



Information Technology Module

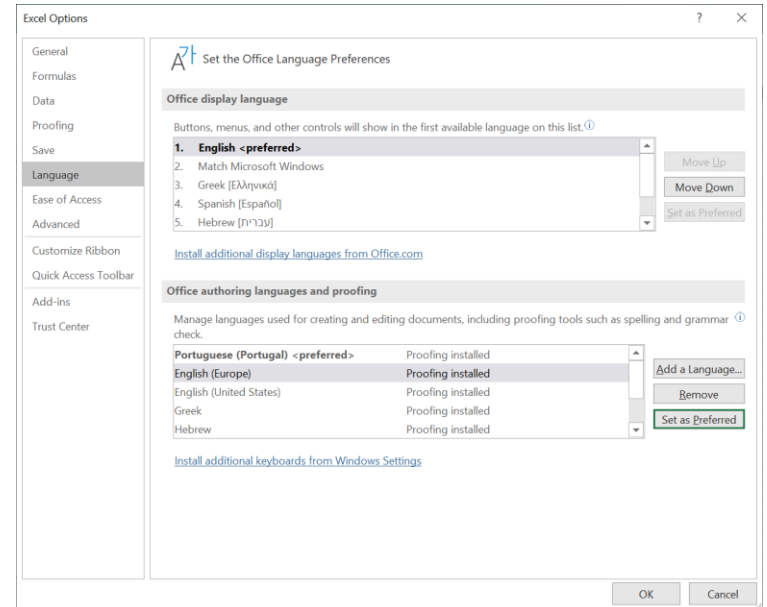
Year 2020/2021

Excel

Review of basic functionalities

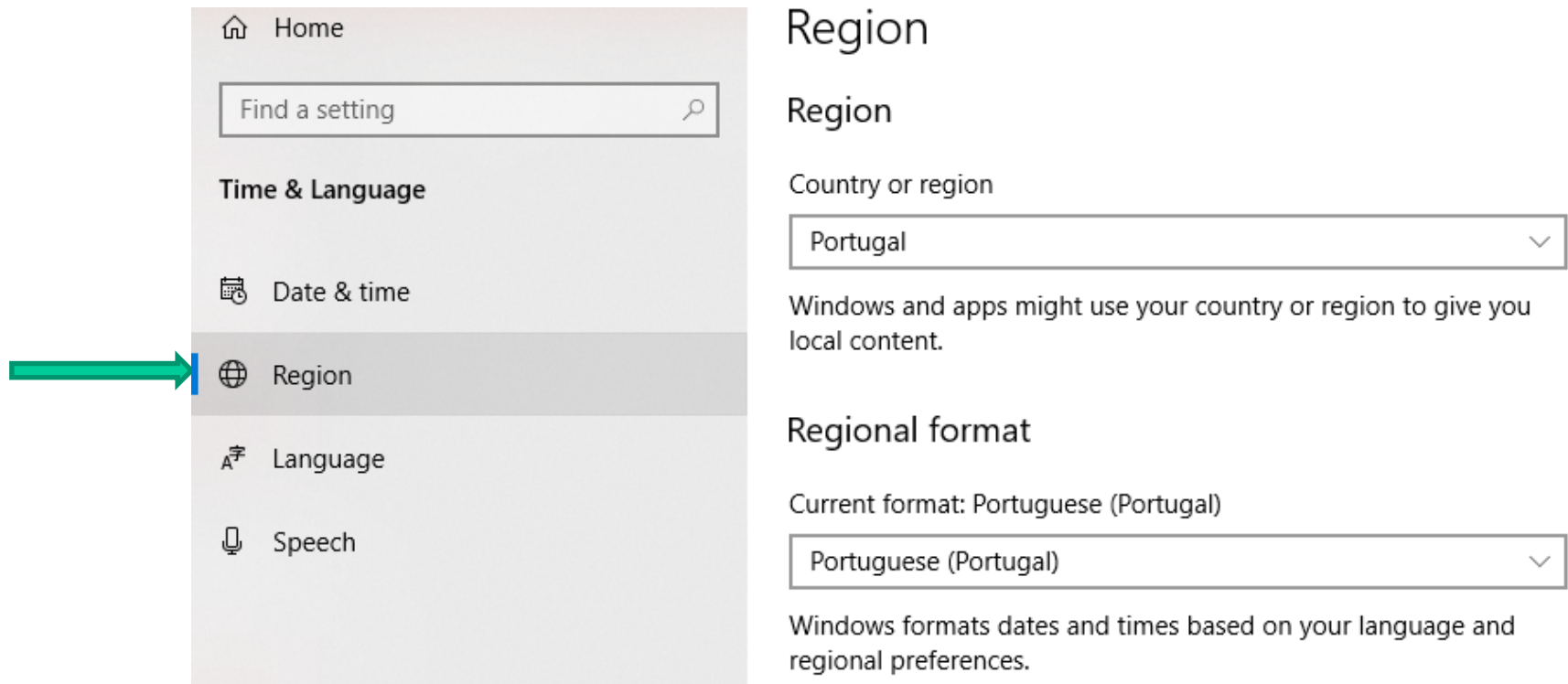
Computer Configurations

- Students are encouraged to bring their own laptop computers for the Excel Exercises. In that case, for the correct usage of the Excel formulas, the computers must have MS Office 365 installed with the following configuration:
 - Excel must be installed in English:
 - Menu “File / Options / Language”:



Computer Configurations (cont)

- “International Settings” computer configuration:



The image shows a screenshot of the Windows Settings application. On the left, a sidebar contains the following options: Home, Find a setting (search bar), Time & Language, Date & time, Region (highlighted with a green arrow), Language, and Speech. The main content area displays the 'Region' settings for Portugal. It includes a dropdown menu for 'Country or region' set to 'Portugal', a description stating 'Windows and apps might use your country or region to give you local content.', a 'Regional format' section with a dropdown menu set to 'Portuguese (Portugal)', and a description stating 'Windows formats dates and times based on your language and regional preferences.'

Concepts

Spreadsheet

- Electronic equivalent to the spreadsheets used in accounting maps for analysis
- Allows the organization of data in tables (rows and columns)
- Each cell on the table contains either a data element or a formula
- The formulas perform calculations and/or use functions based on data from other cells

Spreadsheet

Example problem: We want to analyse a table showing the monthly cost of groceries, with a total per month and per item.

	A	B	C	D	E	F	G
1	CUSTOS	Janeiro	Fevereiro	Março	...	Dezembro	Total Anual
2	Açúcar	4,00	19,00	8,00	26,00	14,00	71,00
3	Arroz	12,00	20,00	15,00	24,00	21,00	92,00
4	Farinha	14,00	5,00	12,00	8,00	26,00	65,00
5	...	17,00	24,00	10,00	12,00	35,00	98,00
6	Ovos	27,00	25,00	13,00	23,00	21,00	109,00
7	Total Mensal	74,00	93,00	58,00	93,00	117,00	

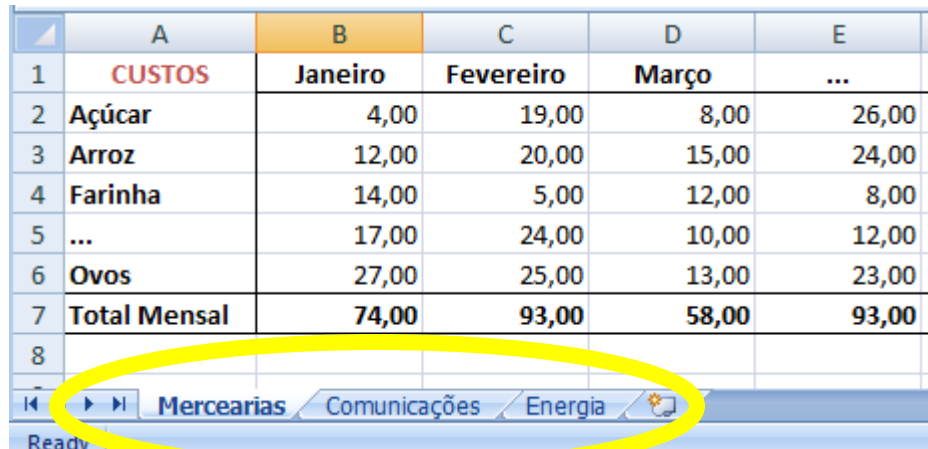
Totals per column

Totals per row

The power of spreadsheets is that, by changing any cell, the content of its dependents are immediately changed.

Workbook

To organize in a single file the various costs (Ex: Grocery, Communications, Energy), Excel allows storing in a single file, a set of worksheets: **Workbook** → **Set of Worksheets (spreadsheets)**



	A	B	C	D	E
1	CUSTOS	Janeiro	Fevereiro	Março	...
2	Açúcar	4,00	19,00	8,00	26,00
3	Arroz	12,00	20,00	15,00	24,00
4	Farinha	14,00	5,00	12,00	8,00
5	...	17,00	24,00	10,00	12,00
6	Ovos	27,00	25,00	13,00	23,00
7	Total Mensal	74,00	93,00	58,00	93,00
8					

- Switching between the sheets is done in the tabs at the bottom of the book.
- The worksheets can be renamed by right clicking on the tab.
- To change the order of a worksheet, simply drag it with the mouse to the new position.

Absolute and relative cell references

Excel cells can contain formulas. The formulas use data from other cells, so they refer to address (row / column) of data :

	A	B	C	D	E
1	Artigo	Preço Base	% Desconto	Taxa IVA	Preço Total
2	Artigo A	581	10%	21%	632,71 =B2*(1-C2)*(1+D2)
3	Artigo B	272	5%	21%	312,66 =B3*(1-C3)*(1+D3)
4	Artigo C	768	10%	21%	836,35 =B4*(1-C4)*(1+D4)
5	Artigo D	945	15%	21%	971,93 =B5*(1-C5)*(1+D5)
6	Artigo E	150	5%	21%	172,43 =B6*(1-C6)*(1+D6)

These formulas use relative references

To add a new article ("Artigo F"), you can copy the formula from one of the existing lines. Excel automatically modifies the corresponding addresses:

	A	B	C	D	E
1	Artigo	Preço Base	% Desconto	Taxa IVA	Preço Total
2	Artigo A	581	10%	21%	632,71 =B2*(1-C2)*(1+D2)
3	Artigo B	272	5%	21%	312,66 =B3*(1-C3)*(1+D3)
4	Artigo C	768	10%	21%	836,35 =B4*(1-C4)*(1+D4)
5	Artigo D	945	15%	21%	971,93 =B5*(1-C5)*(1+D5)
6	Artigo E	150	5%	21%	172,43 =B6*(1-C6)*(1+D6)
7	Artigo F	345	25%	21%	313,09 =B7*(1-C7)*(1+D7)
8					

Absolute and relative cell references

If we want to isolate the rate of VAT (IVA) to be the same for all products, we would have:

	A	B	C	D
1	Taxa de IVA: 21%			
2				
3				
4	Artigo	Preço Base	% Desconto	Preço Total
5	Artigo A	581	10%	632,71 =B5*(1-C5)*(1+\$C\$1)
6	Artigo B	272	5%	312,66 =B6*(1-C6)*(1+\$C\$1)
7	Artigo C	768	10%	836,35 =B7*(1-C7)*(1+\$C\$1)
8	Artigo D	945	15%	971,93 =B8*(1-C8)*(1+\$C\$1)
9	Artigo E	150	5%	172,43 =B9*(1-C9)*(1+\$C\$1)
10	Artigo F	345	25%	313,09 =B10*(1-C10)*(1+\$C\$1)

By preceding the cell address with the dollar sign ("\$"), the reference becomes absolute

- In absolute references, Excel keeps the address unchanged when copying a formula from one cell to another, i.e. fixes the address of the cell.
- You can fix
 - Only the row: C\$1
 - Only the column: \$C1
 - The row and the column: \$C\$1

Formatting cells

Suppose we want to view data in Excel for better presentation and understanding. For example, to format values like "EURO":

Formatting zone

Excel_Exemplos.xlsx - Microsoft Excel

Home Insert Page Layout Formulas Data Review View

Clipboard: Paste, Copy, Format Painter

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

Alignment: Wrap Text, Merge & Center

Number: General, %, <-0 .00, >.00 ->.0

B2 fx =B1

	A	B	C	D	E	F	G	H	I
1	Sem formatação	62,143							
2	Formato Euro (2 casas decimais)	62,143							
3									

Clicking the arrow, opens the formatting menu

Formatting options

The screenshot shows the Excel ribbon with the Number tab active. The Format Cells dialog box is open, displaying the Currency format options. The 'Category' list on the left has 'Currency' selected. The 'Sample' field shows '62,14 €'. The 'Decimal places' are set to 2, and the 'Symbol' is set to '€'. The 'Negative numbers' list includes '-1.234,10 €', '1.234,10 €', '-1.234,10 €', and '-1.234,10 €'. The dialog box also contains a note: 'Currency formats are used for general monetary values. Use Accounting formats to align decimal points in a column.'



Attention!

formatting \neq rounding !!!



	A	B
1	Number not formatted	62,14286
2	Same number with Euro format	62,14 €

Formatting Tables

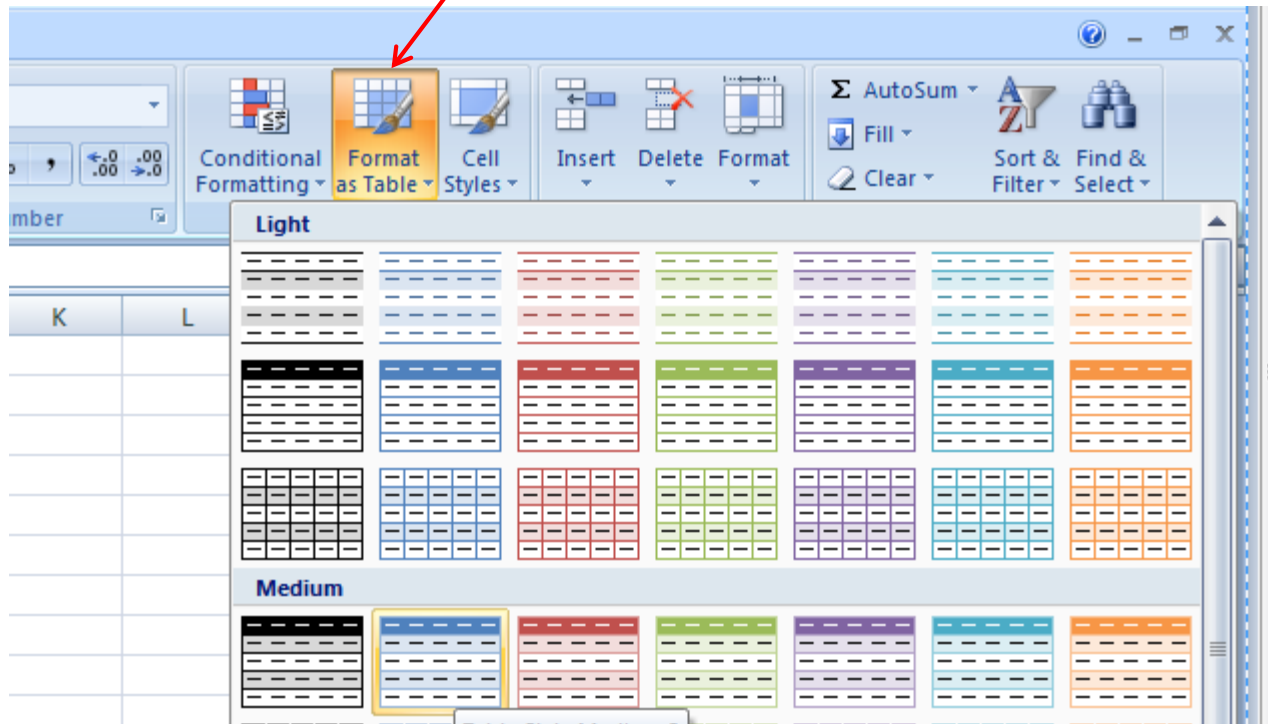
We want to format a table with data. Excel has a pre-set of table formats that can be used immediately.

E.g.: Data table unformatted:

	A	B	C	D	E	F	G	H
1	CUSTOS	Janeiro	Fevereiro	Março	...	Dezembro	Total Anual	
2	Açúcar	4,00	19,00	8,00	26,00	14,00	71,00	
3	Arroz	12,00	20,00	15,00	24,00	21,00	92,00	
4	Farinha	14,00	5,00	12,00	8,00	26,00	65,00	
5	...	17,00	24,00	10,00	12,00	35,00	98,00	
6	Ovos	27,00	25,00	13,00	23,00	21,00	109,00	
7	Total Mensal	74,00	93,00	58,00	93,00	117,00		
8								

Formatting Tables

Access the menu option and choose a format



Formatting Tables - Result

	A	B	C	D	E	F	G	H
1	CUSTOS	Janeiro	Fevereiro	Março	...	Dezembro	Total Anual	
2	Açúcar	4,00	19,00	8,00	26,00	14,00	71,00	
3	Arroz	12,00	20,00	15,00	24,00	21,00	92,00	
4	Farinha	14,00	5,00	12,00	8,00	26,00	65,00	
5	...	17,00	24,00	10,00	12,00	35,00	98,00	
6	Ovos	27,00	25,00	13,00	23,00	21,00	109,00	
7	Total Mensal	74,00	93,00	58,00	93,00	117,00		
8								
9								

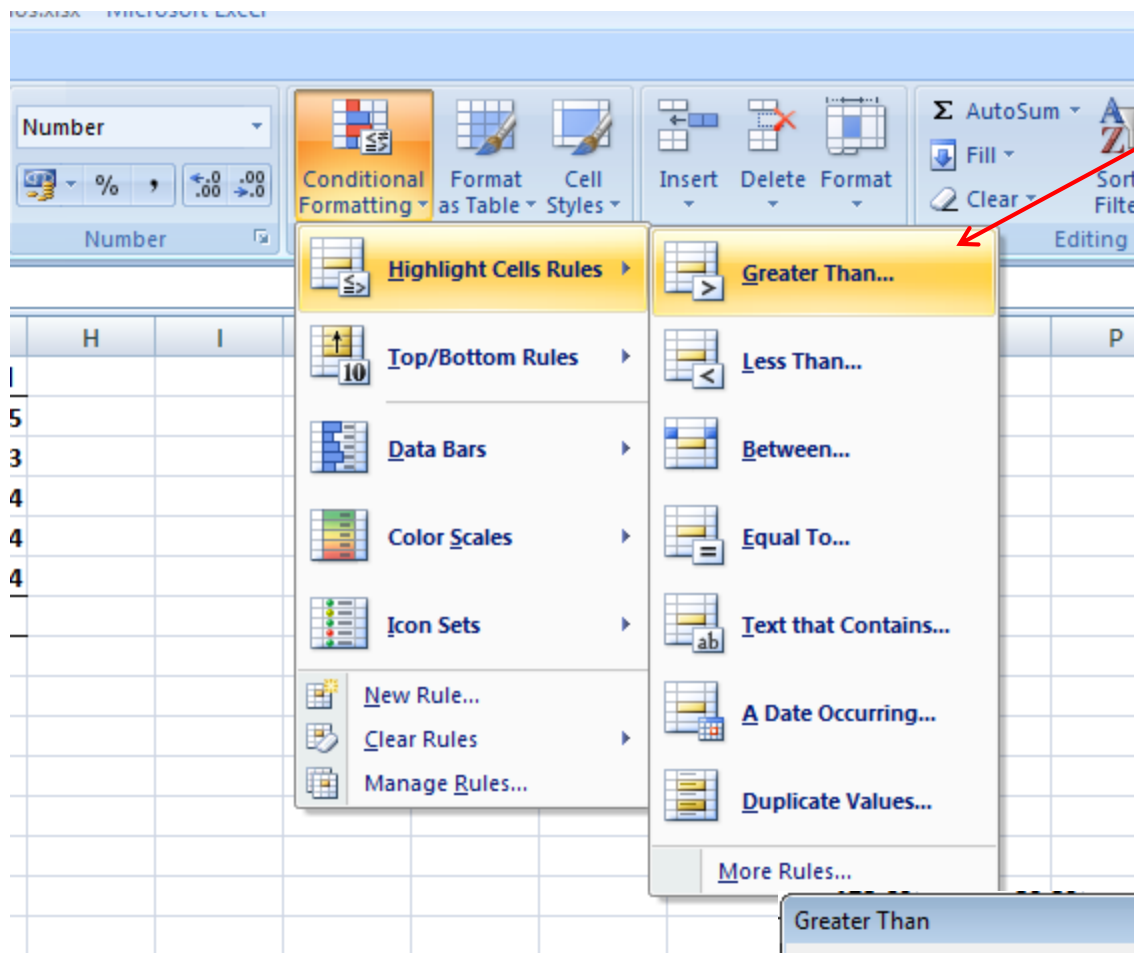
Conditional Formatting

We want to highlight cells that have a cost over € 20.00

	A	B	C	D	E	F	G
1	CUSTOS	Janeiro	Fevereiro	Março	...	Dezembro	Total Anual
2	Açúcar	7,78	42,54	6,45	41,08	5,60	103,45
3	Arroz	31,01	10,44	37,73	49,37	31,68	160,23
4	Farinha	34,99	32,87	23,78	40,84	16,76	149,24
5	...	39,04	6,50	22,34	41,61	19,85	129,34
6	Ovos	39,41	10,01	40,02	5,70	7,00	102,14
7	Total Mensal	152,23	102,36	130,32	178,60	80,89	
8							

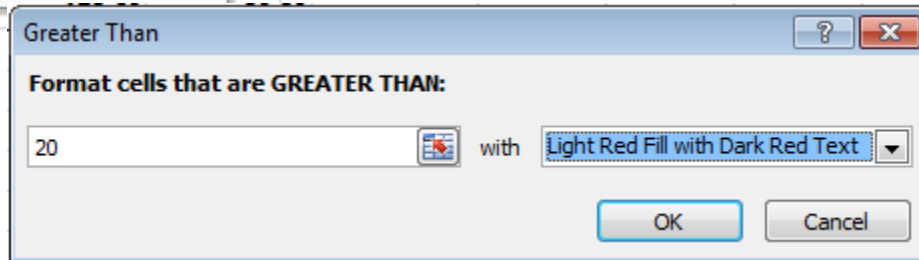
Select the cells to
format

Conditional Formatting - Result



Choose option

In the next window, enter the reference value and the format to stress



Conditional Formatting - Result

	A	B	C	D	E	F	G	H
1	CUSTOS	Janeiro	Fevereiro	Março	...	Dezembro	Total Anual	
2	Açúcar	7,78	42,54	6,45	41,08	5,60	103,45	
3	Arroz	31,01	10,44	37,73	49,37	31,68	160,23	
4	Farinha	34,99	32,87	23,78	40,84	16,76	149,24	
5	...	39,04	6,50	22,34	41,61	19,85	129,34	
6	Ovos	39,41	10,01	40,02	5,70	7,00	102,14	
7	Total Mensal	152,23	102,36	130,32	178,60	80,89		
8								

Formatting Print

We want to print the grade report in the following format:

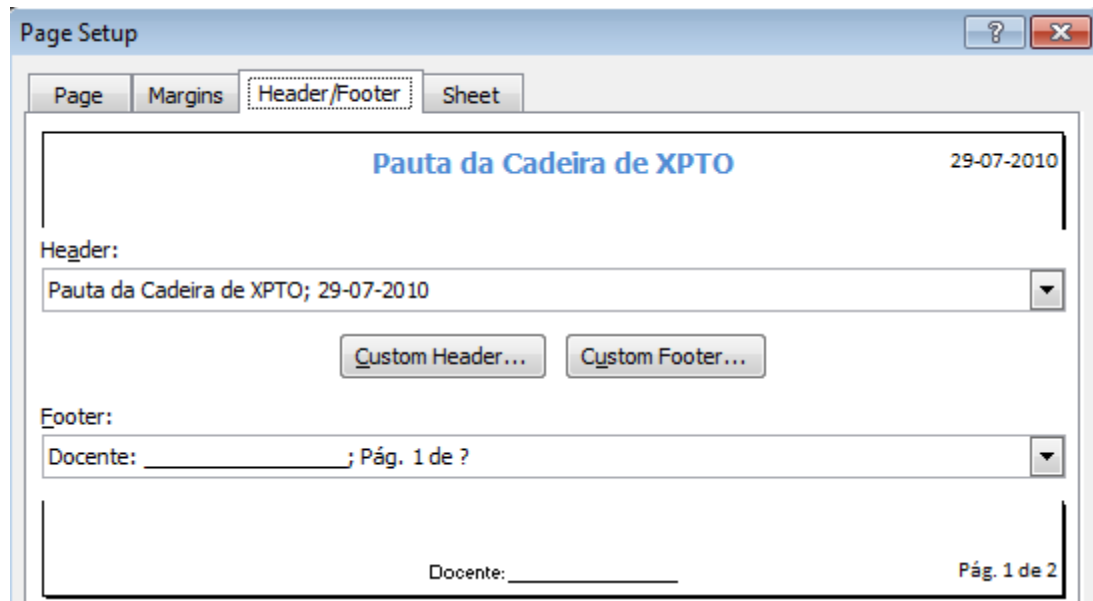
The image shows a screenshot of an Excel spreadsheet titled "Pauta da Cadeira de XPTO" with a date of 29-07-2010. The spreadsheet contains a table of student names and their grades. Annotations include a magnifying glass over the date, a red arrow pointing to the date "29-07-2010", a red arrow pointing to the "Docente:" field, and a red arrow pointing to the page number "Pág. 1 de 2".

Nome	Nota Trabalho	Nota Exame	Nota Final	Nota a Lagar
Adrian Woodson	11,9	12,7	12,38	12
Anna McCall	10,0	5,3	REP	REP
Beatrice Fitzgerald	17,8	7,2	REP	REP
Bill Oliver	17,1	3,9	REP	REP
Charles Bynum	17,6	4,7	REP	REP
Cheryl T. Anderson	16,3	17,7	17,14	17
Cinderella Godwin	10,4	5,5	REP	REP
Dale Bennett	13,9	14,1	14,02	14
Dale Lemay	13,0	16,4	15,04	15
Dorothy Peterman	16,7	13,2	14,6	15
Ebony Agnew	11,1	11,7	11,46	11
Edith Ross	14,1	7,6	REP	REP
Elizabeth Sullivan	17,5	6,8	REP	REP
Elvia Duncan	18,6	3,1	REP	REP
Emily Hernandez	14,1	13,8	13,92	14
Evelyn Jorgensen	8,7	9,8	9,36	REP
Fred Rice	9,5	4,0	REP	REP
George Williams	17,7	8,8	12,36	12
Georgie Talamantez	12,8	14,0	13,52	14
Harry Cox	18,2	11,1	13,94	14
Herman Howell	18,8	7,8	REP	REP
Hilda Christensen	8,8	8,0	REP	REP
Irma Werner	8,6	13,6	11,6	12
James Sanders	8,1	8,9	8,58	REP
Jamie Miller	13,3	4,8	REP	REP
Jay F. Bowman	13,4	4,3	REP	REP
Jerry Stilaire	17,2	13,5	14,98	15
John Galloway	18,1	9,0	12,64	13
John Smith	14,6	5,9	REP	REP
Joseph Davis	17,6	16,1	16,7	17
Juanita Barnes	9,9	16,4	13,8	14
Kenneth Haley	15,2	4,1	REP	REP
Kimberly Turner	8,7	9,8	9,36	REP
Kristi Smith	16,3	15,3	15,7	16
Kristina Walter	8,5	9,6	9,16	REP
Lilia Fick	11,2	6,2	REP	REP
Lisa Doan	8,1	18,2	14,16	14
Maria Brown	13,1	18,8	16,52	17
Maria Doe	14,4	8,6	10,92	11
Mariana J. Pinkerton	11,9	14,8	13,64	14
Mary Seibert	9,8	18,9	15,26	15
Matthew Pierce	14,7	10,2	12	12
Michael Bacon	16,1	15,0	15,44	15
Michael Johnson	9,4	15,0	12,76	13
Michael Lares	16,1	6,1	REP	REP
Nancy Gay	11,5	13,9	12,94	13
Patricia Avery	16,9	18,7	18,74	19
Rafael Fleener	15,9	17,6	16,92	17
Raymond Saldívar	8,8	10,7	10,72	11

Formatting Print

Use the "Page Setup" on "Header / Footer" buttons "Custom Header" and "Custom Footer" to create headers and footers.

The remaining options allow several configurations for printing



Contributors

- List of authors/contributors to these materials:
 - José Camacho (2011)
 - Ana Lucas (2012)
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 - Álvaro Rocha (2020)