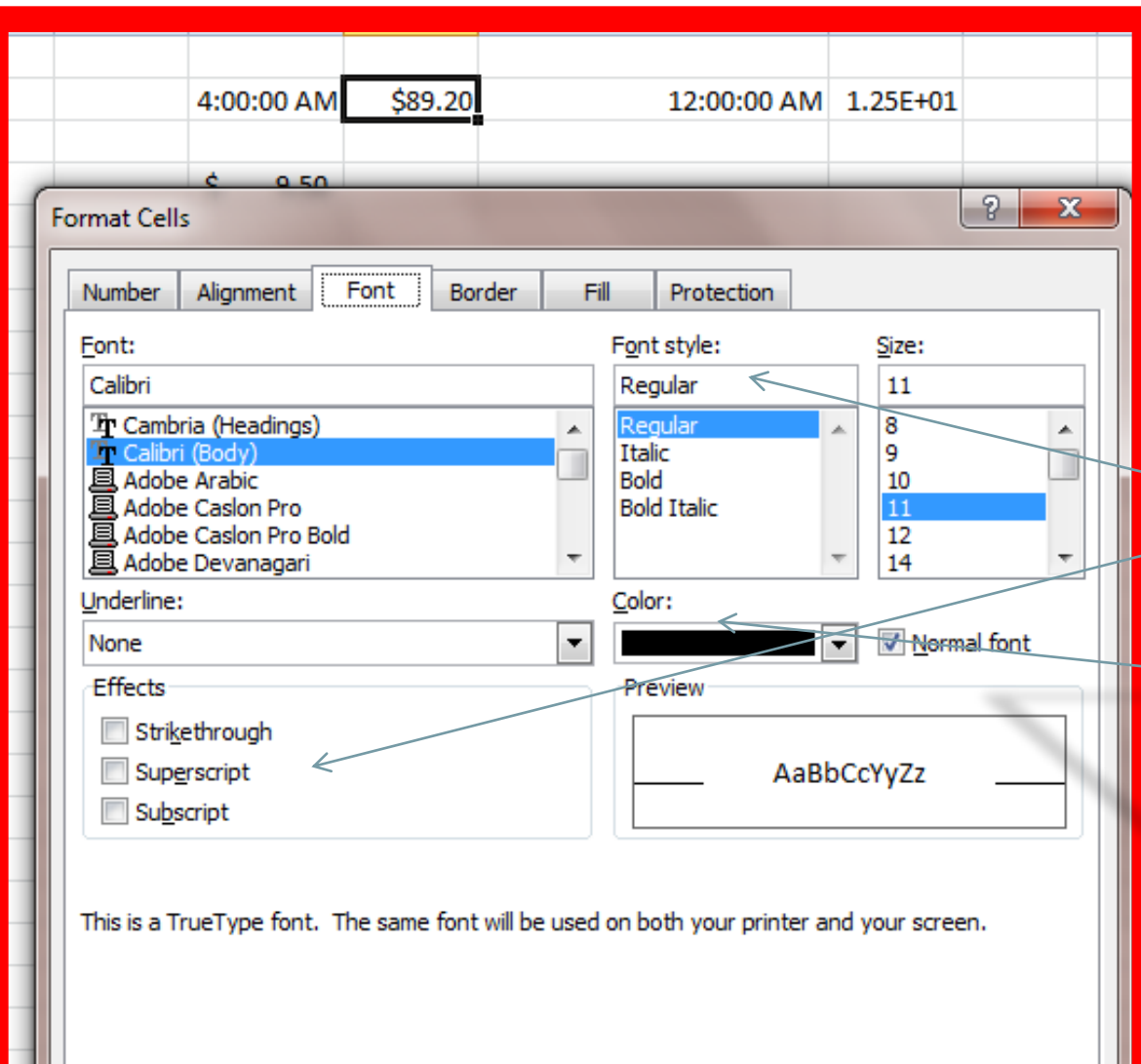
30

Formatting Cells: Setting fonts

- Select text,
- Modify the font type and size from **Font Group**



Formatting Cells: Text-decoration and setting text color



- To get the Format Cell Dialog:
Right click on cell and select **format cell , font tab**

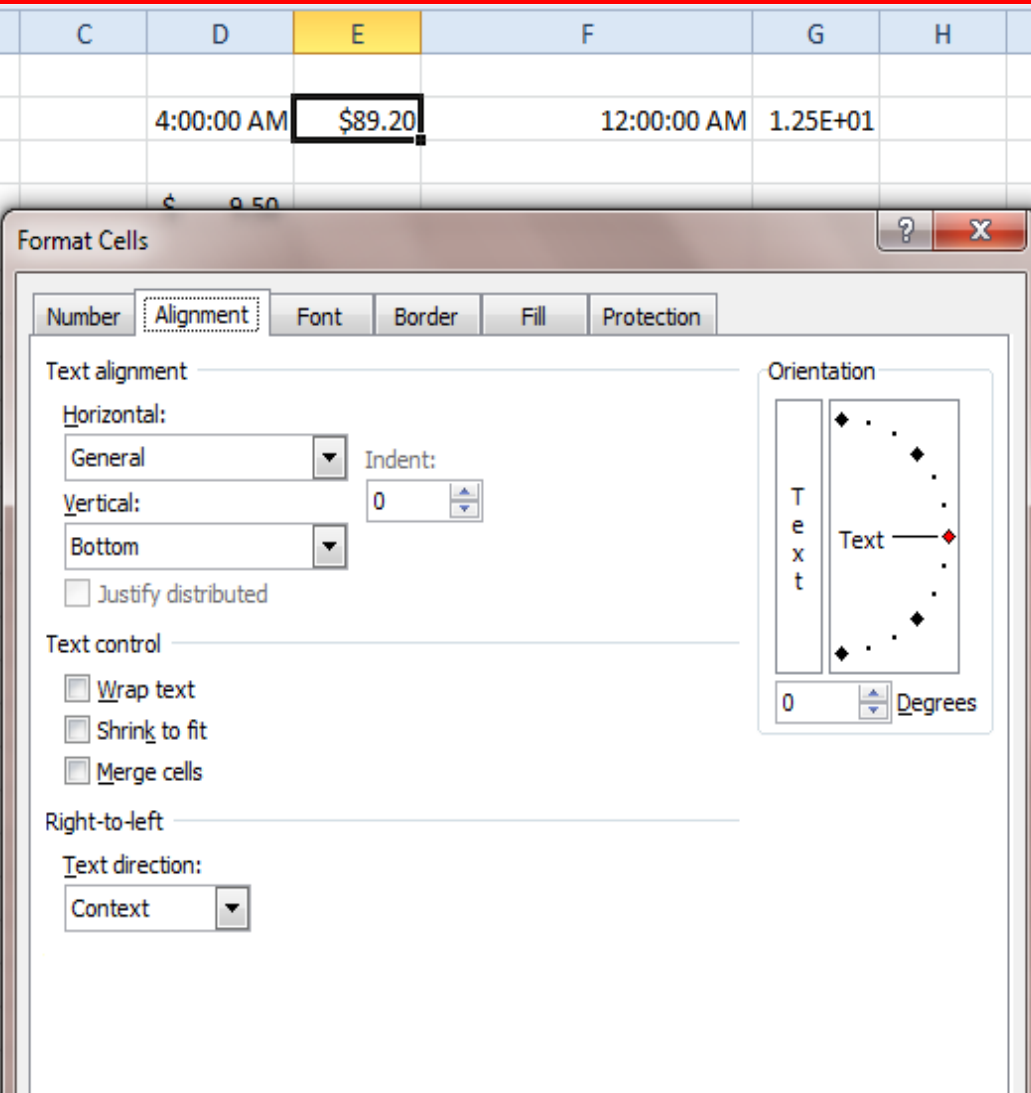
1. **Modify font style**
2. **Effects**

- Change the text color

Formatting Cells: Rotate Cells

- To rotate A cell:
 - Display the same format cell dialog
 - Select alignment tab
 - Modify the orientation

Change the text alignment :



Formatting Cells: Setting Colors

- To change the background color:

- Display the format cell
- Go to Fill tab



\$98.0

- To add borders:

- Display the format cell
- Go to Border tab



\$98.0

Formatting Cells: Merge Cells

- Is to combine two or more cells into a single cell.
- How ? Select and merge

Book1 - Mi

File Home Insert Page Layout Formulas Data Review View PDF Acrobat

Cut Copy Paste Format Painter Clipboard

Calibri 11 A A

B I U

Font

Alignment

Wrap Text

Merge & Center

Merge & Center
Merge Across
Merge Cells
Unmerge Cells

F2 5/19/4350 12:00:00 AM

	A	B	C	D	E	F
1						
2				4:00:00 AM	\$89.20	12:00:00 AM
3						
4				\$ 9.50		
5						
6						
7						

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Formatting Cells: Wrap text

- Problem?



The cell content is :
Ahmed Abdullah Ali
HOWEVER , the cell is only displaying (Ahmed A)

- ❖ Merge cells
- ❖ Wrap text
- ❖ Shrink to fit



Format cell dialog
Alignment Tab
Control Text

Formatting Sheets: Options for printing purpose

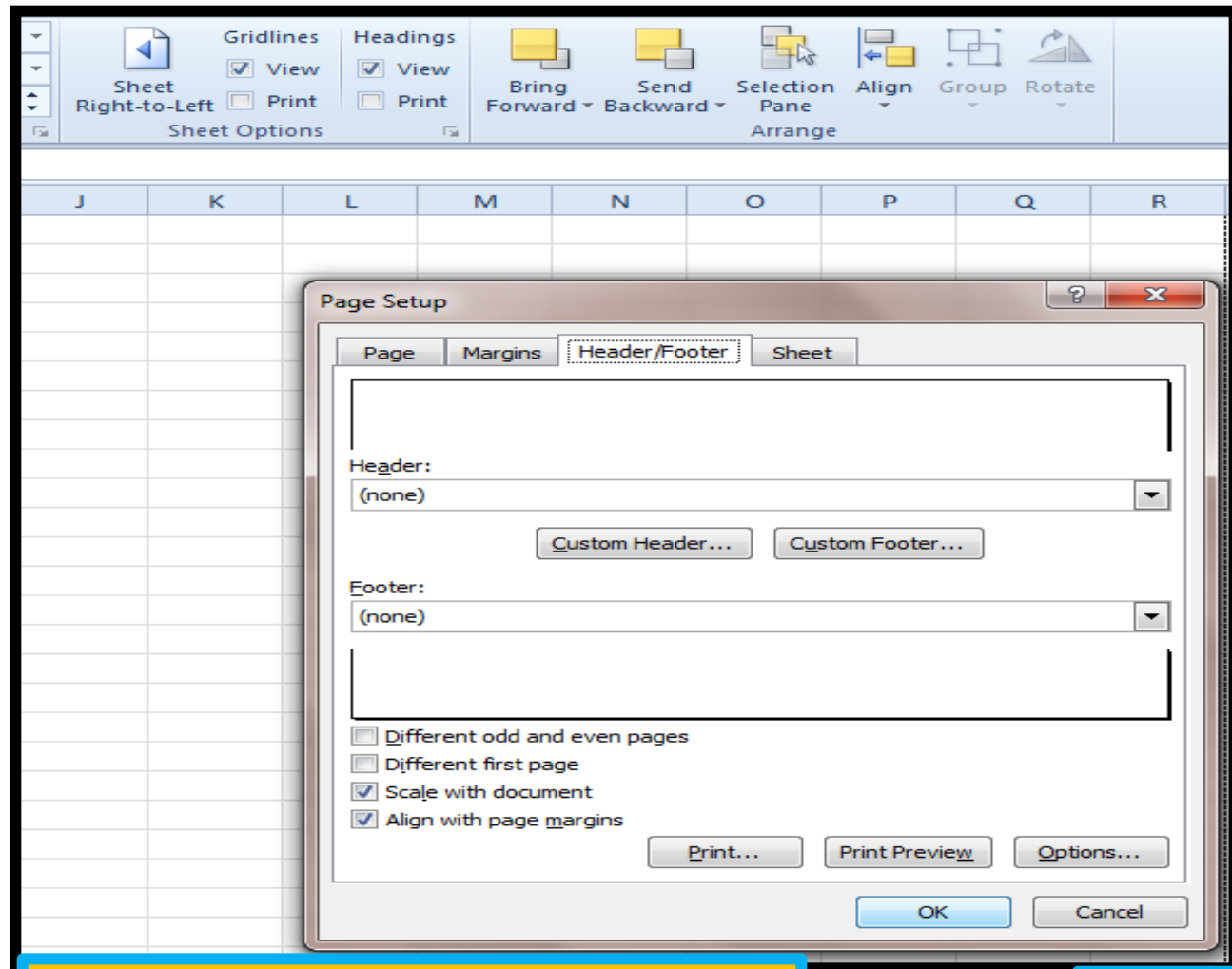
The image shows the Microsoft Excel interface with the **Page Layout** tab selected. The **Page Setup** group is highlighted, and the **Sheet Options** group is also visible. A blue arrow points from the text 'To set the layout for printing : Go to **page layout** tab **Sheet options** group' to the **Page Setup** group in the ribbon. Another blue arrow points from the same text to the **Sheet** tab in the **Page Setup** dialog box. The dialog box is open, showing the **Sheet** tab with options for **Print area**, **Print titles**, **Print** (Gridlines, Black and white, Draft quality, Row and column headings), **Comments**, **Cell errors as**, and **Page order** (Down, then over; Over, then down).

To set the layout for printing :
Go to **page layout** tab
Sheet options group

Formatting Sheets: add header and footer

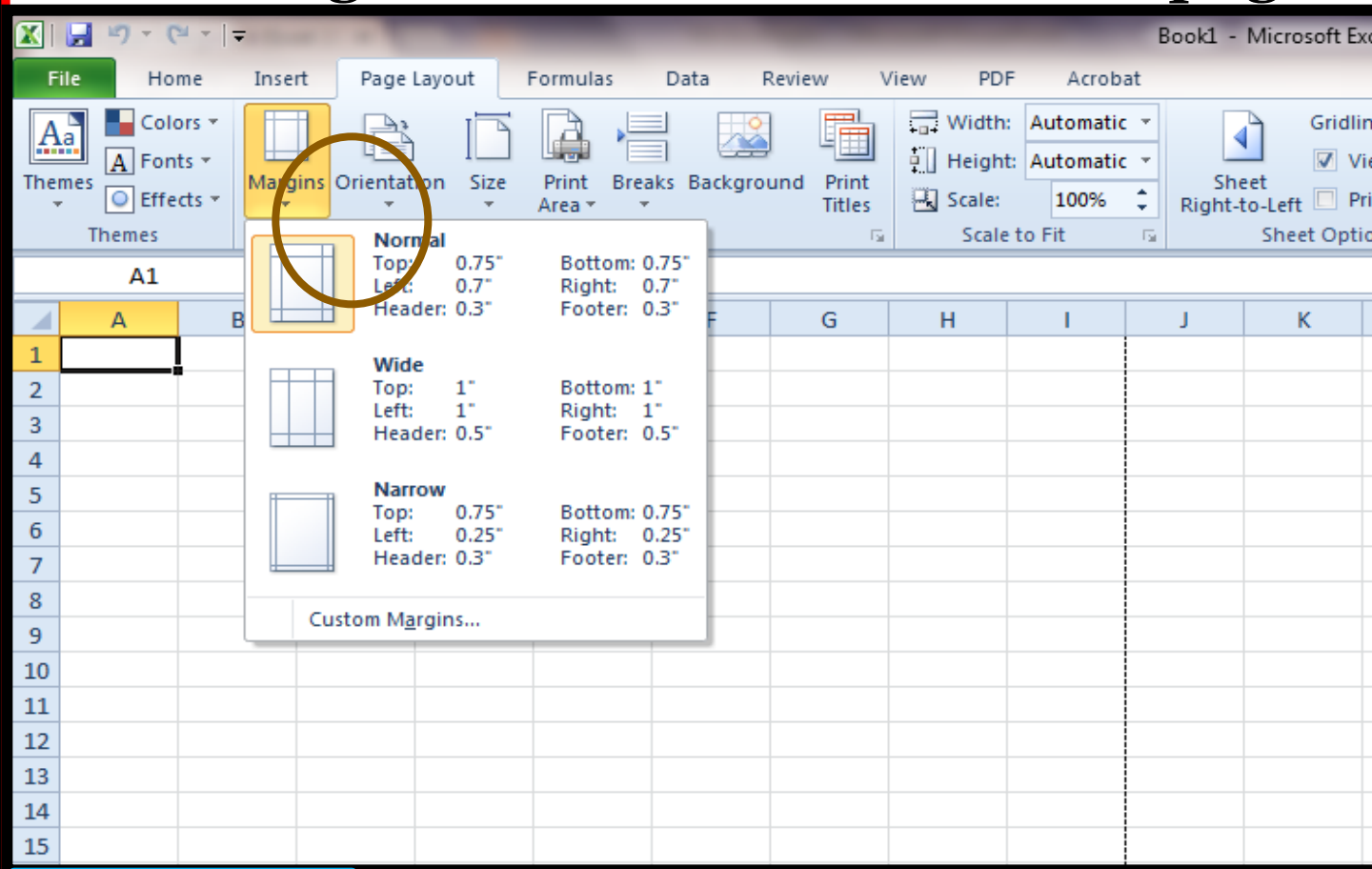
- Add header and footer to add information to the workbook.

Page layout
Sheet options
Header/footer



Formatting Sheets: Set Margins and page orientation

- Margins : are the unprinted area the page sides
- All margins are fixed for the same pages.



Change page orientation,

1. Portrait
2. landscape

- Page break: Identify the printed part of each page
- Background for the entire worksheet
- How ?

Formatting Sheets: Conditional Formatting

- enables you to format a range of values so that values outside certain limits, are automatically formatted.

The screenshot shows the Microsoft Excel interface with the 'Home' tab selected. The 'Conditional Formatting' dropdown menu is open, displaying various options: Highlight Cells Rules, Top/Bottom Rules, Data Bars, Color Scales, Icon Sets, New Rule..., Clear Rules, and Manage Rules... The 'Highlight Cells Rules' submenu is also open, showing comparison operators: Greater Than..., Less Than..., Between..., Equal To..., Text that Contains..., A Date Occurring..., and Duplicate Values... The spreadsheet shows column A with values 10, 3326, 2351, 565, 222, and 22. The cell A6 (565) is highlighted with a blue border. A text box is overlaid on the spreadsheet with the text: 'Select the column in which you want to apply the conditional formatting'.

Book1 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View PDF Acrobat

Clipboard Font Alignment Number

Conditional Formatting

Highlight Cells Rules

Greater Than...

Less Than...

Between...

Equal To...

Text that Contains...

A Date Occurring...

Duplicate Values...

More Rules...

Select the column in which you want to apply the conditional formatting

11/2/22

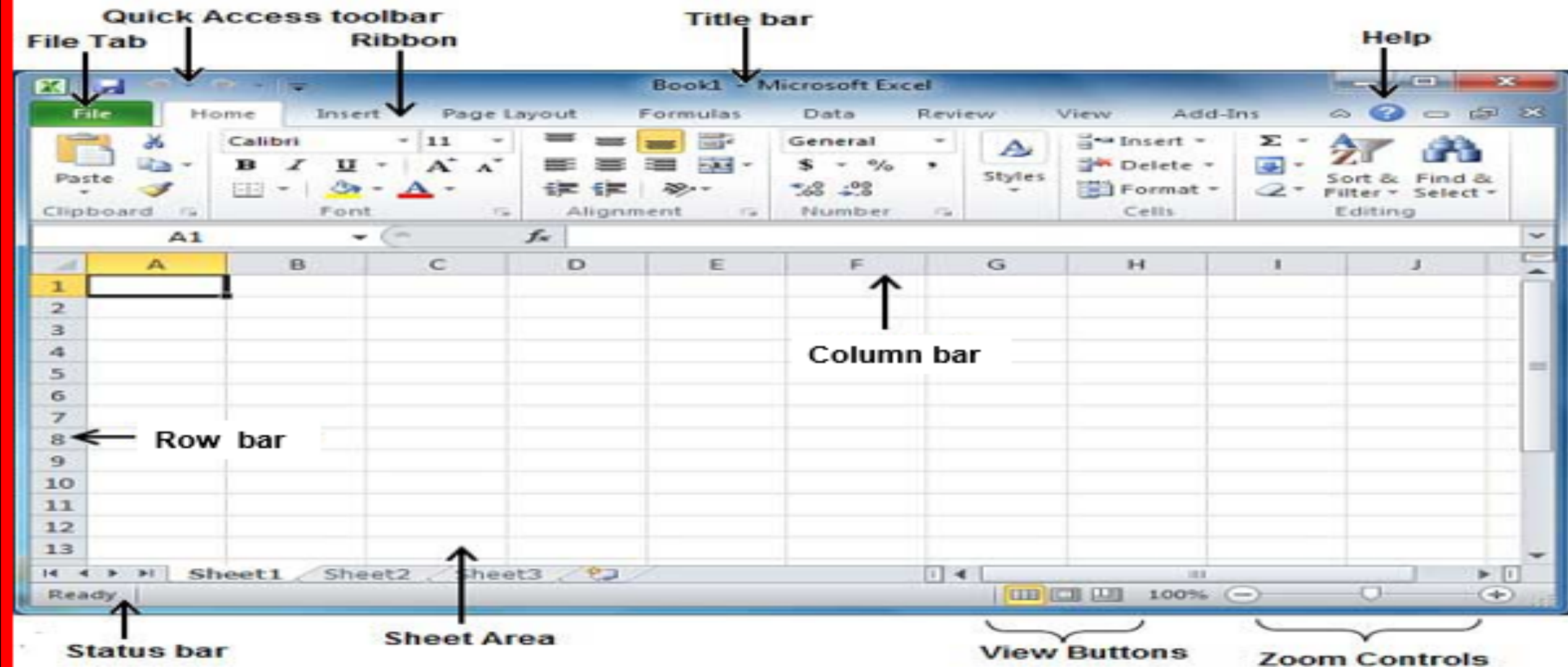
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References :

- ICS skills, New Ecdl Syllabi , 2013

Learning MS Excel Basics: Explore Window

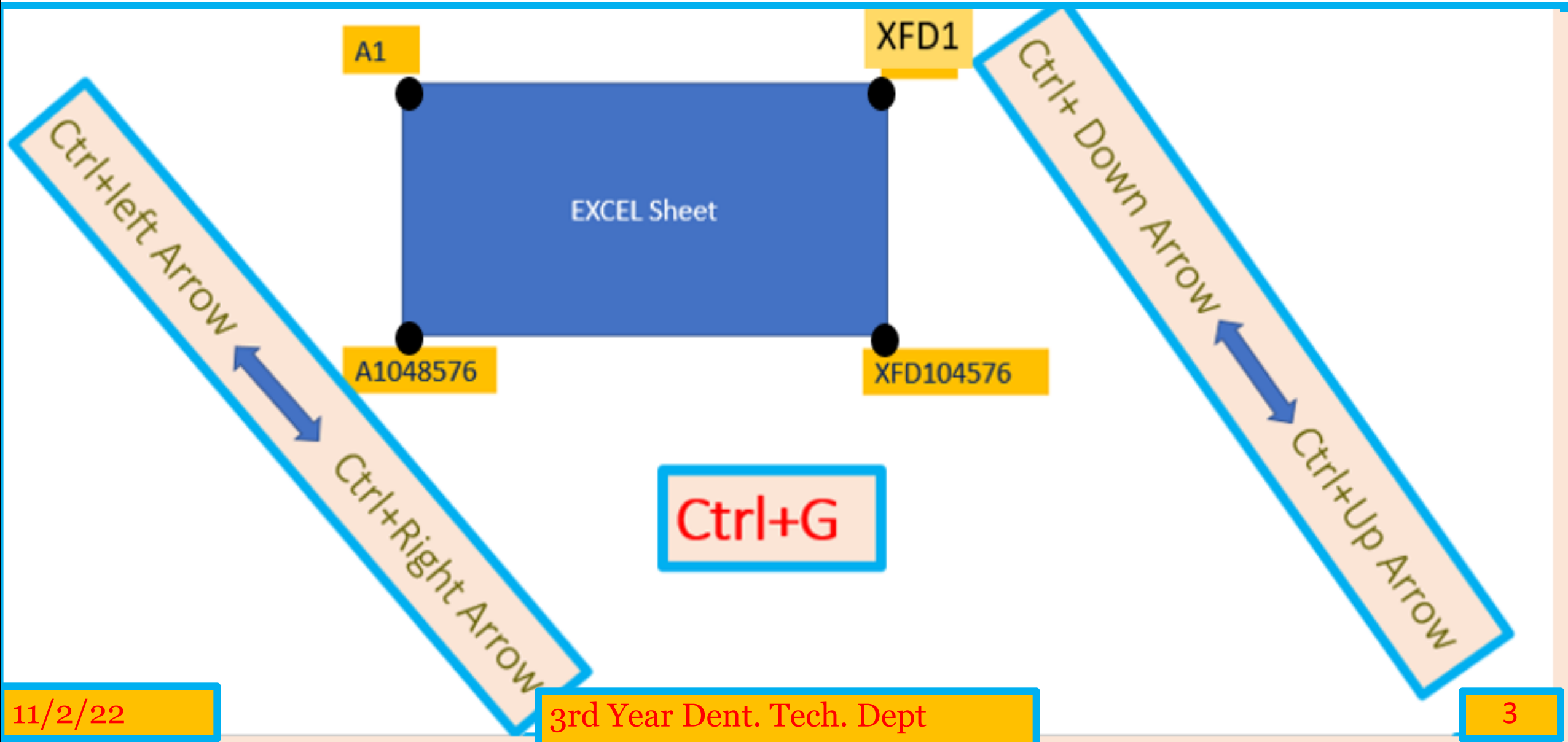


Status Bar

Displays the current cell mode, One of the following modes is displayed:

1. **Ready** to indicate a general state.
2. **Enter** to indicate content entry mode. It is displayed when you select a cell and **start typing**, or when you press F2 **twice**.
3. **Edit** to indicate in-cell editing mode. It is displayed when you **double-click** a cell, or when you press **F2** so that you can enter or edit data in a cell.
4. **Point** to indicate formula cell selection mode. It is displayed when you start a **formula** and then click the **cells** that you want **to include** in the formula.

Cells Navigation (EXCEL Sheet Boundary)



Total number of Cells

4

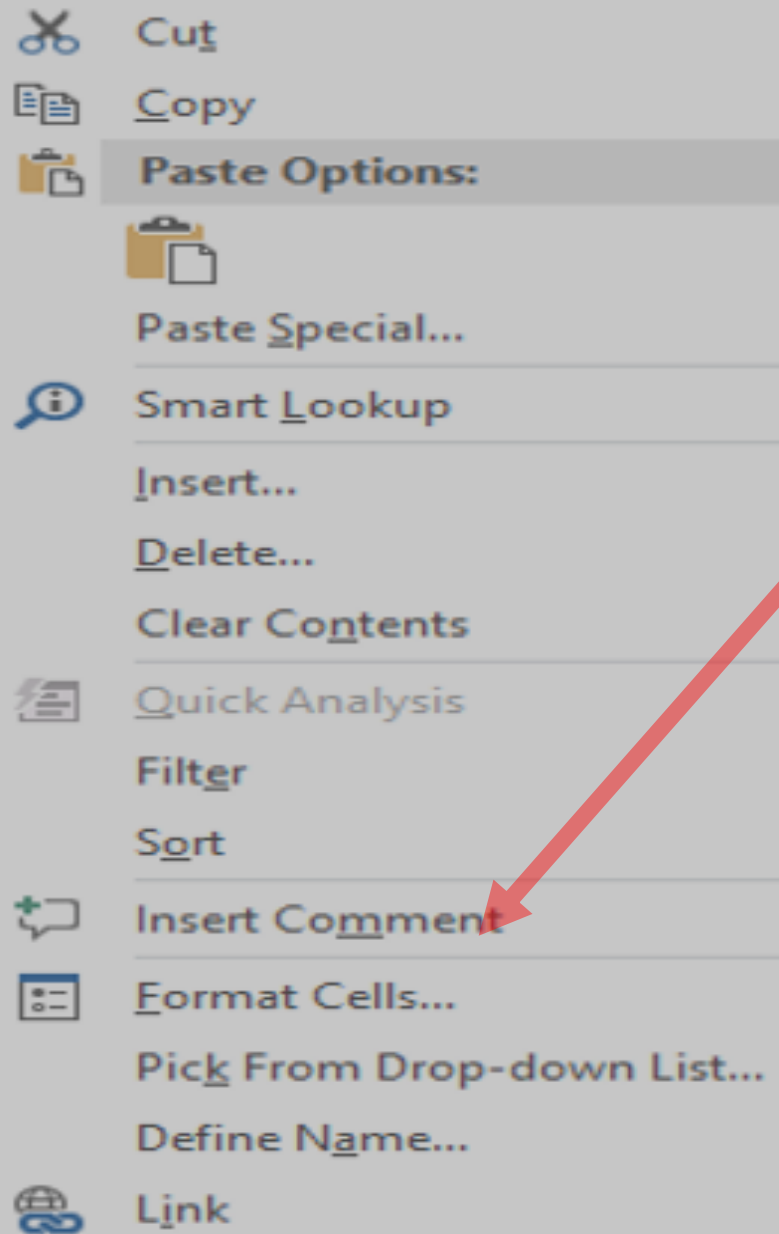
	A	B	C
1	=COUNTIF(4:4,"")	16384	عدد الأعمدة
2	=COUNTIF(D:D,"")	1048576	عدد الصفوف
3	=A1*A2 →	17,179,869,184	عدد الخلايا

seventeen billion one hundred seventy-nine million eight hundred sixty-nine thousand one hundred eighty-four)

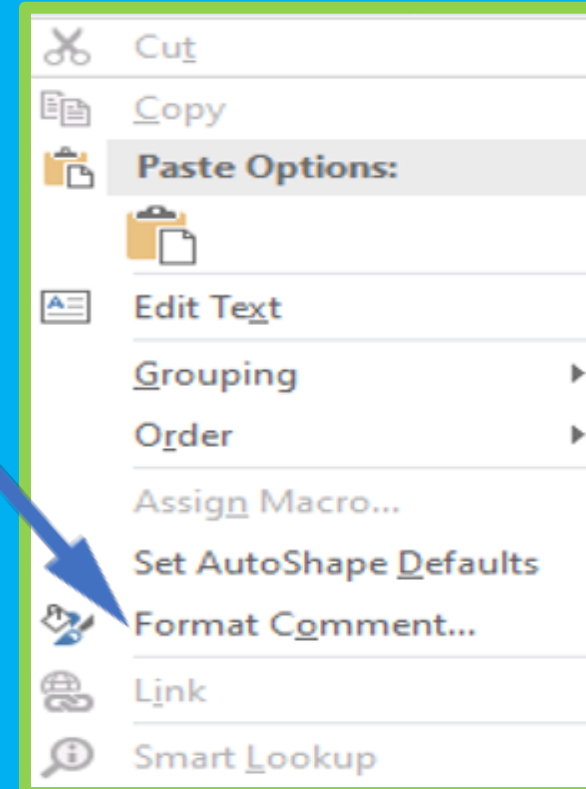
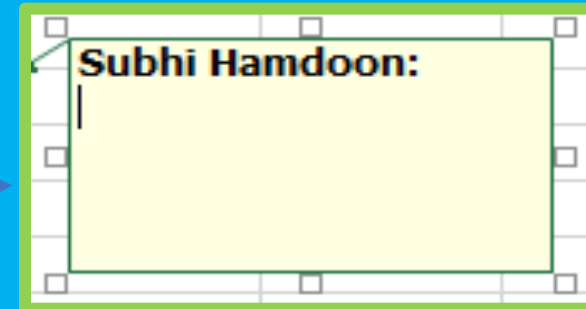
Types of Data in Excel Cell

Cell can contains the following types of Data:

- 1. Number:** it could be Decimal and/or comma separator..
- 2. Date:** user can select any Date format (Hijri, Gregorian).
- 3. Text:** All types (Char, Number and special characters)
- 4. Formula:** Date & Time, Statistical, Math & trig, Logical ...(Shift+F3)
- 5. Errors:** #DIV/0, #N/A, #NAME?, #NULL!, #NUM!, #REF!, #VALUE!, #####

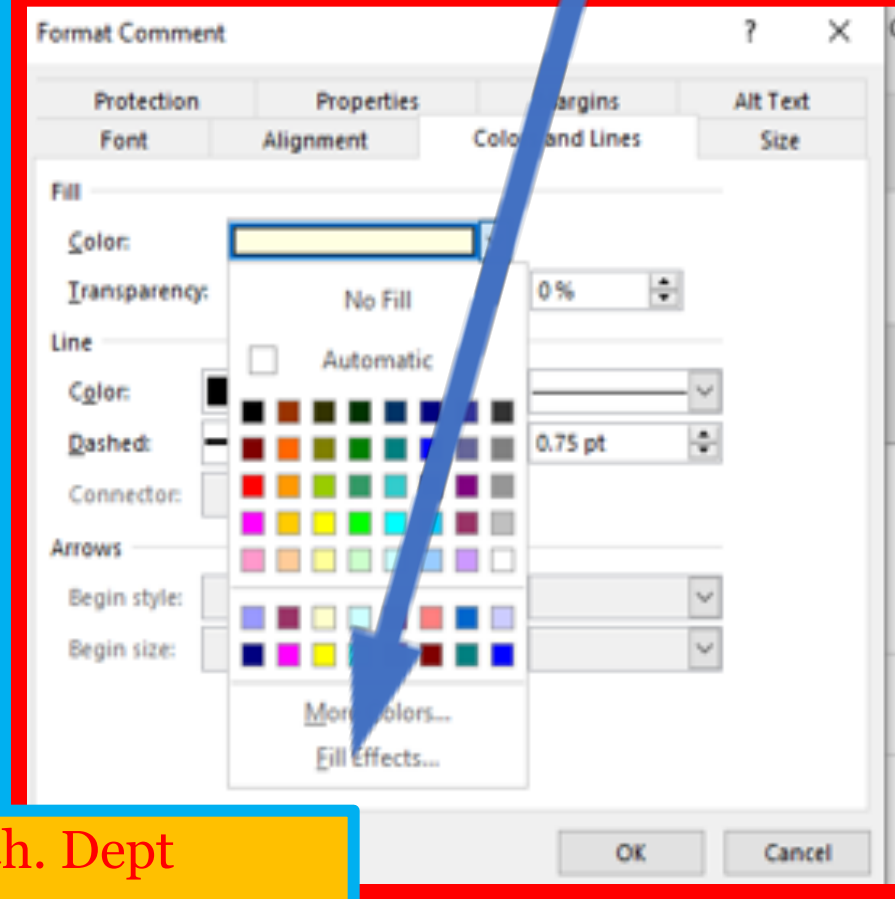
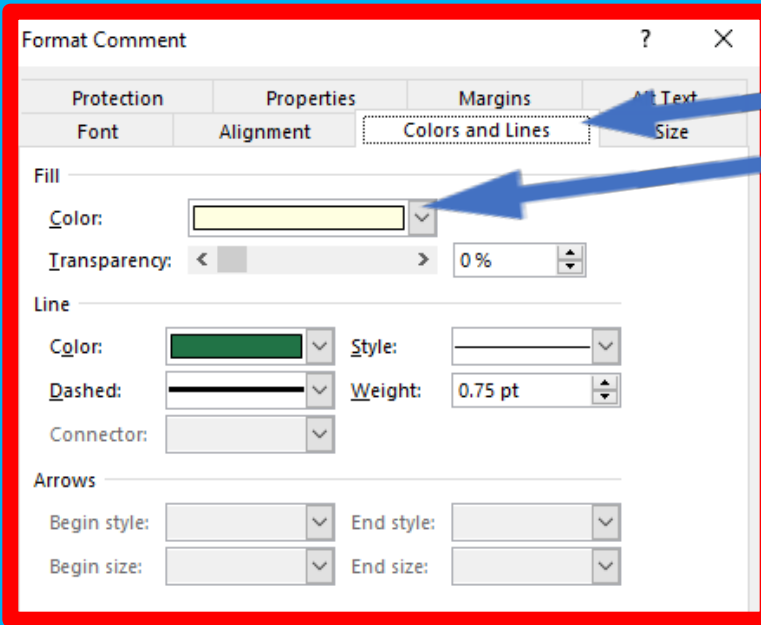


1. At any cell ,right click (mouse) then
2. Select (Insert Comment) the following picture appear.
3. Put the cursor at the boundary.
4. Right click (mouse)
5. Select (Format Comment)



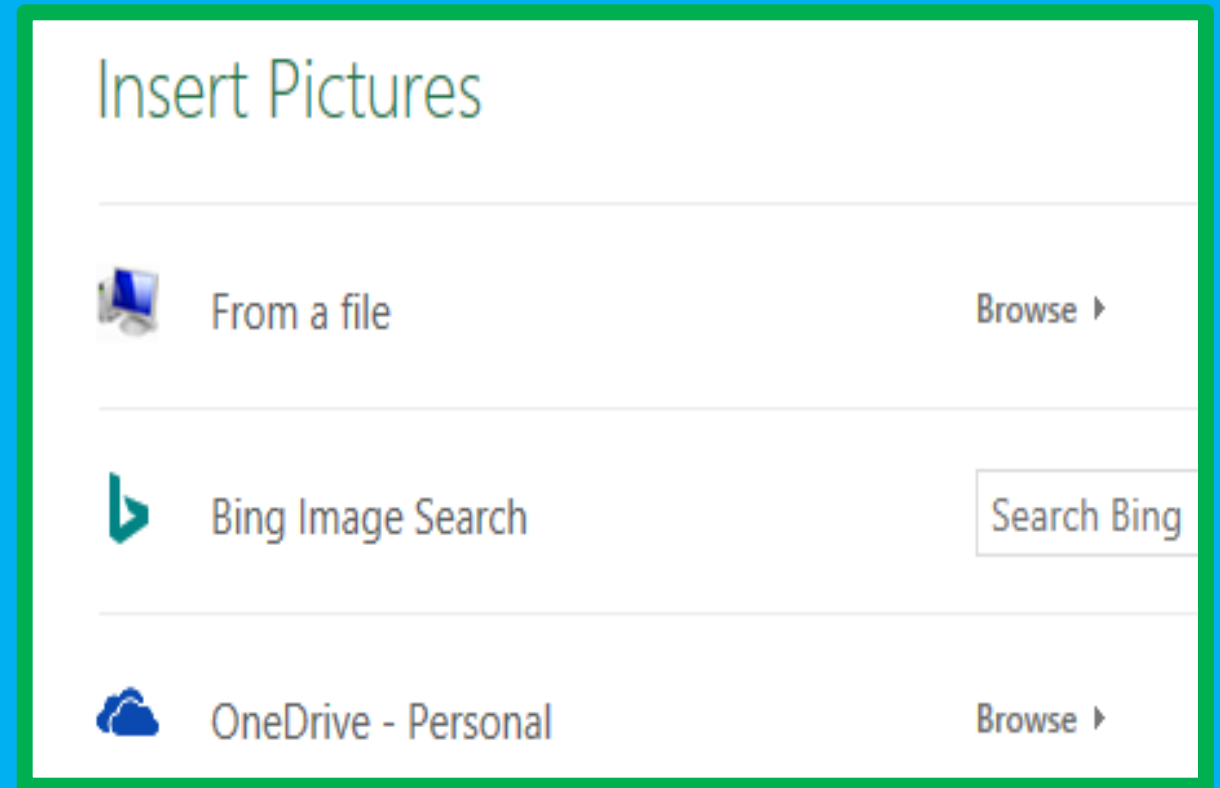
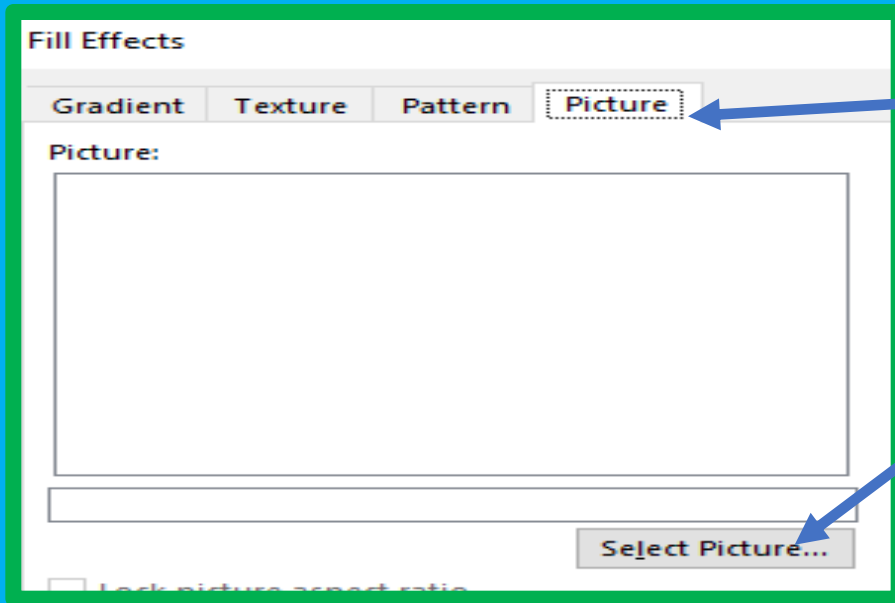
How to add Picture

5. Select (Colors & Lines)
6. Select fill effect



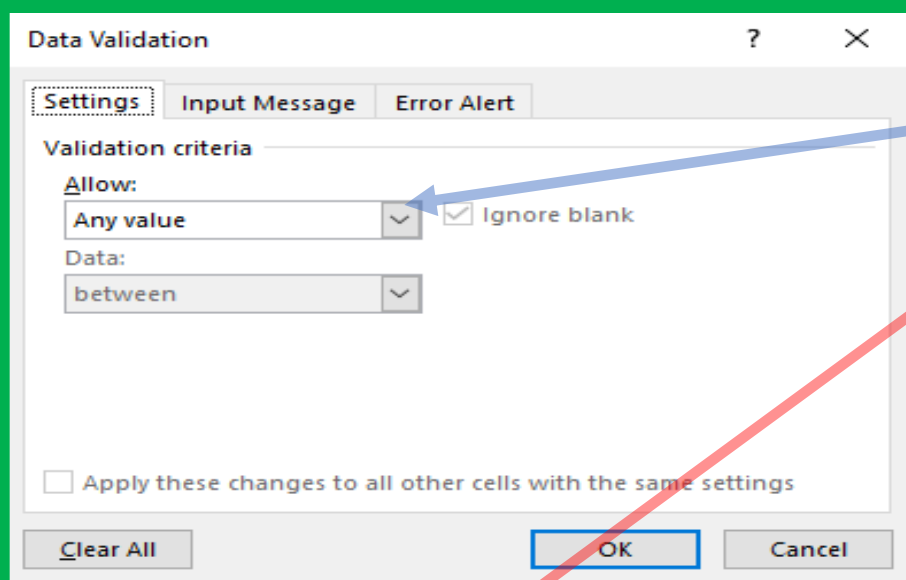
How to add Picture

7. Select Picture

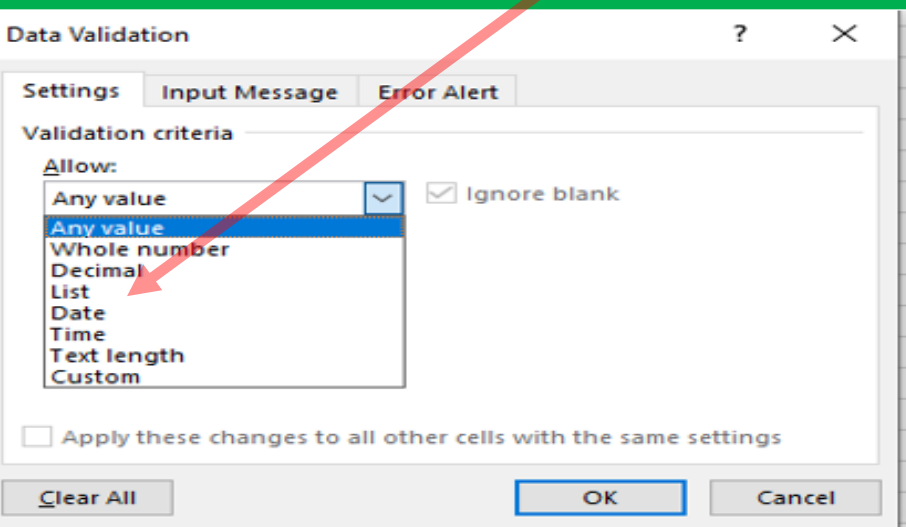


How to add Validation

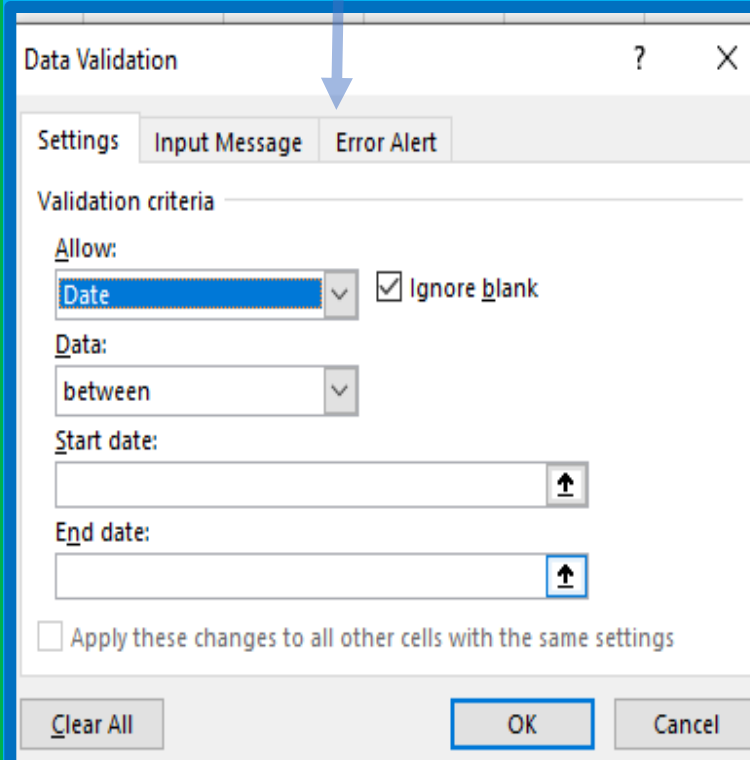
1. From Data at Ribbon select (Data Validation)
2. Select Setting =>Any Value
3. Select the appropriate type (Number, Date, Decimal,...)
4. Below a selection of Date type



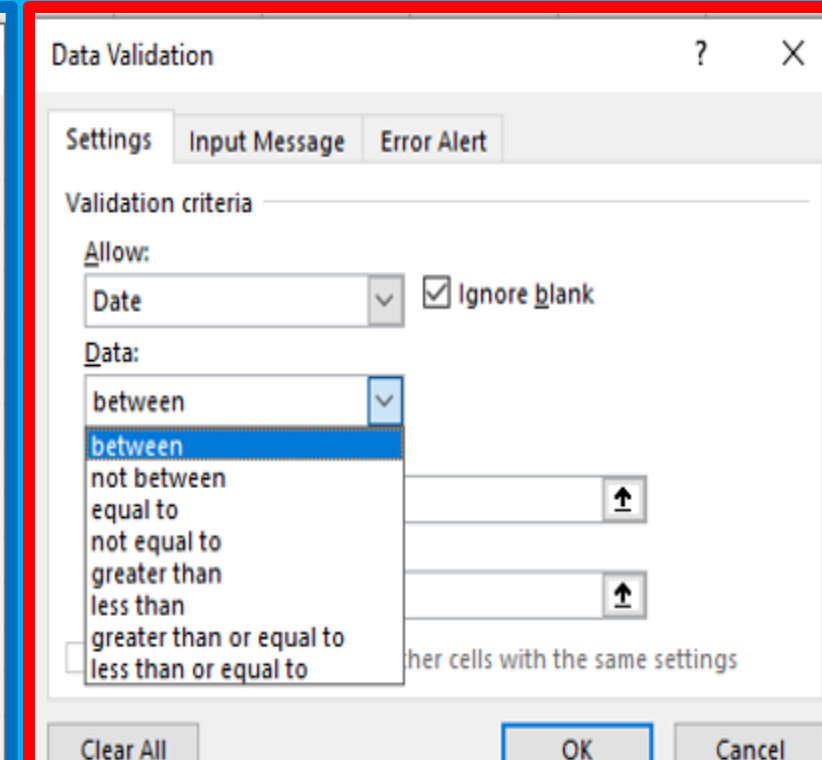
The 'Data Validation' dialog box is shown with the 'Settings' tab selected. Under 'Validation criteria', the 'Allow' dropdown is set to 'Any value' and the 'Ignore blank' checkbox is checked. The 'Data' dropdown is set to 'between'. At the bottom, there are buttons for 'Clear All', 'OK', and 'Cancel'.



The 'Data Validation' dialog box is shown with the 'Settings' tab selected. The 'Allow' dropdown menu is open, displaying a list of options: 'Any value', 'Whole number', 'Decimal', 'List', 'Date', 'Time', 'Text length', and 'Custom'. The 'Ignore blank' checkbox is checked. At the bottom, there are buttons for 'Clear All', 'OK', and 'Cancel'.



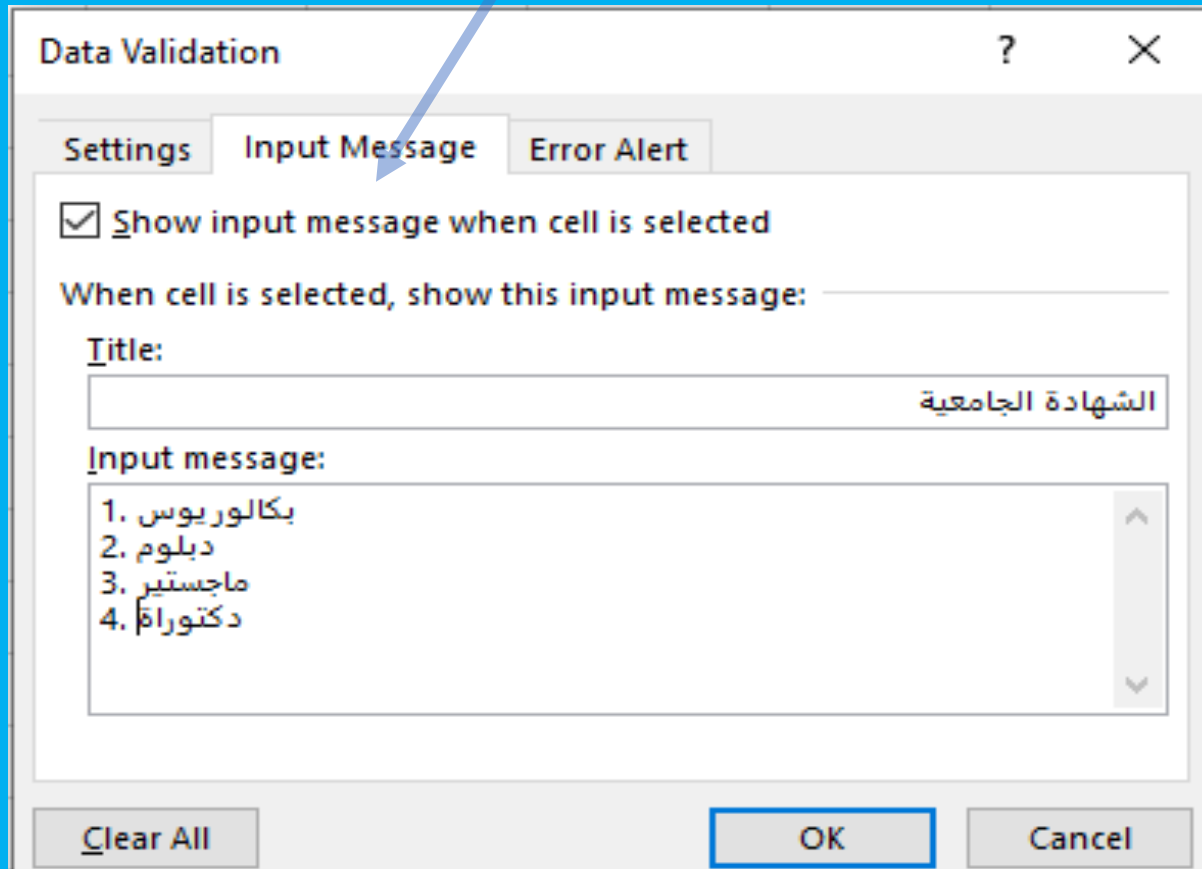
The 'Data Validation' dialog box is shown with the 'Settings' tab selected. Under 'Validation criteria', the 'Allow' dropdown is set to 'Date' and the 'Ignore blank' checkbox is checked. The 'Data' dropdown is set to 'between'. Below 'Data', there are input fields for 'Start date' and 'End date', each with an upward arrow button. At the bottom, there are buttons for 'Clear All', 'OK', and 'Cancel'.



The 'Data Validation' dialog box is shown with the 'Settings' tab selected. Under 'Validation criteria', the 'Allow' dropdown is set to 'Date' and the 'Ignore blank' checkbox is checked. The 'Data' dropdown menu is open, displaying a list of comparison operators: 'between', 'not between', 'equal to', 'not equal to', 'greater than', 'less than', 'greater than or equal to', and 'less than or equal to'. At the bottom, there are buttons for 'Clear All', 'OK', and 'Cancel'.

How to add input Message in Validation

1. From Data Validation select (Input Message)
2. Type the Tittle and your Help message
3. Press OK...



Types of Error Alert in Validation

1. STOP

Data Validation

Settings Input Message **Error Alert**

☒ Show error alert after invalid data is entered

When user enters invalid data, show this error alert:

Style: Stop Title: Error message:

Clear All OK Cancel

2. Warning

Data Validation

Settings Input Message **Error Alert**

☒ Show error alert after invalid data is entered

When user enters invalid data, show this error alert:

Style: Warning Title: Error message:

Clear All OK Cancel

3. Information

Data Validation

Settings Input Message **Error Alert**


☒ Show error alert after invalid data is entered

When user enters invalid data, show this error alert:

Style: Information Title: Error message:


Clear All OK Cancel

Microsoft Excel

 This value doesn't match the data validation restrictions defined for this cell.


Retry Cancel Help

Microsoft Excel

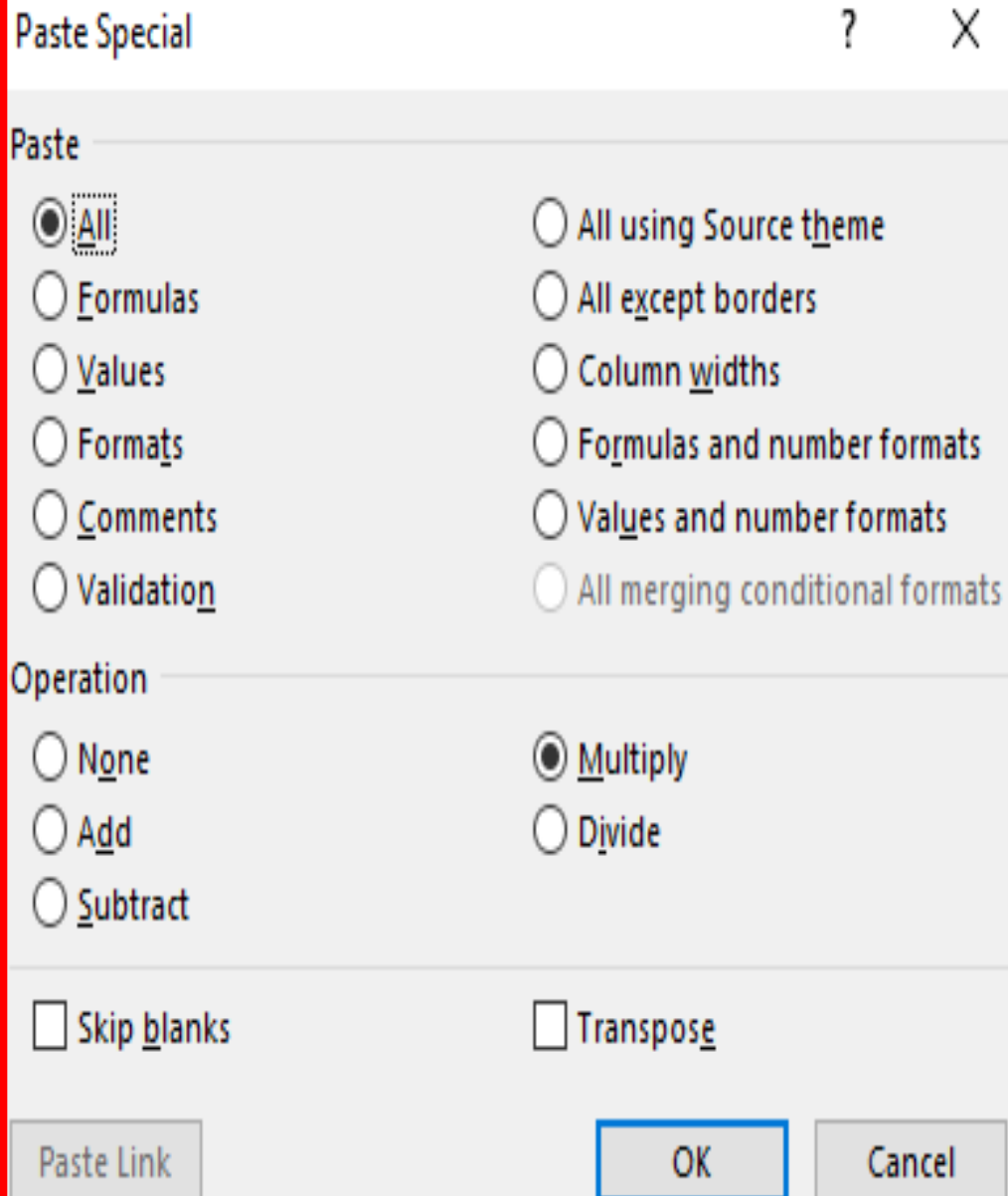
 This value doesn't match the data validation restrictions defined for this cell.
Continue?

Yes No Cancel Help

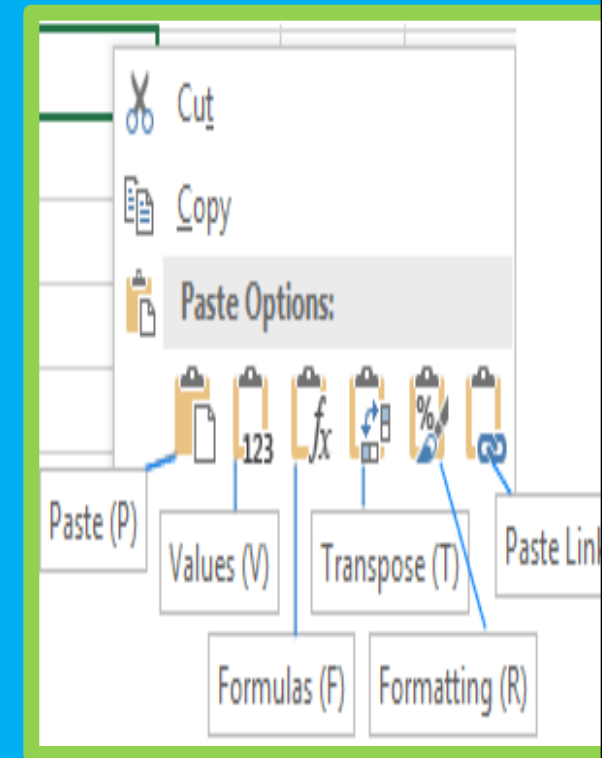
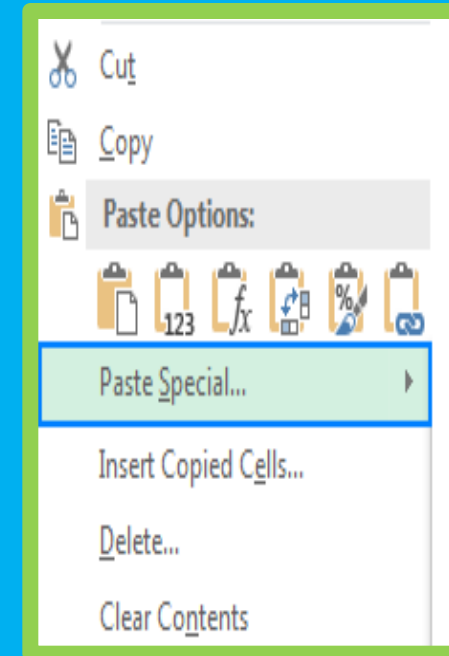
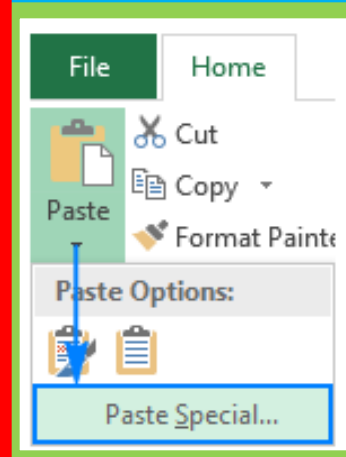
Microsoft Excel

 This value doesn't match the data validation restrictions defined for this cell.

OK Cancel Help



1. Copy the source cell or a range of cells.
2. Open the *Paste Special* dialog.
3. Select the desired paste option, and
4. click OK or press the Enter key



Excel functions

Types (by category)

Compatibility functions

Cube functions

Database functions

Date and time functions

Engineering functions

Financial functions

Information functions

Logical functions

Lookup and reference functions

Math and trigonometry functions

Statistical functions

Text functions

User defined functions that are installed with add-ins

Types of operations

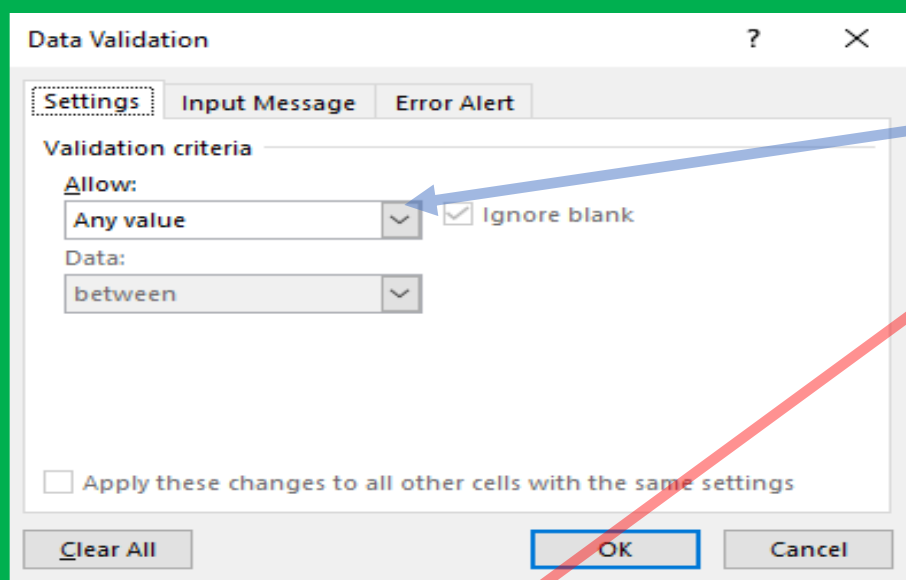
+	Addition
-	Subtraction
*	Multiplication
/	Division
^	Exponentiation
&	Concatenation
=	Equal to
>	Greater Than
<	Less Than
>=	Greater Than Equal To
<=	Less Than Equal To
<>	Not Equal To

Order of Precedence

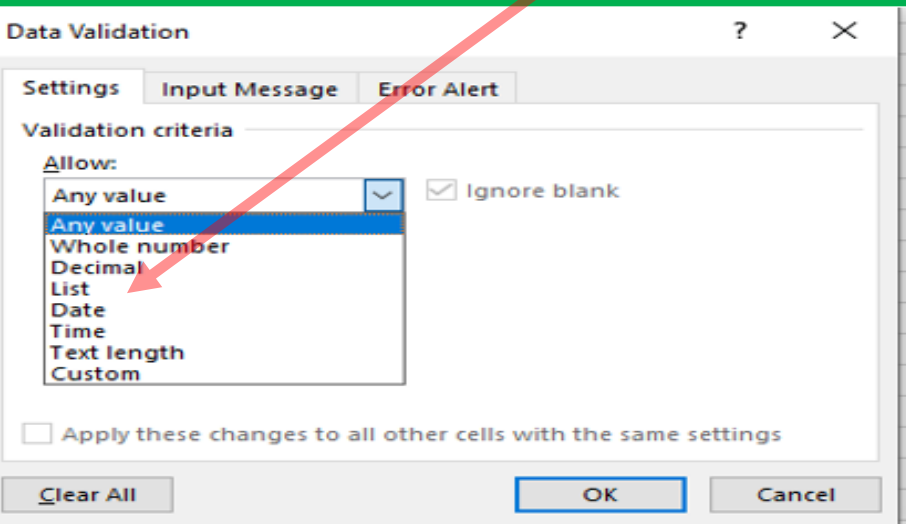
^	
/	
*	
+	
-	
&	
=	
>	
<	

How to add Validation

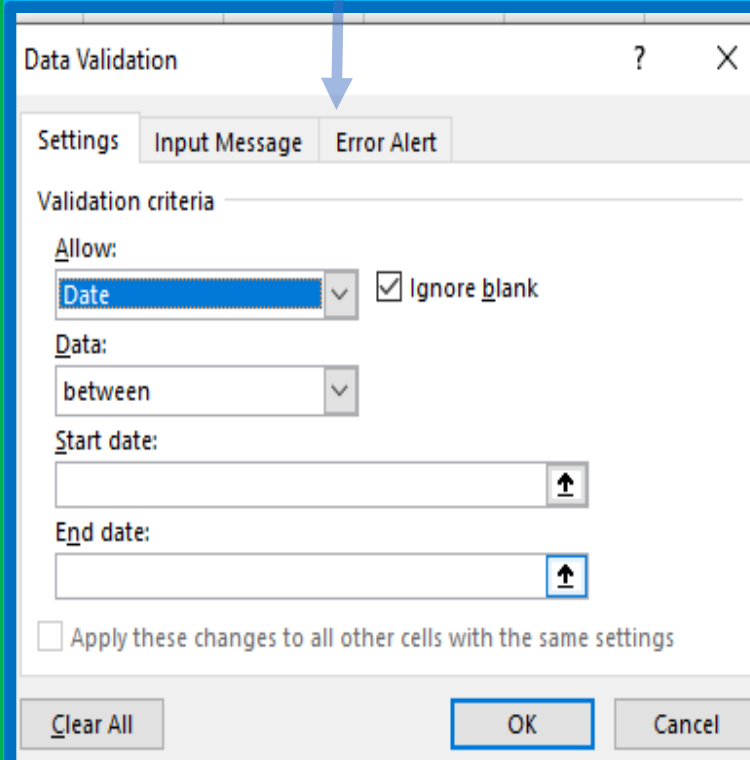
1. From Data at Ribbon select (Data Validation)
2. Select Setting =>Any Value
3. Select the appropriate type (Number, Date, Decimal,...)
4. Below a selection of Date type



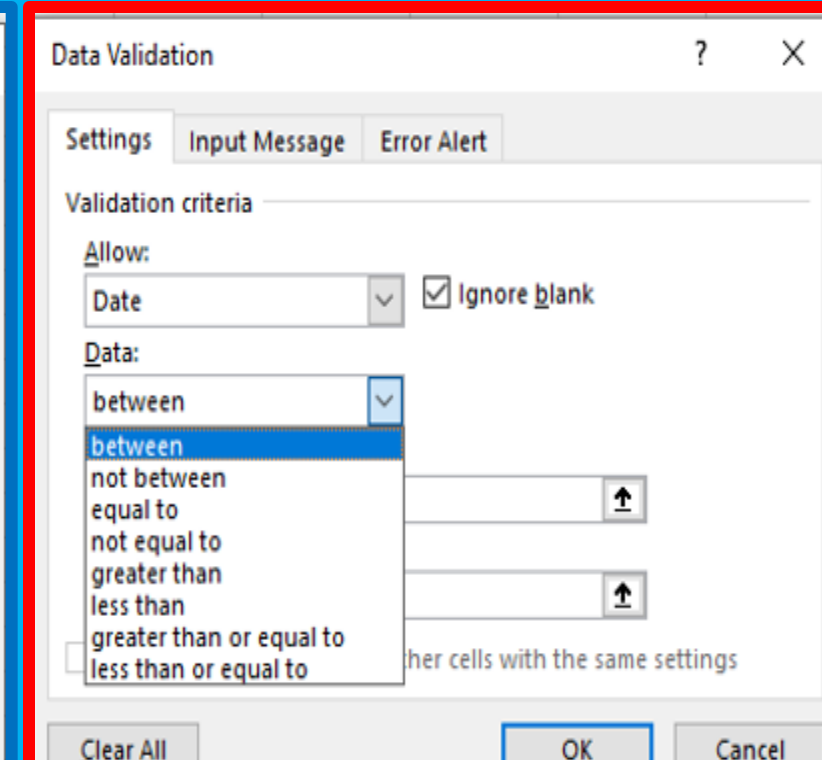
The 'Data Validation' dialog box is shown with the 'Settings' tab selected. The 'Allow' dropdown is set to 'Any value'. The 'Ignore blank' checkbox is checked. The 'Data' dropdown is set to 'between'. The 'Apply these changes to all other cells with the same settings' checkbox is unchecked. The 'Clear All', 'OK', and 'Cancel' buttons are at the bottom.



The 'Data Validation' dialog box is shown with the 'Settings' tab selected. The 'Allow' dropdown menu is open, showing a list of options: 'Any value', 'Whole number', 'Decimal', 'List', 'Date', 'Time', 'Text length', and 'Custom'. The 'Date' option is selected. The 'Ignore blank' checkbox is checked. The 'Data' dropdown is set to 'between'. The 'Apply these changes to all other cells with the same settings' checkbox is unchecked. The 'Clear All', 'OK', and 'Cancel' buttons are at the bottom.



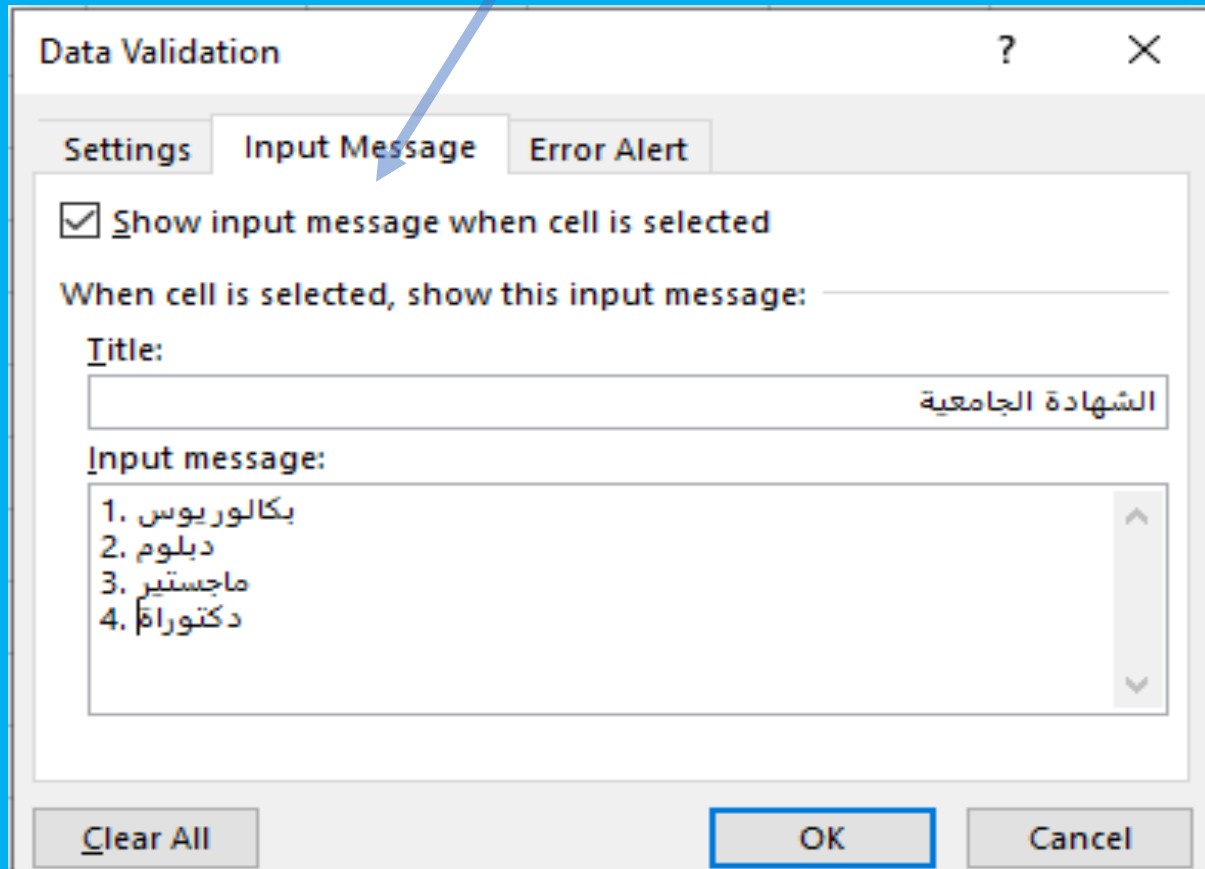
The 'Data Validation' dialog box is shown with the 'Settings' tab selected. The 'Allow' dropdown is set to 'Date'. The 'Ignore blank' checkbox is checked. The 'Data' dropdown is set to 'between'. The 'Start date' and 'End date' fields are empty. The 'Apply these changes to all other cells with the same settings' checkbox is unchecked. The 'Clear All', 'OK', and 'Cancel' buttons are at the bottom.



The 'Data Validation' dialog box is shown with the 'Settings' tab selected. The 'Allow' dropdown is set to 'Date'. The 'Ignore blank' checkbox is checked. The 'Data' dropdown menu is open, showing a list of options: 'between', 'not between', 'equal to', 'not equal to', 'greater than', 'less than', 'greater than or equal to', and 'less than or equal to'. The 'between' option is selected. The 'Apply these changes to all other cells with the same settings' checkbox is unchecked. The 'Clear All', 'OK', and 'Cancel' buttons are at the bottom.

How to add input Message in Validation

1. From Data Validation select (Input Message)
2. Type the Tittle and your Help message
3. Press OK...



Types of Error Alert in Validation

1. STOP

Data Validation

Settings Input Message **Error Alert**

☒ Show error alert after invalid data is entered

When user enters invalid data, show this error alert:

Style: Stop Title: Error message:

Clear All OK Cancel

2. Warning

Data Validation

Settings Input Message **Error Alert**

☒ Show error alert after invalid data is entered

When user enters invalid data, show this error alert:

Style: Warning Title: Error message:

Clear All OK Cancel

3. Information

Data Validation

Settings Input Message **Error Alert**


☒ Show error alert after invalid data is entered

When user enters invalid data, show this error alert:

Style: Information Title: Error message:


Clear All OK Cancel

Microsoft Excel

 This value doesn't match the data validation restrictions defined for this cell.


Retry Cancel Help

Microsoft Excel

 This value doesn't match the data validation restrictions defined for this cell.
Continue?

Yes No Cancel Help

Microsoft Excel

 This value doesn't match the data validation restrictions defined for this cell.

OK Cancel Help

L	F	E	D	C	B	A	
تاريخ الميلاد	الجنس	اسم الطالب الرباعي	نوع الدراسة	المرحلة	القسم	ت	1
2000	انثى	ابتهال بشار عبد فتاح	صباحي	الثالثة	تقنيات صناعة الاسنان	4123	2
1998	ذكر	احمد مصباح مجيد جاسم	صباحي	الثالثة	تقنيات صناعة الاسنان	4124	3
1999	انثى	اسراء احمد قاسم يحيى	صباحي	الثالثة	تقنيات صناعة الاسنان	4125	4
2001	انثى	اسراء خالد الياس خضر	غير معلوم	الثالثة	تقنيات صناعة الاسنان	4126	5
1999	انثى	امنه فارس حمودي يحيى	صباحي	الثالثة	تقنيات صناعة الاسنان	4127	6
2001	انثى	ايناس امجد سعيد عيسى	صباحي	الثالثة	تقنيات صناعة الاسنان	4128	7
1995	انثى	ايه نجيب عبدالله عبدالرحمن	صباحي	السابعة	تقنيات صناعة الاسنان	4129	8
2002	انثى	براء ممتاز يحيى قاسم	صباحي	الثالثة	تقنيات صناعة الاسنان	4130	9
2002	انثى	تبارك ميسر محمود عزيز	مساتي	الثالثة	تقنيات صناعة الاسنان	4131	10
2002	ذكر	حمزة عمار سامي سعيد	صباحي	الثالثة	تقنيات صناعة الاسنان	4133	11
1996	انثى	رسل محمود انور عبدالحميد	صباحي	الثالثة	تقنيات صناعة الاسنان	4134	12
1998	ذكر	رشيد احمد رشيد عويد	صباحي	الثانية	تقنيات صناعة الاسنان	4135	13
2001	انثى	رند محمد وعدا الله صالح	صباحي	الثالثة	تقنيات صناعة الاسنان	4136	14
2002	ذكر	زكريا برع سلطان منوه	خارجي	الثالثة	تقنيات صناعة الاسنان	4137	15
2002	ذكر	زيد محمد عمر عاصي	صباحي	الأولى	تقنيات صناعة الاسنان	4138	16
2002	انثى	زينب عبدالحميد مصطفى محمد	صباحي	الثالثة	تقنيات صناعة الاسنان	4139	17
2001	انثى	زينب هاني زكر جمشيط	صباحي	الثالثة	تقنيات صناعة الاسنان	4140	18
2002	انثى	زينه عبدالكريم اسماعيل عزيز	مستمر	الثالثة	تقنيات صناعة الاسنان	4141	19
2000	انثى	سجى بهاء الدين خالد نايف	صباحي	الثالثة	تقنيات صناعة الاسنان	4142	20

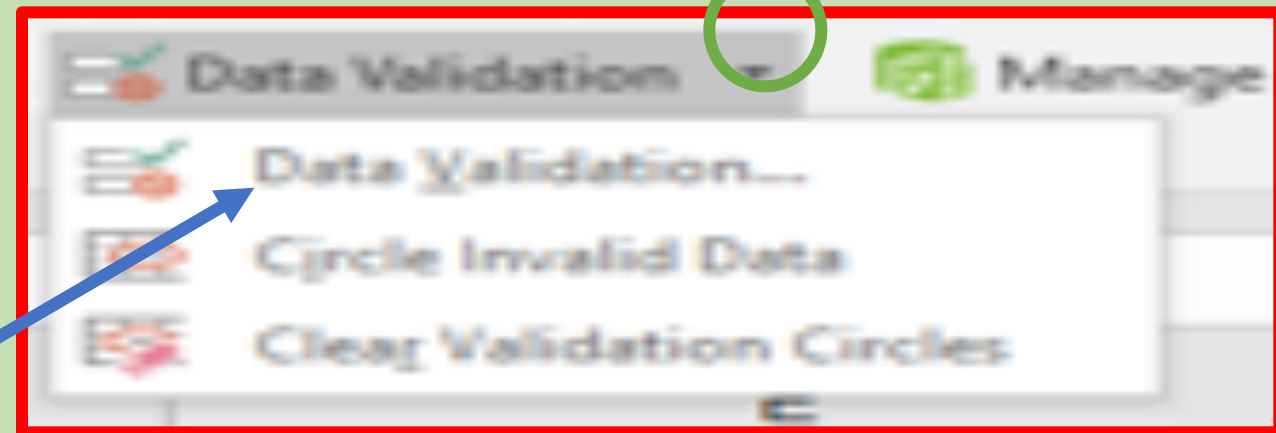
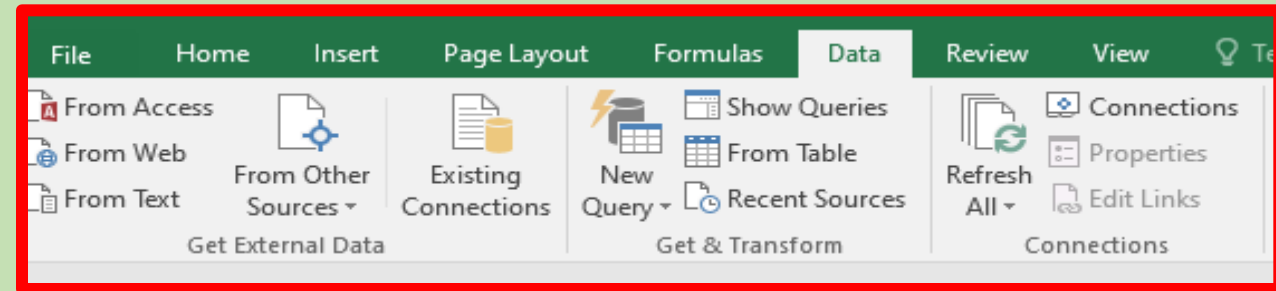
أشتر الخطأ في حقل نوع الدراسة

11/2/22

L	F	E	D	C	B	A
تاريخ الميلاد	الجنس	اسم الطالب الرباعي	نوع الدراسة	المرحلة	القسم	ت
2000	انثى	ابتهال بشار عبد فتاح	صياحي	الثالثة	تقنيات صناعة الاسنان	4123
1998	ذكر	احمد مصباح مجيد جاسم	صياحي	الثالثة	تقنيات صناعة الاسنان	4124
1999	انثى	اسراء احمد قاسم يحيى	صياحي	الثالثة	تقنيات صناعة الاسنان	4125
2001	انثى	اسراء خالد الياس خضر	غير معلوم	الثالثة	تقنيات صناعة الاسنان	4126
1999	انثى	امنه فارس حمودي يحيى	صياحي	الثالثة	تقنيات صناعة الاسنان	4127
2001	انثى	ايناس امجد سعيد عيسى	صياحي	الثالثة	تقنيات صناعة الاسنان	4128
1995	انثى	ايه نجيب عبدالله عبدالرحمن	صياحي	السادسة	تقنيات صناعة الاسنان	4129
2002	انثى	براء ممتاز يحيى قاسم	صياحي	الثالثة	تقنيات صناعة الاسنان	4130
2002	انثى	تبارك ميسر محمود عزيز	مسائي	الثالثة	تقنيات صناعة الاسنان	4131
2002	ذكر	حمزة عمار سامي سعيد	صياحي	الثالثة	تقنيات صناعة الاسنان	4133
1996	انثى	رسل محمود انور عبدالحميد	صياحي	الثالثة	تقنيات صناعة الاسنان	4134
1998	ذكر	رشيد احمد رشيد عويد	صياحي	الثانية	تقنيات صناعة الاسنان	4135
2001	انثى	رند محمد وعبدالله صالح	صياحي	الثالثة	تقنيات صناعة الاسنان	4136
2002	ذكر	زكريا برع سلطان منوه	خارجي	الثالثة	تقنيات صناعة الاسنان	4137
2002	ذكر	زيد محمد عمر عاصي	صياحي	الأولى	تقنيات صناعة الاسنان	4138
2002	انثى	زينب عبدالحميد مصطفى محمد	صياحي	الثالثة	تقنيات صناعة الاسنان	4139
2001	انثى	زينب هاني زكر جمشيط	صياحي	الثالثة	تقنيات صناعة الاسنان	4140
2002	انثى	زينه عبدالكريم اسماعيل عزيز	مستمر	الثالثة	تقنيات صناعة الاسنان	4141
2000	انثى	سجى بهاء الدين خالد نايف	صياحي	الثالثة	تقنيات صناعة الاسنان	4142

Steps to circle invalid Data من القائمة الرئيسية، حدد البيانات

- From main menu select data
- Then Data Validation
- Then Circle invalid Data



Solve Homework Assignment

HW: Calculate your age in Years, Months and Days.

Method – One (Using built-in Integer command **INT**)

Sol:

1. Age in days (C1) = current date (A1) – Birthdate (B1)= ; current date TODAY().
2. Take integer value of C1/365 ; D1= INT(C1/365) ; # of Years.
3. Let E1 = C1 – 365 * D1 ; Fractions of days/year.
4. Let F1 = INT(E1/30) ; # of Months.
5. # of days (G1) = E1 – 30 * F1

Method – Two (Using built-in Date&Time command **DATEIF**)

Syntax: **DATEDIF(start_date, end_date, unit)** ; Where:

start_date= Date of birth(P2) ;

end_date(P3)= current date TODAY();

Unit= "Y" return total number of complete Years in the period.

Unit= "YM" return total number of complete Months in the period.

Unit= "MD" return the number of Days in the period.

Sol: If P3 = 7/14/1996, then

DATEDIF(P2, P3, "Y"); gives 26 Years (P5);

DATEDIF(P2, P3, "YM"); gives 3 Months and (P6)

DATEDIF(B2, P3, "MD"); gives 16 Days (P7).

we can use concat built-in function (@) to merge above functions, we get:

Compare the
results of both
methods,

=P5&" Years, "&P6&" Months, and "&P7&" days"

26 Years, 3 Months, and 16 days

11/2/22

Next Lecture (Excel functions)

9

Types (by category)

Types of operations

Order of Precedence

Compatibility functions

Cube functions

Database functions

Date and time functions

Engineering functions

Financial functions

Information functions

Logical functions

Lookup and reference functions

Math and trigonometry functions

Statistical functions

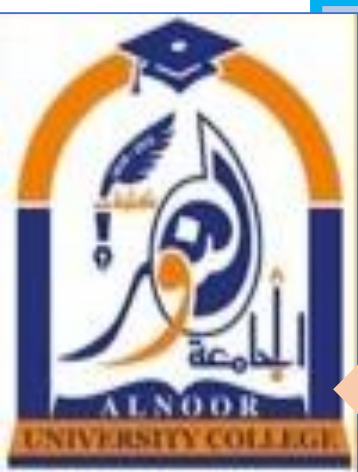
Text functions

User defined functions that are installed with add-ins

3rd Year Dent. Tech. Dept

+	Addition
-	Subtraction
*	Multiplication
/	Division
^	Exponentiation
&	Concatenation
=	Equal to
>	Greater Than
<	Less Than
>=	Greater Than Equal To
<=	Less Than Equal To
<>	Not Equal To

^	1
/	2
*	2
+	3
-	3
&	4
=	5
>	5
<	5



3rd Year / **Dent. Tech.** Department
2022-2023 / (Lecture – 5&6)

**TYPES OF EXCEL
FUNCTION**

Functions and its Types

Order of operators Precedence

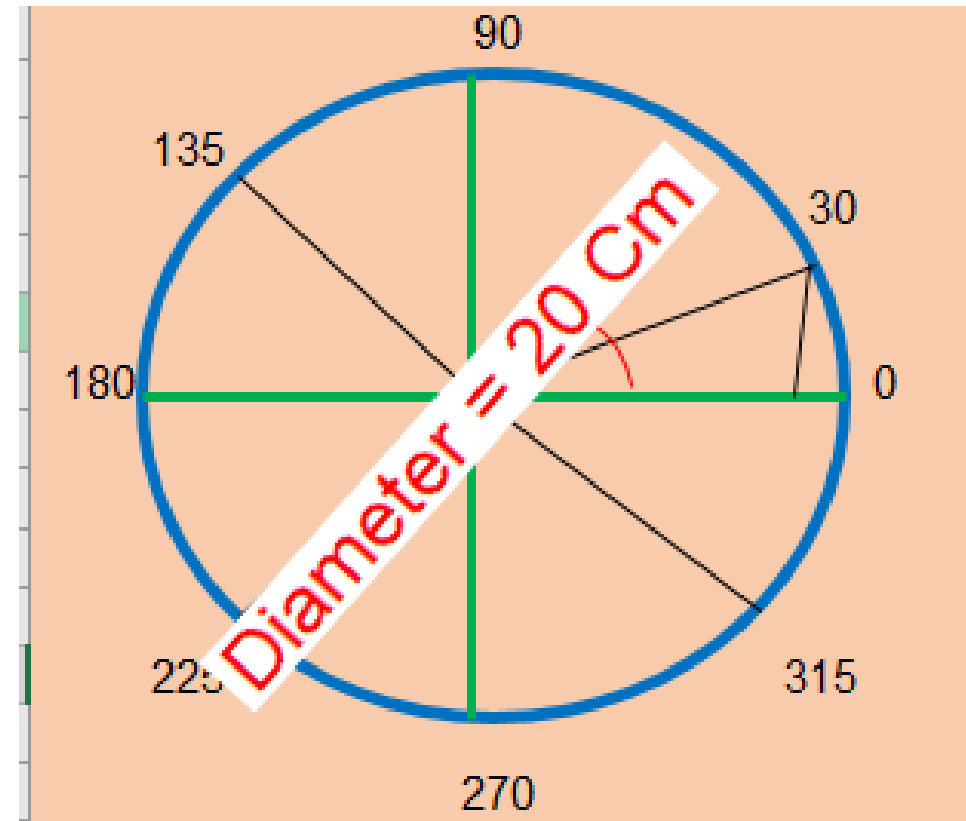
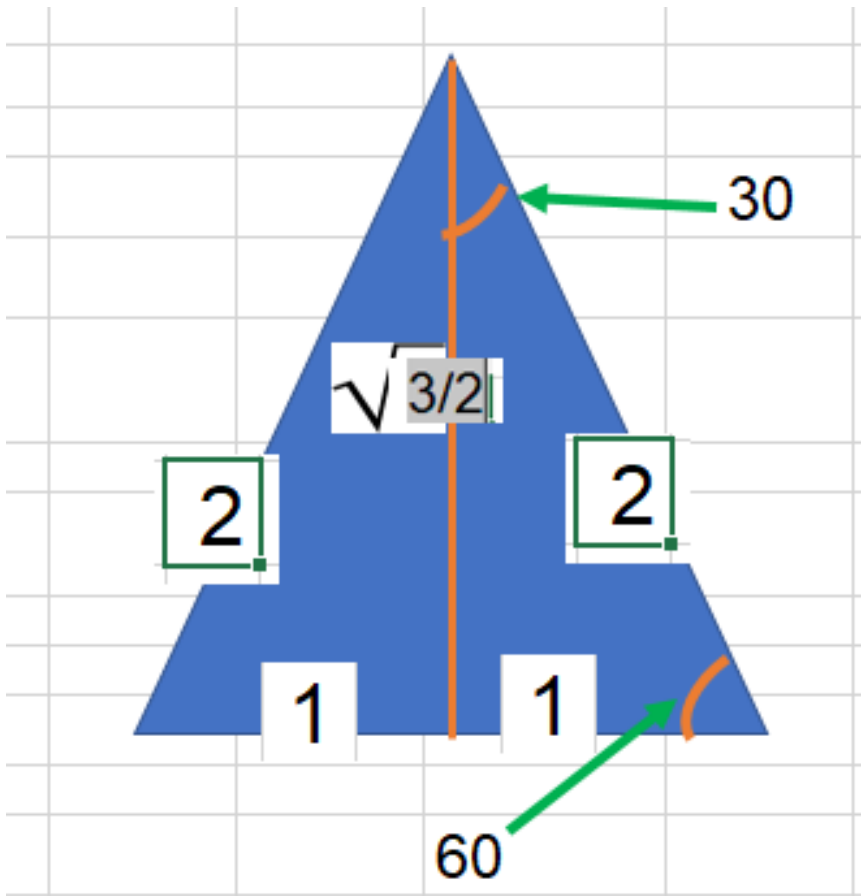
\wedge	1
/	2
*	2
+	3
-	3
&	4
=	5
\vee	5
\wedge	5

1. (\wedge) Exponential
2. (/ , *) Division and Multiplication
3. (+ , -) Addition and Subtraction
4. (&) Concatenation
5. (= , > , < , <= , >= , <>) Relational operators

Any operators inside Parentheses () (round brackets) must be evaluated first then this rule applied.

Function and Formula in Excel

اوجد جيب, جيب تمام لزاويا المثلث



ماهي مساحة هذه الدائرة؟

مساحة الدائرة = نصف القطر تربيع في النسبة الثابة $\pi()$

Function and Formula in Excel



1. Shift+F3 (search for function)
2. From Formula Tab
3. Argument could be (zero,1,2,...n)
4. Insert from current sheet or another one

How to Edit Function

1. Double click the cell that contains the data that you want to edit.
2. Click the cell that contains the data that you want to edit, and then press F2.
3. Click the cell that contains the data that you want to edit, and then click anywhere in the formula bar

File

Home

Insert

Draw

Page Layout

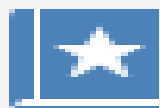
Formulas



11/7/2022



AutoSum



Recently



3rd Year Dent. Tech. Dept



Logical



Text



Date &
Time



Look
Refer

Types of Cell Address

Three types of cell Address:

1. Relative (address change in relation of cell position)
2. Absolut (\$ sign) lock the cell, no change.
3. Mixed (Partially Absolute)

Cell Reference

What is a range reference in Excel?

	A	B	C	D	E	F	G	H	I	J	K
1											
2											
3	The range A1:D2 includes 8 cells from A1 through D2.										

	A	B	C	D	E
1	1	2	1	1	
2	2	1	1	1	
3				=SUM(A1:D2)	

When copied and filled to other cells, relative and absolute references behave differently

The dollar sign (\$) is used to make references absolute. it has three different states :

\$A1

Allows the row reference to change, but not the column reference.

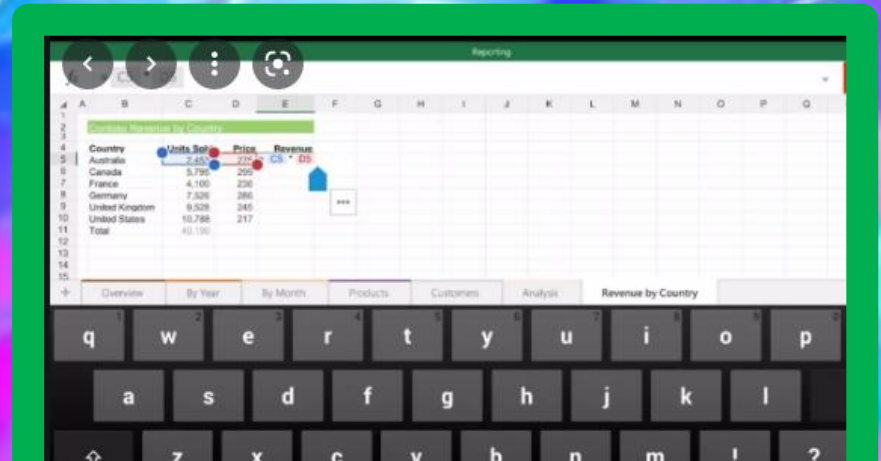
A\$1

Allows the column reference to change, but not the row reference.

\$A\$1

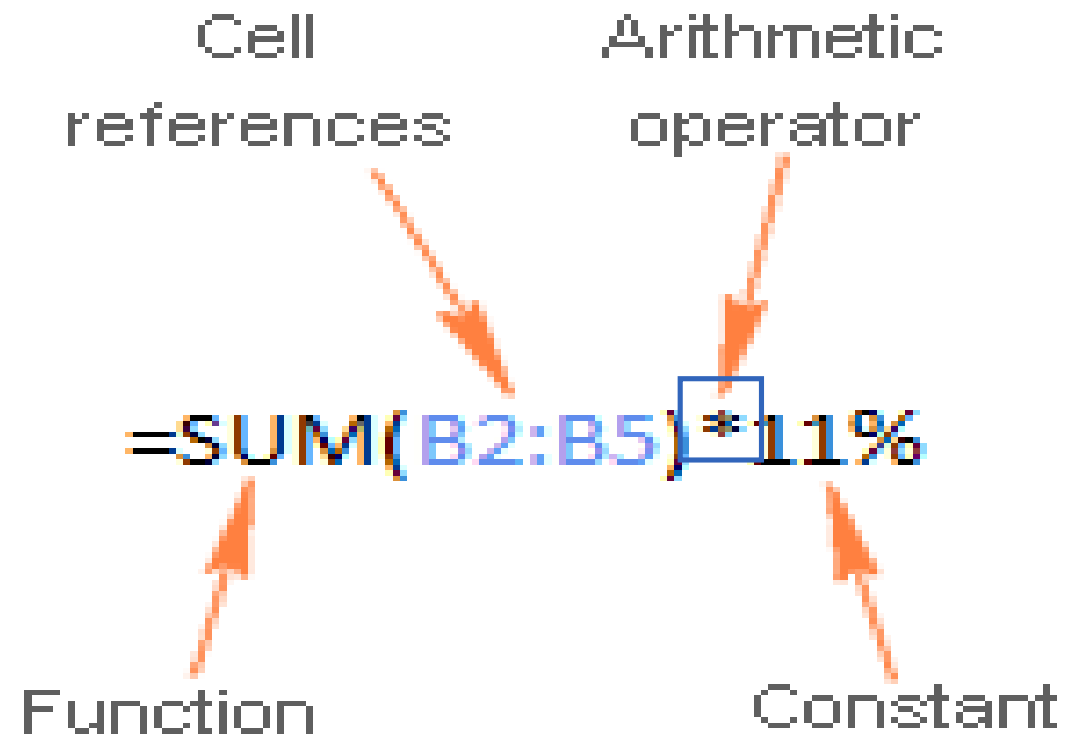
Allows neither the column nor the row reference to change.

تجارت الکترونیک



FORMULA in EXCEL

Argument could be (zero,1,2,...n) elements. Argument is the material between the two brackets () after the function name.



Argument in EXCEL

Example:

Today() ... Zero argument.

NOT(TRUE)...One single Argument

SUM(1,2,4,10) (n) Arguments

SUM(A1:A10,B5:B12)

IF(logical_test,[value_if_true],[value_if_false])

Up to 64 nested if

Most arguments are required, but some are optional. In Excel, optional arguments are denoted with square brackets

{ } for array

Control + Shift + Enter

FUNCTION CATEGORY

Logical FUNCTION

AND
OR / XOR
NOT
TRUE
FALSE
IF
IFS
IFERROR
IS

Math FUNCTION

INT
MOD
RAND
RANDBETWEEN
ROUND
SUM
SUMIF
SUMPRODUCT

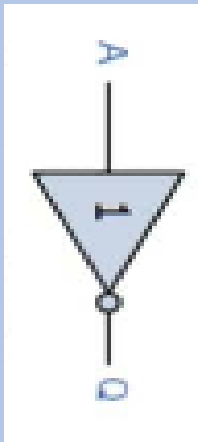
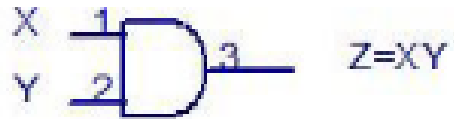
11/7/2022

AND, OR, NOT & XOR

3rd Year Dent. Tech. Dept

FALSE*1 \longrightarrow 0

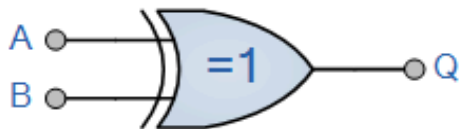
TRUE*1 \longrightarrow 1



A	B	AND	OR	XOR	NOT
FALSE	FALSE	FALSE	FALSE	FALSE	TRUE
FALSE	TRUE	FALSE	TRUE	TRUE	FALSE
TRUE	FALSE	FALSE	TRUE	TRUE	TRUE
TRUE	TRUE	TRUE	TRUE	FALSE	FALSE

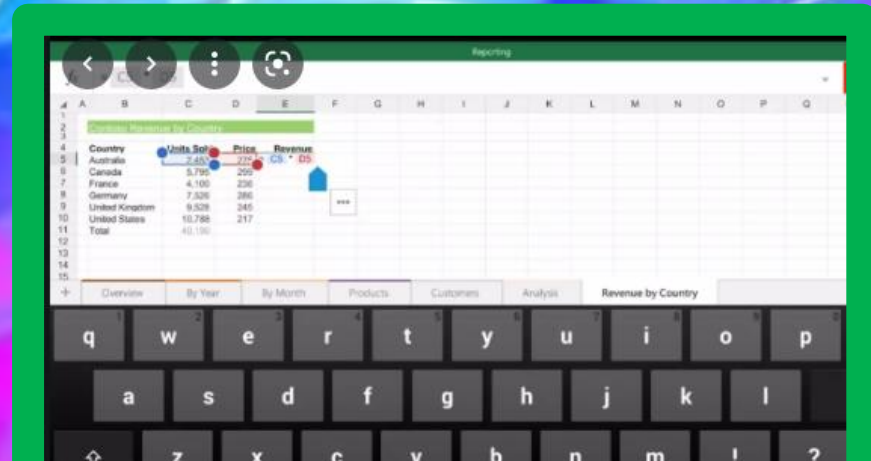


A	B	AND	OR	XOR	NOT
0	0	0	0	0	1
0	1	0	1	1	0
1	0	0	1	1	1
1	1	1	1	0	0



$$Q = A\bar{B} + \bar{A}B$$

تجارت الکترونیک



Math FUNCTION

INT()

What it Does:

Rounds a number down to the nearest integer.

Syntax:

=INT(number)

MOD()

What it Does:

Returns the remainder after number is divided by divisor. The result has the same sign as divisor.

Syntax:

=MOD(number, divisor)

RAND()

What it Does:

Returns an evenly distributed random real number greater than or equal to 0 and less than 1. A new random real number is returned every time the worksheet is calculated.

Syntax:

=RAND()

ROUND()

What it Does:

Rounds a number to a specified number of digits

Syntax:

=ROUND(number, num_digits)

RANDBETWEEN()

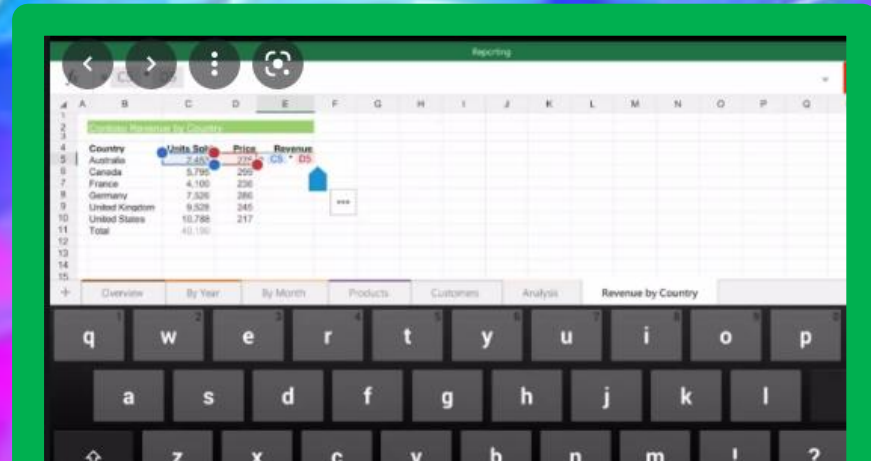
What it Does:

Returns a random integer number between the numbers you specify. A new random integer number is returned every time the worksheet is calculated.

Syntax:

=RANDBETWEEN(bottom, top)

تجارت الکترونیک



Math FUNCTION

SUM()

What it Does:

Adds all the numbers that you specify as arguments

Syntax:

`=SUM(number1,[number2],...)`

SUMIF()

What it Does:

Adds all the values in a range that meet the specified criteria

Syntax:

`=SUMIF(range, criteria, [sum_range])`

SUMIFS()

What it Does:

Adds the cells in a range that meet multiple criteria

Syntax:

`=SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2], ...)`

SUMPRODUCT()

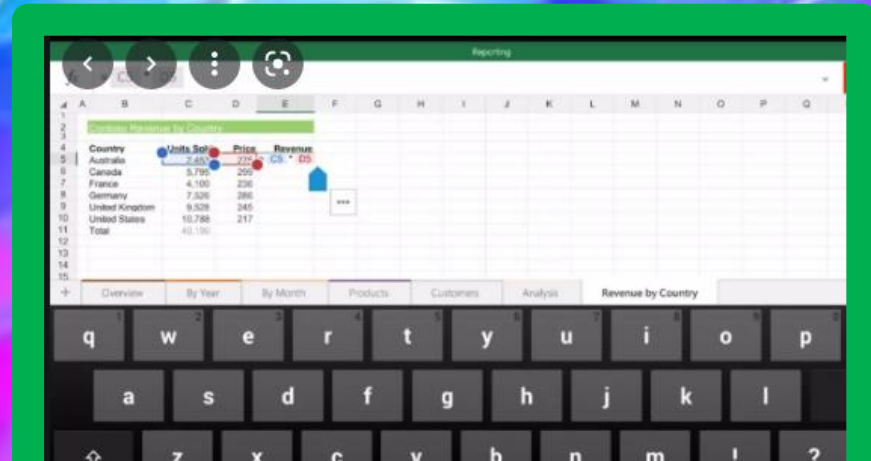
What it Does:

Multiplies corresponding components in the given arrays, and returns the sum of those products

Syntax:

`=SUMPRODUCT(array1, [array2], [array3], ...)`

تجارت الکترونیک



STATISTICAL FUNCTIONS

1. COUNT
2. COUNTA
3. COUNTBLANK
4. COUNTIF
5. COUNTIFS

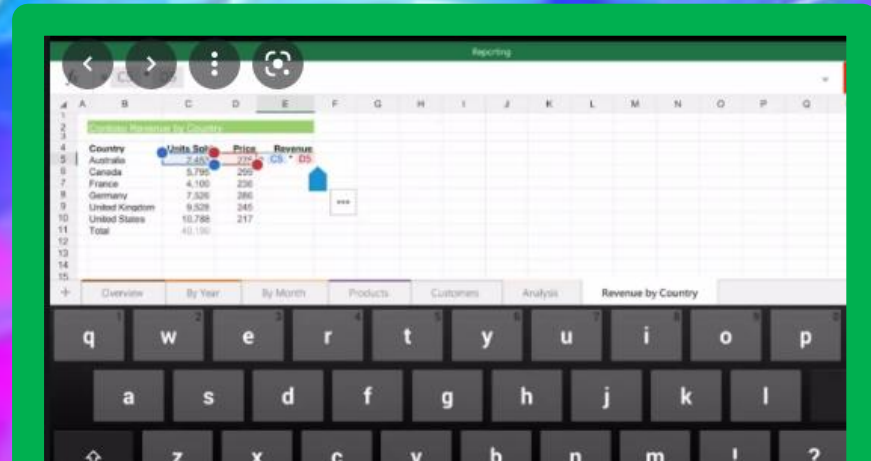
6. AVERAGE
7. AVERAGEIF
8. AVERAGEIFS

9. LARGE
10. SMALL
11. MIN
12. MAX
13. RANK

14. MINIFS
15. MAXIFS

16. MEDIAN
17. MODE
18. STANDARD DEVIATION

تجارت الکترونیک



ISBLANK()

Check if the value is *BLANK*

ISERROR()

Check if the value is *ERROR*

ISNA()

Check if the value is *#N/A*

ISNUMBER()

Check if the value is *NUMBER*

ISODD()

Check if the value is *ODD*

ISEVEN()

Check if the value is *EVEN*

ISTEXT()

Check if the value is *TEXT*

ISNONTEXT()

Check if the value is *not a text*

ISERR()

Returns TRUE if the given value is an error (except N/A) and vice versa

ISREF()

Check if the value is #N/A

ISOWEekNUM)

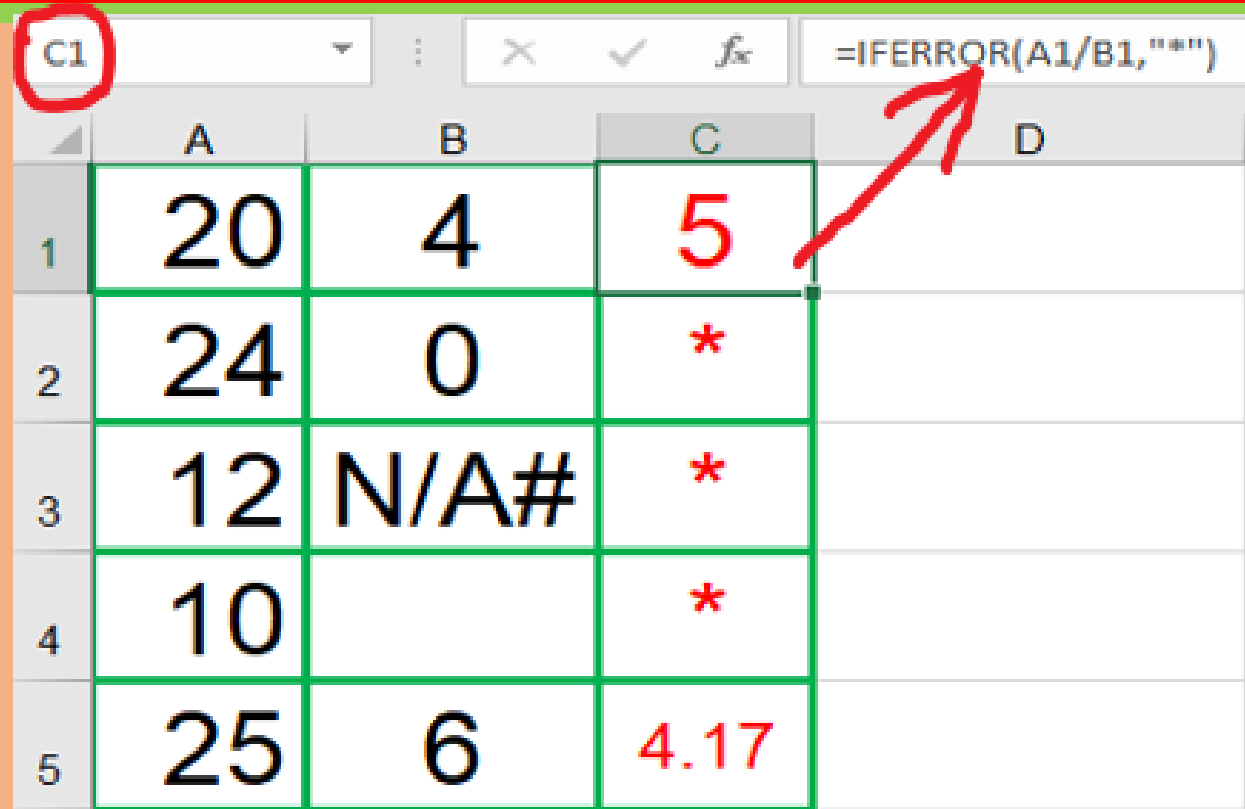
Check if the value is *NUMBER*

ISFORMULA()

Check if the value is ODD

IFERROR checks a formula, and if it evaluates to an error, returns another value you specify; otherwise, returns the result of the formula.

Examples:



The image shows an Excel spreadsheet with columns A, B, and C. The formula bar at the top shows the formula `=IFERROR(A1/B1,"")` in cell C1. A red circle highlights the cell reference C1 in the formula bar. A red arrow points from the formula bar to the cell C1 in the spreadsheet. The spreadsheet data is as follows:

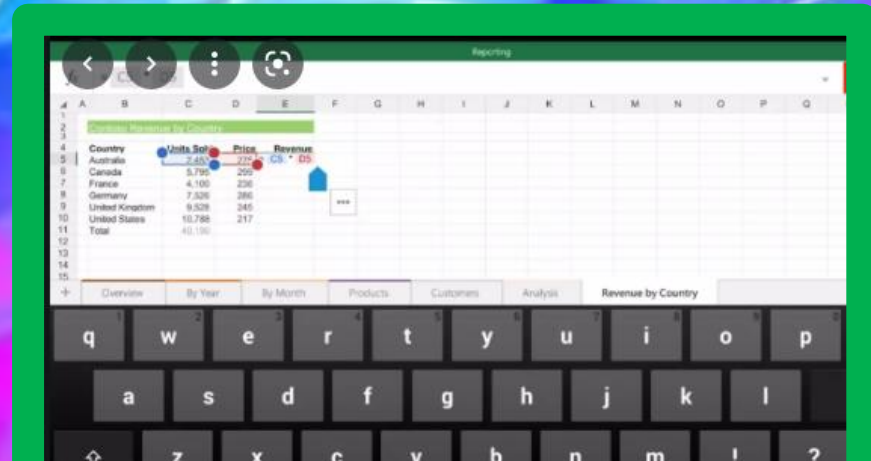
	A	B	C
1	20	4	5
2	24	0	*
3	12	N/A#	*
4	10		*
5	25	6	4.17

Example of ISNA Function

	A	B	C
1	2		
2	3	=VLOOKUP(10,A1:A7,1,0)	=ISNA(B2)
3	4		=ISNA(A3)
4	5		
5	9		
6	7		
7	8		

	A	B	C
1	2		
2	3	#N/A	TRUE
3	4		FALSE
4	5		
5	9		
6	7		
7	8		

تجارت الکترونیک





3rd Year / **Dent. Tech.** Department
2022-2023 / (Lecture – 5&6)

TYPES OF EXCEL
FUNCTION

Functions and its Types

Order of operators Precedence

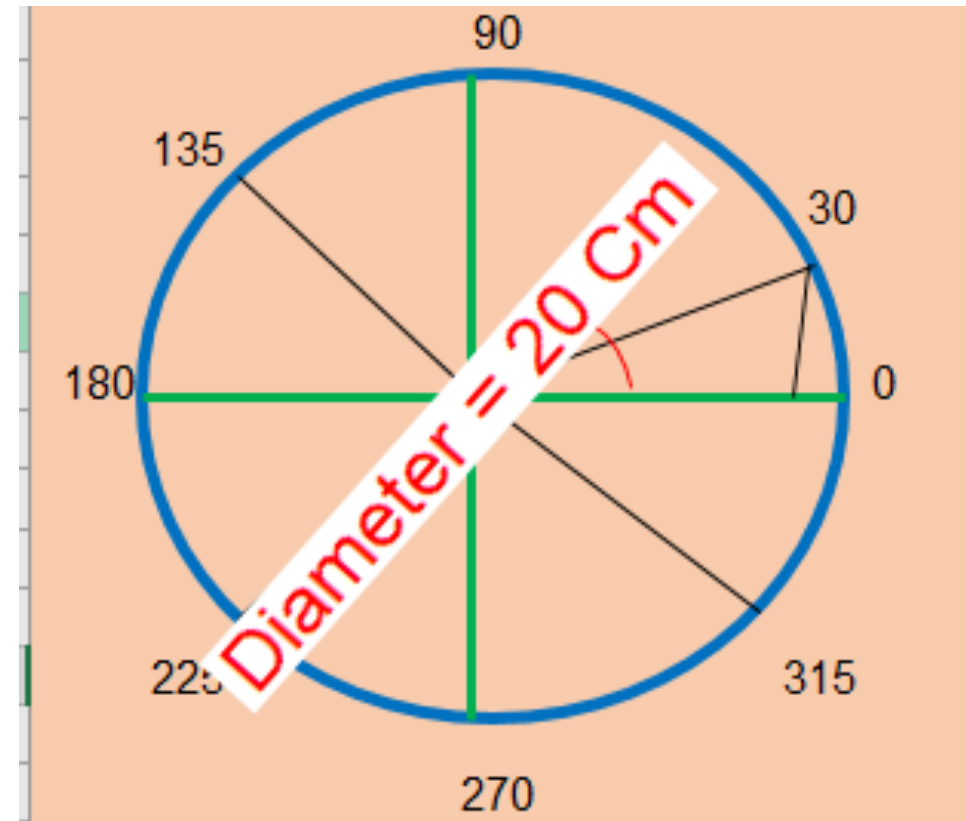
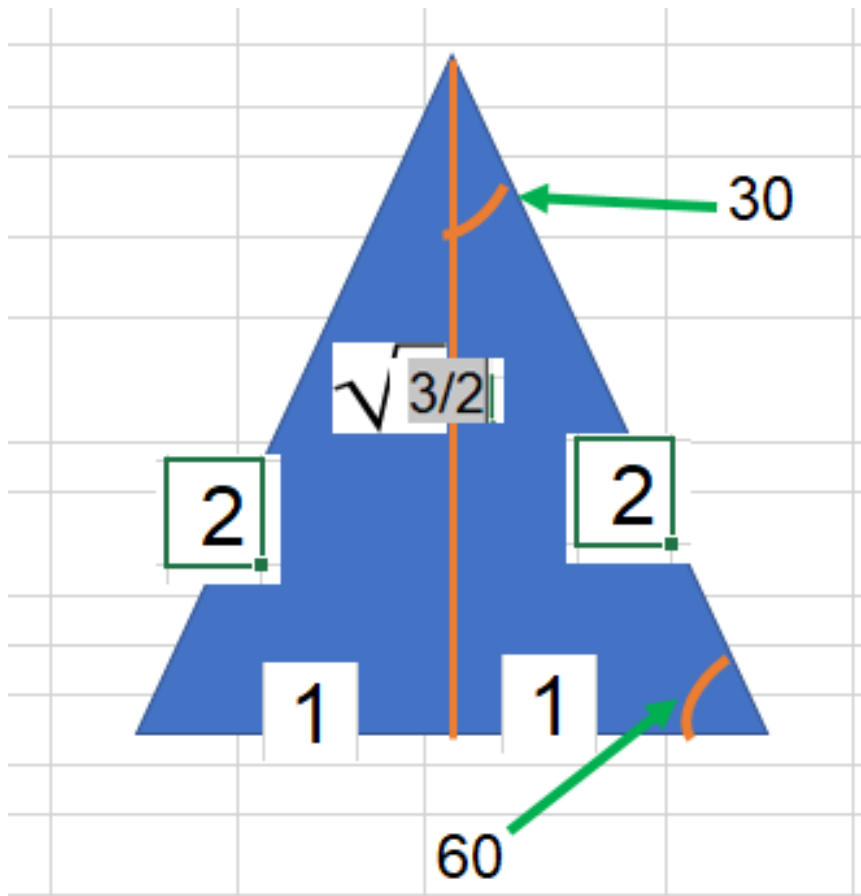
^	1
/	2
*	2
+	3
-	3
&	4
=	5
>	5
<	5

1. (^) Exponential
2. (/, *) Division and Multiplication
3. (+, -) Addition and Subtraction
4. (&) Concatenation
5. (=, >, <, <=, >=, <>) Relational operators

Any operators inside Parentheses () (round brackets) must be evaluated first then this rule applied.

Function and Formula in Excel

اووجد جيب, جيب تمام لزيويا المثلث



ماهي مساحة هذه الدائرة؟

مساحة الدائرة = نصف القطر تربيع في النسبة الثابتة $\pi()$

Function and Formula in Excel



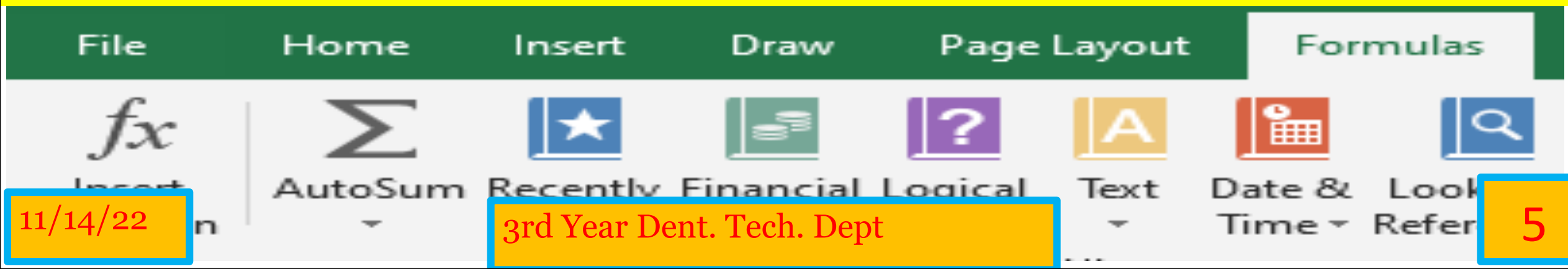
1. Shift+F3 (search for function)
2. From Formula Tab
3. Argument could be (zero,1,2,...n)
4. Insert from current sheet or another one

=SUM(A1,A2,G1:G20)

Argument

How to Edit Function

1. Double click the cell that contains the data that you want to edit.
2. Click the cell that contains the data that you want to edit, and then press F2.
3. Click the cell that contains the data that you want to edit, and then click anywhere in the formula bar



Types of Cell Address

Three types of cell Address:

1. Relative (address change in relation of cell position)
2. Absolut (\$ sign) lock the cell, no change.
3. Mixed (Partially Absolute)

Cell Reference

What is a range reference in Excel?

	A	B	C	D	E	F	G	H	I	J	K
1											
2											
3	The range A1:D2 includes 8 cells from A1 through D2.										

	A	B	C	D	E
1	1	2	1	1	
2	2	1	1	1	
3				=SUM(A1:D2)	

When copied and filled to other cells, relative and absolute references behave differently

The dollar sign (\$) is used to make references absolute. it has three different states :

\$A1

Allows the row reference to change, but not the column reference.

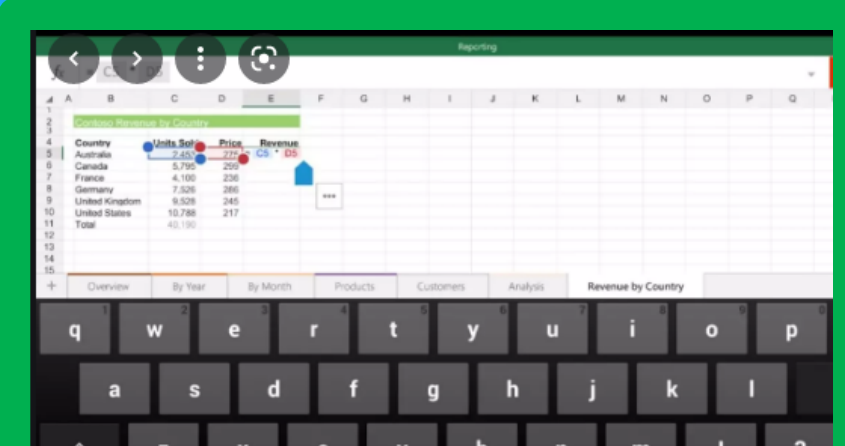
A\$1

Allows the column reference to change, but not the row reference.

\$A\$1

Allows neither the column nor the row reference to change.

تجارتی تجربہ



Reporting

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
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96																	
97																	
98																	
99																	
100																	

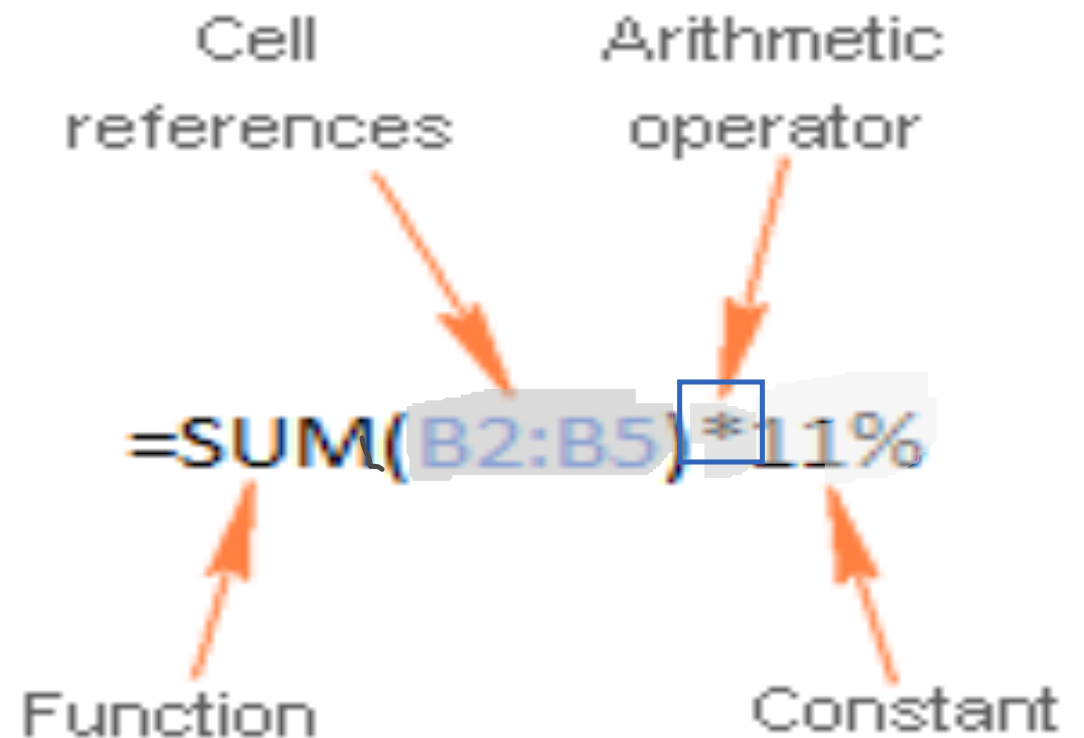
Country Revenue by Country

Country	Units Sold	Price	Revenue
Australia	2,455	222	545,110
Canada	5,795	205	1,187,975
France	4,100	236	967,600
Germany	7,526	286	2,152,436
United Kingdom	6,528	245	1,600,320
United States	10,768	217	2,336,656
Total	40,190		10,789,103

Overview By Year By Month Products Customers Analysis Revenue by Country

FORMULA in EXCEL

Argument could be (zero,1,2,...n) elements. Argument is the material between the two brackets () after the function name.



Argument in EXCEL

Example:

Today() ... Zero argument.

NOT(TRUE)....One single Argument

SUM(1,2,4,10) (n) Arguments

SUM(A1:A10,B5:B12)

IF(logical_test,[value_if_true],[value_if_false])

Up to 64 nested if

Most arguments are required, but some are optional. In Excel, optional arguments are denoted with square brackets

{ } for array

Control + Shift + Enter

FUNCTION CATEGORY

Logical FUNCTION

AND
OR / XOR
NOT
TRUE
FALSE
IF
IFS
IFERROR
IS

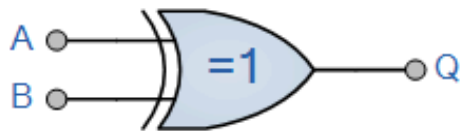
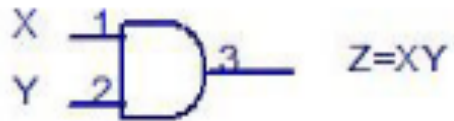
Math FUNCTION

INT
MOD
RAND
RANDBETWEEN
ROUND
SUM
SUMIF
SUMPRODUCT

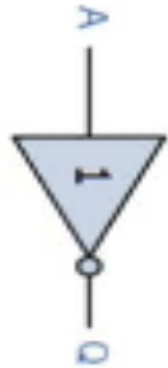
AND, OR, NOT & XOR

FALSE*1 \longrightarrow 0

TRUE*1 \longrightarrow 1



$$Q = A\bar{B} + \bar{A}B$$

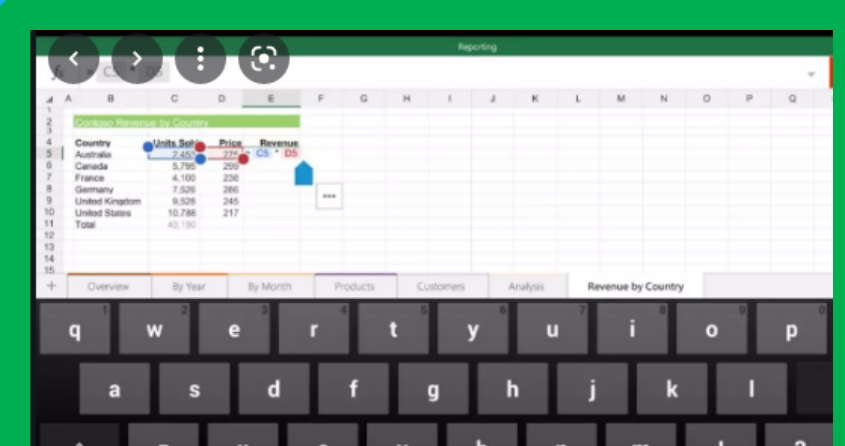


A	B	AND	OR	XOR	NOT
FALSE	FALSE	FALSE	FALSE	FALSE	TRUE
FALSE	TRUE	FALSE	TRUE	TRUE	FALSE
TRUE	FALSE	FALSE	TRUE	TRUE	TRUE
TRUE	TRUE	TRUE	TRUE	FALSE	FALSE



A	B	AND	OR	XOR	NOT
0	0	0	0	0	1
0	1	0	1	1	0
1	0	0	1	1	1
1	1	1	1	0	0

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Country	Units Sold	Price	Revenue
Australia	2,455	222	545,110
Canada	5,795	225	1,293,875
France	4,100	236	967,600
Germany	7,526	286	2,152,436
United Kingdom	6,528	245	1,600,320
United States	10,788	217	2,340,796
Total	40,192		8,390,137

AND, OR, NOT, XOR & IF Functions

AND: Returns TRUE if ALL argument is TRUE.

A single AND function can test up to 255.

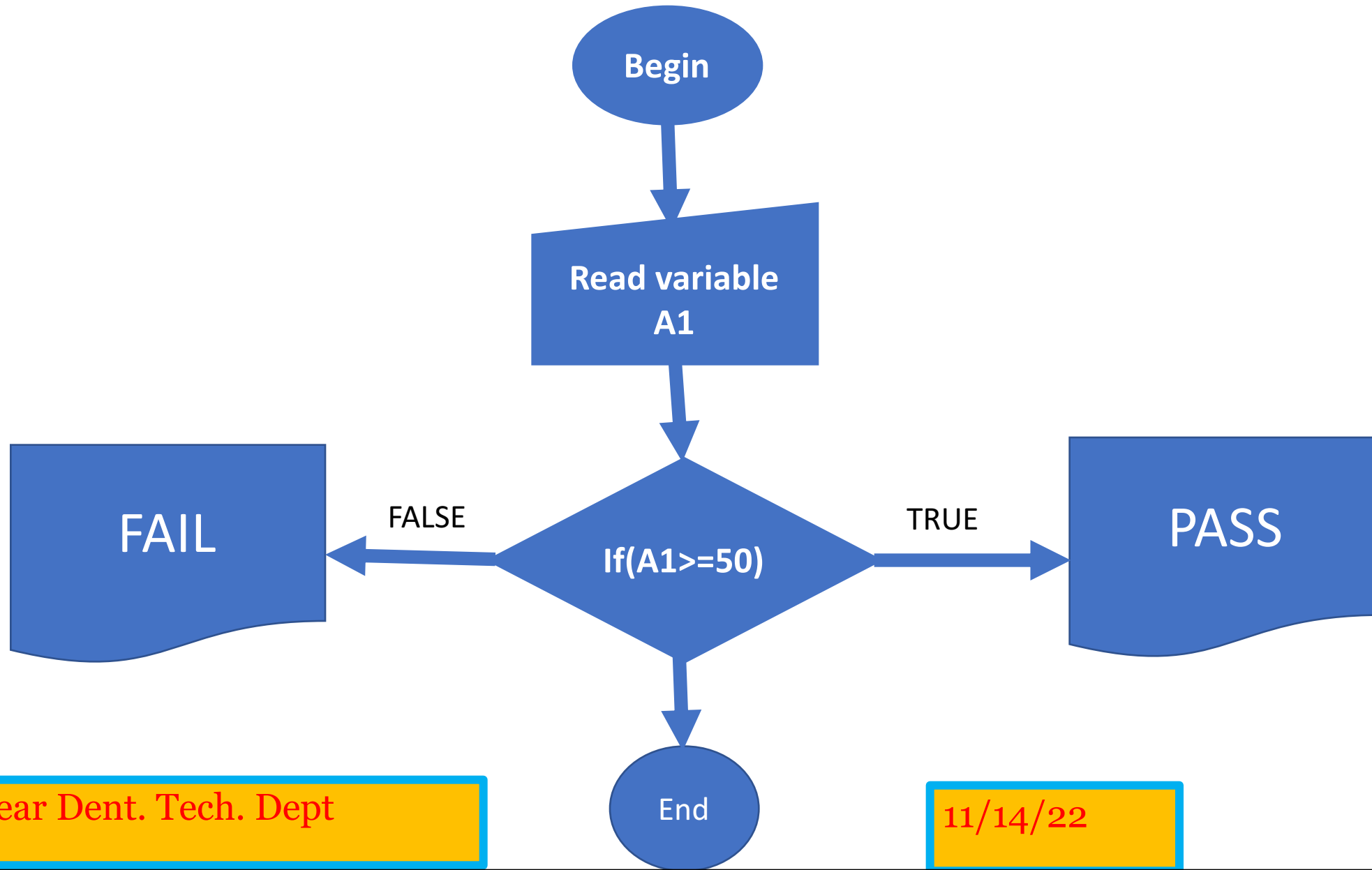
OR: Returns TRUE if any argument is TRUE

NOT : Reverses the logic of its argument.

XOR: Returns TRUE if the number of TRUE inputs is even.

IF: make logical comparisons between a value and what you expect. IF statement can have two results. The first result is: if your comparison is True, the second if your comparison is False.

IF Functions (Single Condition)



```
IF(condition1, result1, IF(condition2, result2, IF(condition3, result3, result4)))
```

```
Test condition1, if TRUE - return result1, if FALSE -  
test condition2, if TRUE - return result2, if FALSE -  
test condition3, if TRUE - return result3, if FALSE -  
return result4
```

Ex:

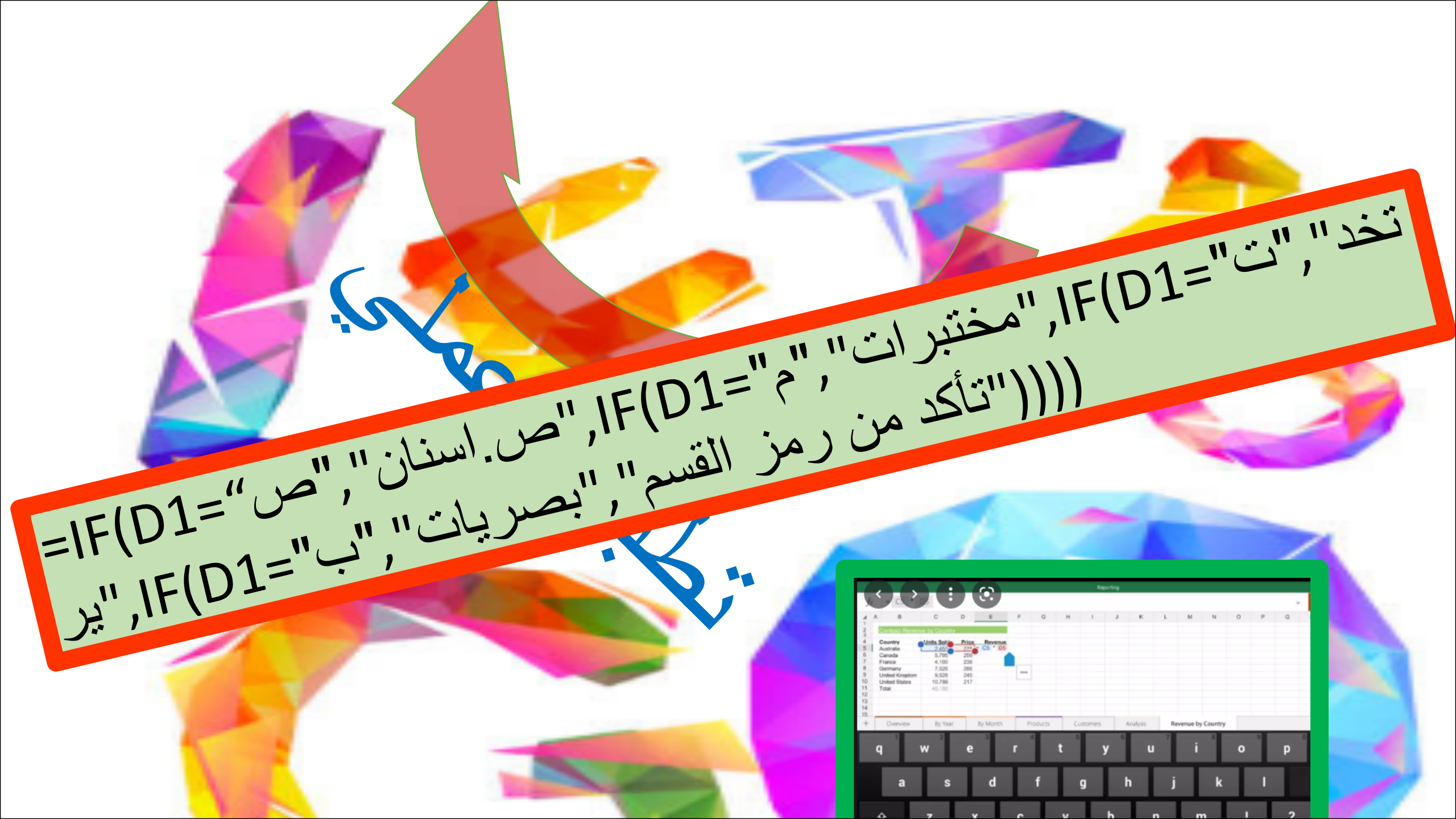
```
test if DEPTCODE in (D1)="ص" PRINT ص.اسنان,  
if (D1)="م" PRINT مختبرات,  
if (D1)="ت" PRINT تخدير,  
if (D1)="ب" PRINT بصريات,  
  
ELSE  
  
PRINT تأكد من رمز القسم
```


=IF(A1="ب", "بصريات", IF(A1="ص", "ص. اسنان", IF(A1="م", "مختبرات", IF(A1="ت", "تخدير", "تأكد من رمز القسم")))))

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	A	B
1	ص	=IF(A1="ب", "بصريات", IF(A1="ص", "ص. اسنان", IF(A1="م", "مختبرات", IF(A1="ت", "تخدير", "تأكد من رمز القسم")))))
2	ف	=IF(A2="ب", "بصريات", IF(A2="ص", "ص. اسنان", IF(A2="م", "مختبرات", IF(A2="ت", "تخدير", "تأكد من رمز القسم")))))
3	ت	=IF(A3="ب", "بصريات", IF(A3="ص", "ص. اسنان", IF(A3="م", "مختبرات", IF(A3="ت", "تخدير", "تأكد من رمز القسم")))))
4	م	=IF(A4="ب", "بصريات", IF(A4="ص", "ص. اسنان", IF(A4="م", "مختبرات", IF(A4="ت", "تخدير", "تأكد من رمز القسم")))))
5	ص	=IF(A5="ب", "بصريات", IF(A5="ص", "ص. اسنان", IF(A5="م", "مختبرات", IF(A5="ت", "تخدير", "تأكد من رمز القسم")))))
6	ت	=IF(A6="ب", "بصريات", IF(A6="ص", "ص. اسنان", IF(A6="م", "مختبرات", IF(A6="ت", "تخدير", "تأكد من رمز القسم")))))
7	م	=IF(A7="ب", "بصريات", IF(A7="ص", "ص. اسنان", IF(A7="م", "مختبرات", IF(A7="ت", "تخدير", "تأكد من رمز القسم")))))
8	ب	=IF(A8="ب", "بصريات", IF(A8="ص", "ص. اسنان", IF(A8="م", "مختبرات", IF(A8="ت", "تخدير", "تأكد من رمز القسم")))))
9	ص	=IF(A9="ب", "بصريات", IF(A9="ص", "ص. اسنان", IF(A9="م", "مختبرات", IF(A9="ت", "تخدير", "تأكد من رمز القسم")))))
10	ع	=IF(A10="ب", "بصريات", IF(A10="ص", "ص. اسنان", IF(A10="م", "مختبرات", IF(A10="ت", "تخدير", "تأكد من رمز القسم")))))
11	ت	=IF(A11="ب", "بصريات", IF(A11="ص", "ص. اسنان", IF(A11="م", "مختبرات", IF(A11="ت", "تخدير", "تأكد من رمز القسم")))))

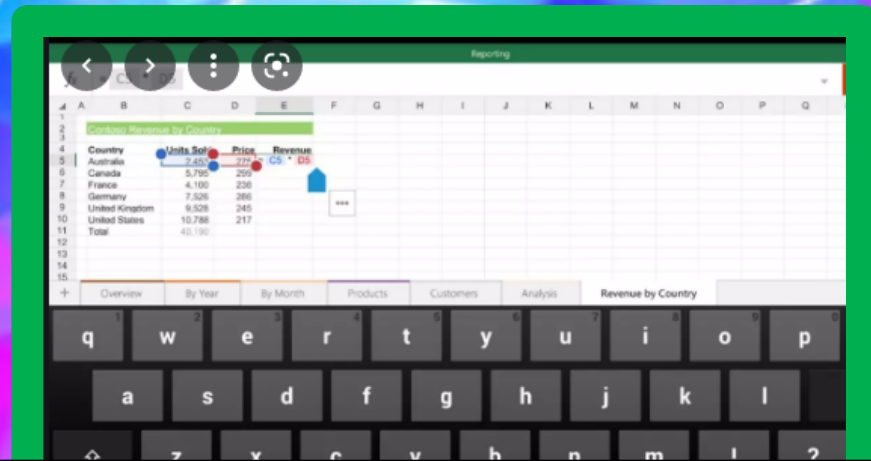
	A	B
1	ص	ص. اسنان
2	ف	تأكد من رمز القسم
3	ت	تخدير
4	م	مختبرات
5	ص	ص. اسنان
6	ت	تخدير
7	م	مختبرات
8	ب	بصريات
9	ص	ص. اسنان
10	ع	تأكد من رمز القسم
11	ت	تخدير



مطلوب

تأكد

تخذ", "ت", IF(D1="م", "مختبرات", IF(D1="ص", "ص. اسنان", IF(D1="ب", "بصريات", IF(D1="ير", "ير"))))



Combine IF statement with AND & OR

استخدم الجدول ادناه لكتابة دالة لطبع :

	A الجنس	B الحضور	يطبع
1	F	X	غائبة
1	F	A	حاضرة
3	T	X	غائب
4	T	A	حاضر

1. غائبة (إذا $A2=F$ و $B2=X$)

2. حاضرة (إذا $A2=F$ و $B2=A$)

3. غائب (إذا $A2=T$ و $B2=X$)

4. حاضر (إذا $A2=T$ و $B2=A$)

Example of using IF statement with AND

	A	B	C
1	Gender	Attendance	Display
2	F	X	=IF(AND(A2="F",B2="X"),"غائبة",IF(AND(A2="F",B2="A"),"حاضرة",IF(AND(A2="T",B2="X"),"غائب",IF(AND(A2="T",B2="A"),"حاضر","")))))
3	F	A	=IF(AND(A3="F",B3="X"),"غائبة",IF(AND(A3="F",B3="A"),"حاضرة",IF(AND(A3="T",B3="X"),"غائب",IF(AND(A3="T",B3="A"),"حاضر","")))))
4	T	X	=IF(AND(A4="F",B4="X"),"غائبة",IF(AND(A4="F",B4="A"),"حاضرة",IF(AND(A4="T",B4="X"),"غائب",IF(AND(A4="T",B4="A"),"حاضر","")))))
5	T	A	=IF(AND(A5="F",B5="X"),"غائبة",IF(AND(A5="F",B5="A"),"حاضرة",IF(AND(A5="T",B5="X"),"غائب",IF(AND(A5="T",B5="A"),"حاضر","")))))
6			
7			
8			
9			
10			
11			
12			
13			

1	A الجنس	B الحضور	يطبع
1	F	X	غائبة
3	F	A	حاضرة
4	T	X	غائب
	T	A	حاضر

Math FUNCTION

INT()

What it Does:

Rounds a number down to the nearest integer.

Syntax:

=INT(number)

MOD()

What it Does:

Returns the remainder after number is divided by divisor. The result has the same sign as divisor.

Syntax:

=MOD(number, divisor)

RAND()

What it Does:

Returns an evenly distributed random real number greater than or equal to 0 and less than 1. A new random real number is returned every time the worksheet is calculated.

Syntax:

=RAND()

ROUND()

What it Does:

Rounds a number to a specified number of digits

Syntax:

=ROUND(number, num_digits)

RANDBETWEEN()

What it Does:

Returns a random integer number between the numbers you specify. A new random integer number is returned every time the worksheet is calculated.

Syntax:

=RANDBETWEEN(bottom, top)

Math FUNCTION

SUM()

What it Does:

Adds all the numbers that you specify as arguments

Syntax:

`=SUM(number1,[number2],...)`

SUMIF()

What it Does:

Adds all the values in a range that meet the specified criteria

Syntax:

`=SUMIF(range, criteria, [sum_range])`

SUMIFS()

What it Does:

Adds the cells in a range that meet multiple criteria

Syntax:

`=SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2], ...)`

SUMPRODUCT()

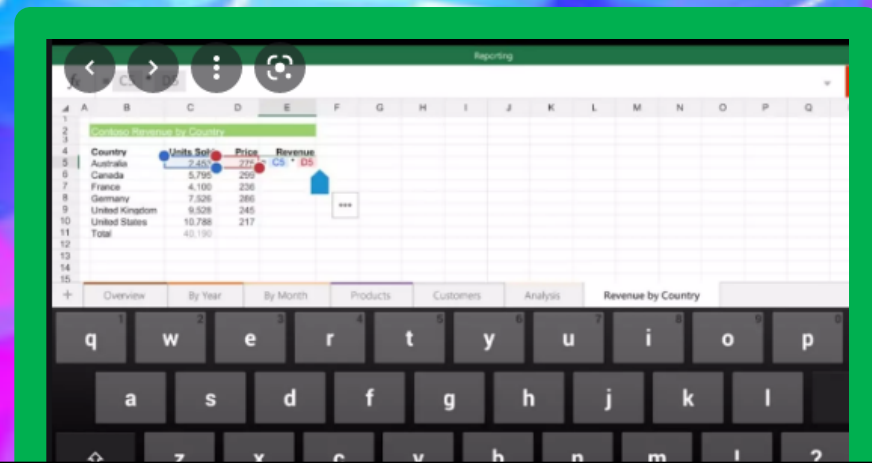
What it Does:

Multiplies corresponding components in the given arrays, and returns the sum of those products

Syntax:

`=SUMPRODUCT(array1, [array2], [array3], ...)`

تجارتی تجربہ



Country	Units Sold	Price	Revenue
Australia	2,455	222	545,110
Canada	5,795	225	1,293,875
France	4,100	236	967,600
Germany	7,526	286	2,152,436
United Kingdom	6,528	245	1,600,360
United States	10,788	217	2,340,796
Total	40,190		8,390,273

STATISTICAL FUNCTIONS

1. COUNT
2. COUNTA
3. COUNTBLANK
4. COUNTIF
5. COUNTIFS

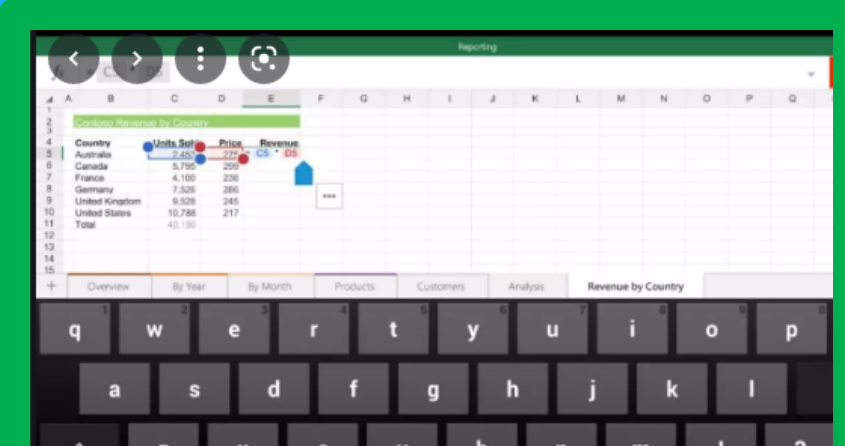
6. AVERAGE
7. AVERAGEIF
8. AVERAGEIFS

9. LARGE
10. SMALL
11. MIN
12. MAX
13. RANK

14. MINIFS
15. MAXIFS

16. MEDIAN
17. MODE
18. STANDARD DEVIATION

تجارتی تجربہ



Country	Units Sold	Price	Revenue
Australia	2,455	222	545,110
Canada	5,795	225	1,293,875
France	4,100	236	967,600
Germany	7,526	286	2,152,436
United Kingdom	6,528	245	1,600,320
United States	10,788	217	2,340,796
Total	40,192		8,050,037

ISBLANK()

Check if the value is *BLANK*

ISERROR()

Check if the value is *ERROR*

ISNA()

Check if the value is *#N/A*

ISNUMBER()

Check if the value is *NUMBER*

ISODD()

Check if the value is *ODD*

ISEVEN()

Check if the value is *EVEN*

ISTEXT()

Check if the value is *TEXT*

ISNONTEXT()

Check if the value is *not a text*

ISERR()

Returns TRUE if the given value is an error (except N/A) and vice versa

ISREF()

Check if the value is a reference or not

ISOWEEKNUM()

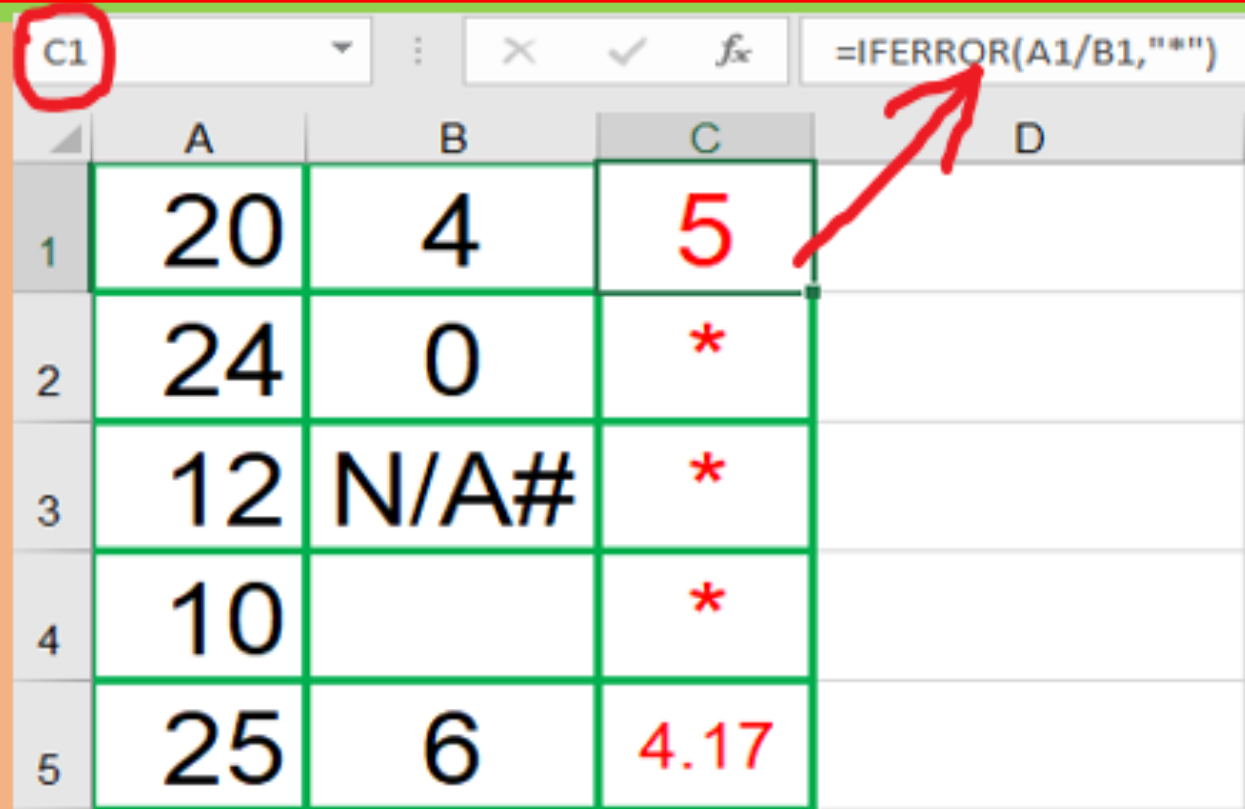
Return the ISO week number of the year for the given date value

ISFORMULA()

checks to see if a value is a formula

IFERROR checks a formula, and if it evaluates to an error, returns another value you specify; otherwise, returns the result of the formula.

Examples:



The image shows an Excel spreadsheet with columns A, B, and C. The formula bar at the top shows the formula `=IFERROR(A1/B1,"")` in cell C1. A red circle highlights the cell reference C1 in the formula bar, and a red arrow points from the formula bar to cell C1. The spreadsheet data is as follows:

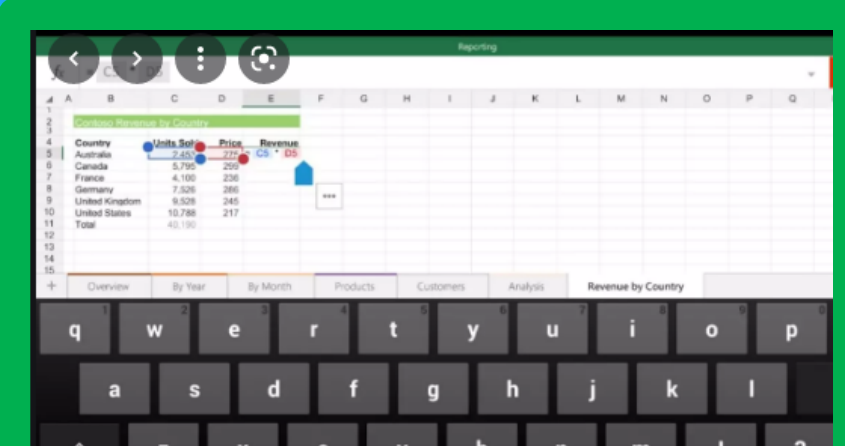
	A	B	C
1	20	4	5
2	24	0	*
3	12	N/A#	*
4	10		*
5	25	6	4.17

Example of ISNA Function

	A	B	C
1	2		✓
2	3	=VLOOKUP(10,A1:A7,1,0)	=ISNA(B2)
3	4		=ISNA(A3)
4	5		
5	9		
6	7		
7	8		

	A	B	C
1	2		
2	3	#N/A	TRUE
3	4		FALSE
4	5		
5	9		
6	7		
7	8		

تجارتی تجربہ



Country	Units Sold	Price	Revenue
Australia	2,455	222	545,000
Canada	5,795	225	1,294,875
France	4,100	236	967,600
Germany	7,526	286	2,152,436
United Kingdom	6,528	245	1,600,320
United States	10,788	217	2,340,796
Total	40,190		8,000,027



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We can combine more than one logical function in a formula like:
[**IF** with AND, OR and not NOT]

Functions and its Types

Format of Nested IF statement

=IF(D1="ب","بصريات",IF(D1="س","أ.اوسونار",IF(D1="م","مختبرات",IF(D1="ت","تخدير","تأكد من رمز القسم")))))

	D	E		D	E
1	س	=IF(D1="ب","بصريات",IF(D1="س","أ.اوسونار",IF(D1="م","مختبرات",IF(D1="ت","تخدير","تأكد من رمز القسم")))))	1	س	أ.اوسونار
2	ف	=IF(D1="ب","بصريات",IF(D1="س","أ.اوسونار",IF(D1="م","مختبرات",IF(D1="ت","تخدير","تأكد من رمز القسم")))))	2	ف	تأكد من رمز القسم
3	ت	=IF(D1="ب","بصريات",IF(D1="س","أ.اوسونار",IF(D1="م","مختبرات",IF(D1="ت","تخدير","تأكد من رمز القسم")))))	3	ت	تخدير
4	م	=IF(D1="ب","بصريات",IF(D1="س","أ.اوسونار",IF(D1="م","مختبرات",IF(D1="ت","تخدير","تأكد من رمز القسم")))))	4	م	مختبرات
5	ص	=IF(D1="ب","بصريات",IF(D1="س","أ.اوسونار",IF(D1="م","مختبرات",IF(D1="ت","تخدير","تأكد من رمز القسم")))))	5	ص	تأكد من رمز القسم
6	ت	=IF(D1="ب","بصريات",IF(D1="س","أ.اوسونار",IF(D1="م","مختبرات",IF(D1="ت","تخدير","تأكد من رمز القسم")))))	6	ت	تخدير
7	م	=IF(D1="ب","بصريات",IF(D1="س","أ.اوسونار",IF(D1="م","مختبرات",IF(D1="ت","تخدير","تأكد من رمز القسم")))))	7	م	مختبرات
8	ب	=IF(D1="ب","بصريات",IF(D1="س","أ.اوسونار",IF(D1="م","مختبرات",IF(D1="ت","تخدير","تأكد من رمز القسم")))))	8	ب	بصريات

IFS statement *instead of* Nested IF statements

=IF(D1="ب","بصريات",IF(D1="س","أ.وسونار",IF(D1="م","مختبرات",IF(D1="ت","تخدير","تأكد من رمز القسم")))))

= IFS(D1="ب", "بصريات",
D1="س", "أ. وسونار",
D1="م", "مختبرات",
D1="ت", "تخدير",
TRUE, "تأكد من الرمز")

ONLY in Excel 2019 and above

Use your Mobil to add abbreviations to all Alnoor Departments

= IFS(D1="ب", "بصريات", D1="س", "أ. وسونار", D1="م", "مختبرات", D1="ت", "تخدير", TRUE, "تأكد من
الرمز")

Math FUNCTION (part-1) *[Ten Functions]*

1. INT()

6. ROUNDDOWN()

2. RAND()

7. MROUND()

3. MOD()

8. CEILING()

4. ROUND()

9. FLOOR()

5. ROUNDUP()

10. RANDBETWEEN()

Each
function has
its own
argument
(number of
parameters)

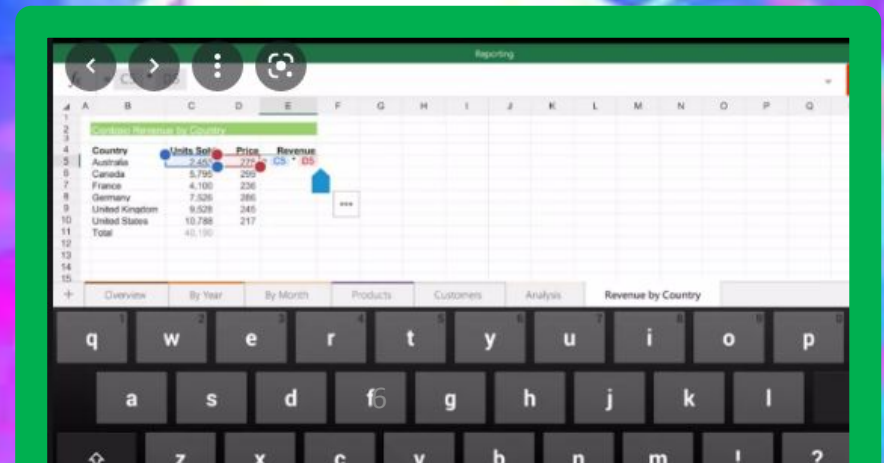
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12/5/2022

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تجربة عملي

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INT() , MOD() FUNCTIONS

INT()

Rounds a number down to the nearest integer

Syntax:

=INT(NUMBER)

WHAT IS:

INT(-8.45) ,

INT(PI())

MOD()

What it Does:

Returns the remainder after number is divided by divisor. The result has the same sign as divisor.

Syntax:

=MOD(number, divisor)

if divisor is negative then:

$a \bmod b = b - \text{Remainder}$,

$5 \bmod -3 =$

$5/3 = 1$ and remainder 2,

So $3 - 2 = 1$

RAND() FUNCTION

RAND()

What it Does:

Returns an evenly distributed random real number greater than or equal to 0 and less than 1. A new random real number is returned every time the worksheet is calculated.

Syntax:

=RAND()

Zero Argument

	A	B
	Formula	Result
1		
2	=Rand()	0.87509731
3	=Rand()	0.7667742
4	=Rand()	0.05949073
5	=Rand()	0.99508906

RANDBETWEEN() FUNCTION

RANDBETWEEN()

What It Does:

Returns a random integer number between the numbers you specify. A new random integer number is returned every time the worksheet is calculated.

Syntax:

=RANDBETWEEN(bottom, top)

Two Parameters

	A	B
1	Data Used in Formula	
2	50	
3	100	
4		
5	Formula	Result
6	RANDBETWEEN(A2,A3)	59
7	RANDBETWEEN(0,49)	3
8	RANDBETWEEN(5,8)	7
9	RANDBETWEEN(-32,0)	-26

ROUND() FUNCTION

ROUND()

=ROUND(148.55,-2)=?

What it Does:

Rounds a number to a specified number of digits

Syntax:

=ROUND(number, num_digits)

Two Parameters

A	B	C
Formula	Result	Commentary
ROUND(42.52,1)	42.5	Rounds to 1 decimal place
ROUND(42.55,1)	42.6	Rounds to 1 decimal place
ROUND(42.55,0)	43	Rounds to 0 decimal place
ROUND(42.45,0)	42	Rounds to 0 decimal place
ROUND(42.55,-1)	40	Rounds to -1 decimal place
ROUND(178.45,-2)	200	Rounds to -2 decimal place

ROUNDUP() FUNCTION

Syntax:

ROUNDUP(N, digits)

=ROUNDUP(7815.75431, -2) GIVES 7900

- ROUNDUP behaves like ROUND, except that it always rounds a number up.
 - If digits is greater than zero, then number is rounded up to the specified number of decimal places.
 - If digits is 0, then number is rounded up to the nearest integer.
 - If digits is less than 0, then number is rounded up to the left of the decimal point.

ROUNDUP() FUNCTION Examples

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Formula	Result	Commentary
ROUNDUP(42.52,1)	42.6	Rounds to 1 decimal place
ROUNDUP(42.55,1)	42.6	Rounds to 1 decimal place
ROUNDUP(42.55,0)	43	Rounds to 0 decimal place
ROUNDUP(42.45,0)	43	Rounds to 0 decimal place
ROUNDUP(42.55,-1)	50	Rounds to -1 decimal place
ROUNDUP(178.55,-2)	200	Rounds to -2 decimal place
ROUNDUP(PI(), 7)	3.1415927	Rounds PI to 7 decimal place
3rd Year Dent. Tech. Depttment	PI() =	3.141592654

ROUNDDOWN() FUNCTION

Syntax:

ROUNDDOWN(N, n_digits)

=ROUNDDOWN(7815.75431, -2) GIVES 7800

It behaves like ROUND, except that it always rounds a number (N) down.

1. If n_digits is greater than zero, then number is rounded down to the specified number of decimal places.
2. If n_digits is 0, then number is rounded down to the nearest integer.
3. If n_digits is less than 0, then number is rounded down to the left of the decimal point.

1	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10
---	---	----	----	----	----	----	----	----	----	----	-----

MROUND() FUNCTION

Syntax:

=MROUND(7815.75431, -2) GIVES 7800

=MROUND(number, multiple)

It uses the following arguments:

Number: This is the number that needs to be rounded.

Multiple: This is the multiple to which we want to round a number.

=MROUND(17,5) GIVES 15

=MROUND(18,5) GIVES 20

MROUND(pi(),2) GIVES 4

What is the result of:

=MROUND(25.4,3)

=MROUND(25.6,3)

CEILING() FUNCTION

Rounds number down, toward zero, to the nearest multiple of significance

=CEILING(16.001,1) Gives 17

=CEILING(16.001,2) Gives 18

=CEILING(16.001,3) Gives 18

=CEILING(16.001,4) Gives 20

=CEILING(16.999,1) GIVES 17

What is the result of:

=CEILING (25.4,3)

=CEILING (pi(),1)

=CEILING (pi(),2)

=CEILING (pi(),4)

=CEILING(PI(),7)

FLOOR() FUNCTION

Syntax

FLOOR(number, significance)

Rounds number down, toward zero, to the nearest multiple of significance

=FLOOR(16.999,1) GIVES 16

What is the result of:

=FLOOR(25.4,1)

=FLOOR(25.4,2)

=FLOOR(25.4,3)

=FLOOR(25.4,7)

Formula	Result
FLOOR(42.001,1)	42
FLOOR(42.999,1)	42
FLOOR(pi(),1)	3



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IFERROR function, to handle errors in a formula.

Functions and its Types

IFERROR (value, value_if_error)

IFERROR checks a formula, and if it evaluates to an error, returns *another value* you specify; *otherwise*, returns the result of the *formula*.

Syntax

IFERROR(value, value_if_error)

value : The argument that is checked for an error.

value_if_error: The value to return if the formula evaluates to an error.

Math FUNCTION (Part – Two)

SUM()

What it Does:

Adds all the numbers that you specify as arguments

Syntax:

`=SUM(number1,[number2],...)`

SUMIF()

What it Does:

Adds all the values in a range that meet the specified criteria

Syntax:

`=SUMIF(range, criteria, [sum_range])`

SUMIFS()

What it Does:

Adds the cells in a range that meet multiple criteria

Syntax:

`=SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2], ...)`

SUMPRODUCT()

What it Does:

Multiplies corresponding components in the given arrays, and returns the sum of those products

Syntax:

`=SUMPRODUCT(array1, [array2], [array3], ...)`



تطبيق عملي

Then

Lecture - 10



STATISTICAL FUNCTIONS (Lect. 10)

1. COUNT
2. COUNTA
3. COUNTBLANK
4. COUNTIF
5. COUNTIFS

6. AVERAGE
7. AVERAGEIF
8. AVERAGEIFS

9. LARGE
10. SMALL
11. MIN
12. MAX
13. RANK

14. MINIFS
15. MAXIFS

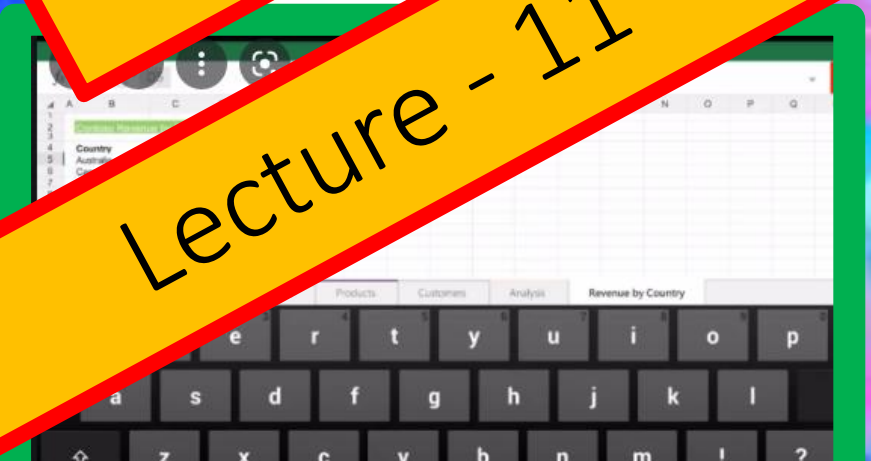
16. MEDIAN
17. MODE
18. STANDARD DEVIATION



تطبيق عملي

Then

Lecture - 11



Country	Revenue
USA	100
Canada	50
UK	30
France	20
Germany	15
Italy	10
Spain	5
Japan	40
China	80
India	60
Australia	25
South Africa	12
Brazil	8
Argentina	3
Chile	2
Colombia	1
Peru	1
Venezuela	1
Mexico	15
Central America	5
Caribbean	2
South America	1

Information Function : IS FORMULA in EXCEL (Lect-11)

ISBLANK()

ISERROR()

ISNA()

ISNUMBER()

ISODD()

ISEVEN()

ISTEXT()

Check if the value is BLANK

Check if the value is ERROR

Check if the value is #N/A

Check if the value is NUMBER

Check if the value is ODD

Check if the value is EVEN

Check if the value is TEXT

Information Function : IS FORMULA in EXCEL – Cont...

ISNONTEXT()

Check if the value is not a text

ISERR()

Returns TRUE if the given value is an error (except N/A) . Otherwise, it will return FALSE.

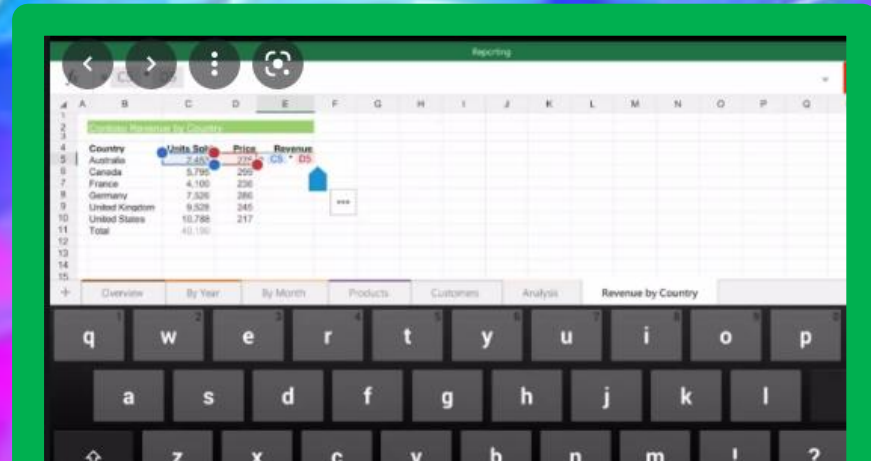
ISREF()

If value is a reference, it will return TRUE. Otherwise, it will return FALSE.

ISFORMULA()

Checks whether there is a reference to a cell that contains a formula, and returns TRUE or FALSE.

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3rd Year Dent. Tech. Department
2022-2023 / (Lecture – 10)

STATISTICAL FUNCTIONS

Functions and its Types

STATISTICAL FUNCTIONS (Lect. 10)

1. COUNT
2. COUNTA
3. COUNTBLANK
4. COUNTIF
5. COUNTIFS

6. AVERAGE
7. AVERAGEIF
8. AVERAGEIFS

9. LARGE
10. SMALL
11. MIN
12. MAX
13. RANK

14. MINIFS
15. MAXIFS

16. MEDIAN
17. MODE
18. STANDARD DEVIATION

COUNT functions

COUNT function counts cells that contain only numbers, but

COUNTA function counts cells that are **not blank**, including **numbers**.

Date and Time values are stored as serial numbers in Excel so these values are counted in **both** of these functions.

COUNT function **does not** count **logical values** (TRUE and FALSE), but

COUNTA function **counts** these values.

COUNTBLANK function **counts** the number of **empty** cells in a range of cells.

Syntax:

COUNT/A/BLANK(range)

COUNTIF/S functions

COUNTIF function counts the # of cells that meet *ONLY ONE* criterion.

COUNTIFS function applies criteria to cells across *multiple* ranges and counts the number of times all criteria are met.

Syntax

COUNTIF(*criteria range, criteria*)

COUNTIFS(*criteria range1, criteria1, [criteria range2, criteria2,]...*)

COUNTIF(D2:D161,"M") ➡ 73

عدد الطلاب

COUNTIF(D2:D161,"F") ➡ 87

عدد الطالبات

COUNTIFS(H2:H161,"بغداد",D2:D161,"F") ➡ 14

عدد طالبات بغداد

AVERAGE functions

AVERAGE returns the average (arithmetic *Mean*) of the arguments.

AVERAGEIF calculates the average of a range based on true or false condition *ONLY ONE* criteria.

AVERAGEIFS calculates the average of a range based on **one or more** *true or false* condition.

Syntax: **AVERAGE**(range)

AVERAGEIF(criteria range, criteria, sum range)

AVERAGEIFS(sum range ,criteria range1, criteria1,[criteria range2, criteria2],...)

LARGE & SMALL functions

LARGE Returns the *Kth* largest value in a data set.

SMALL Returns the *kth* smallest value in a data set.

If array is empty, **LARGE/SMALL** returns the #NUM! error value.

If $k \leq 0$ or if $k > n$ greater than the number of data points, **LARGE/SMALL** returns the #NUM! error value.

Syntax : **LARGE/ SMALL(array, k)**

If *n* is the number of data points in a range, then **LARGE(array,1)** returns the **largest** value, and **LARGE(array, n)** returns the **smallest** value.

If *n* is the number of data points in array, **SMALL(array,1)** equals the **smallest** value, and **SMALL(array, n)** equals the **largest** value.



تطبيق عملي

Then

Lecture - 11

12/18/2022

3rd Year Dent. Tech. Department

Information Function : IS FORMULA in EXCEL (Lect-11)

ISBLANK()

ISERROR()

ISNA()

ISNUMBER()

ISODD()

ISEVEN()

ISTEXT()

Check if the value is BLANK

Check if the value is ERROR

Check if the value is #N/A

Check if the value is NUMBER

Check if the value is ODD

Check if the value is EVEN

Check if the value is TEXT

ISNONTEXT()

Check if the value is not a text

ISERR()

Returns TRUE if the given value is an error (except N/A) . Otherwise, it will return FALSE.

ISREF()

If value is a reference, it will return TRUE. Otherwise, it will return FALSE.

ISFORMULA()

Checks whether there is a reference to a cell that contains a formula, and returns TRUE or FALSE.

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12/18/2022

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3rd Year / **Dent. Tech.** Department
2022-2023 / (Lecture – 12)

Information Function

Functions and its Types

Information Function : IS FORMULA in EXCEL (Lect-12)

ISBLANK()

ISERROR()

ISNA()

ISNUMBER()

ISODD()

ISEVEN()

ISTEXT()

Check if the value is BLANK

Check if the value is ERROR

Check if the value is #N/A

Check if the value is NUMBER

Check if the value is ODD

Check if the value is EVEN

Check if the value is TEXT

...Information Function : IS FORMULA in EXCEL – Cont

ISNONTEXT()

Check if the value is not a text

ISERR()

**Returns TRUE if the given value is an error
. (except N/A) . Otherwise, it will return FALSE**

ISREF()

**If value is a reference, it will return TRUE.
. Otherwise, it will return FALSE**

ISFORMULA()

**Checks whether there is a reference to a cell that
. contains a formula, and returns TRUE or FALSE**

...Information Function : IS FORMULA in EXCEL – Cont

ISLOGICAL()

Returns TRUE when a cell contains the logical values TRUE or FALSE, and returns FALSE for .cells that contain any other value

ISOWEEKNUM()

Returns number of the ISO week number of .the year for a given date

Excel stores dates in a serial date format. It represents the days from January 1, 1900. So January 1, 1900 would be the serial number 1 and January 1, 2023 would be 44927, as it is 44927 days after January 1, 1900.

ISOWEEKNUM():used for finding out the ISO week number of the year for the given date value (e.g.: **ISOWEEKNUM(30)** gives week number 5 of 52 weeks in the year).

بہترین محلی

12/24/2022

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