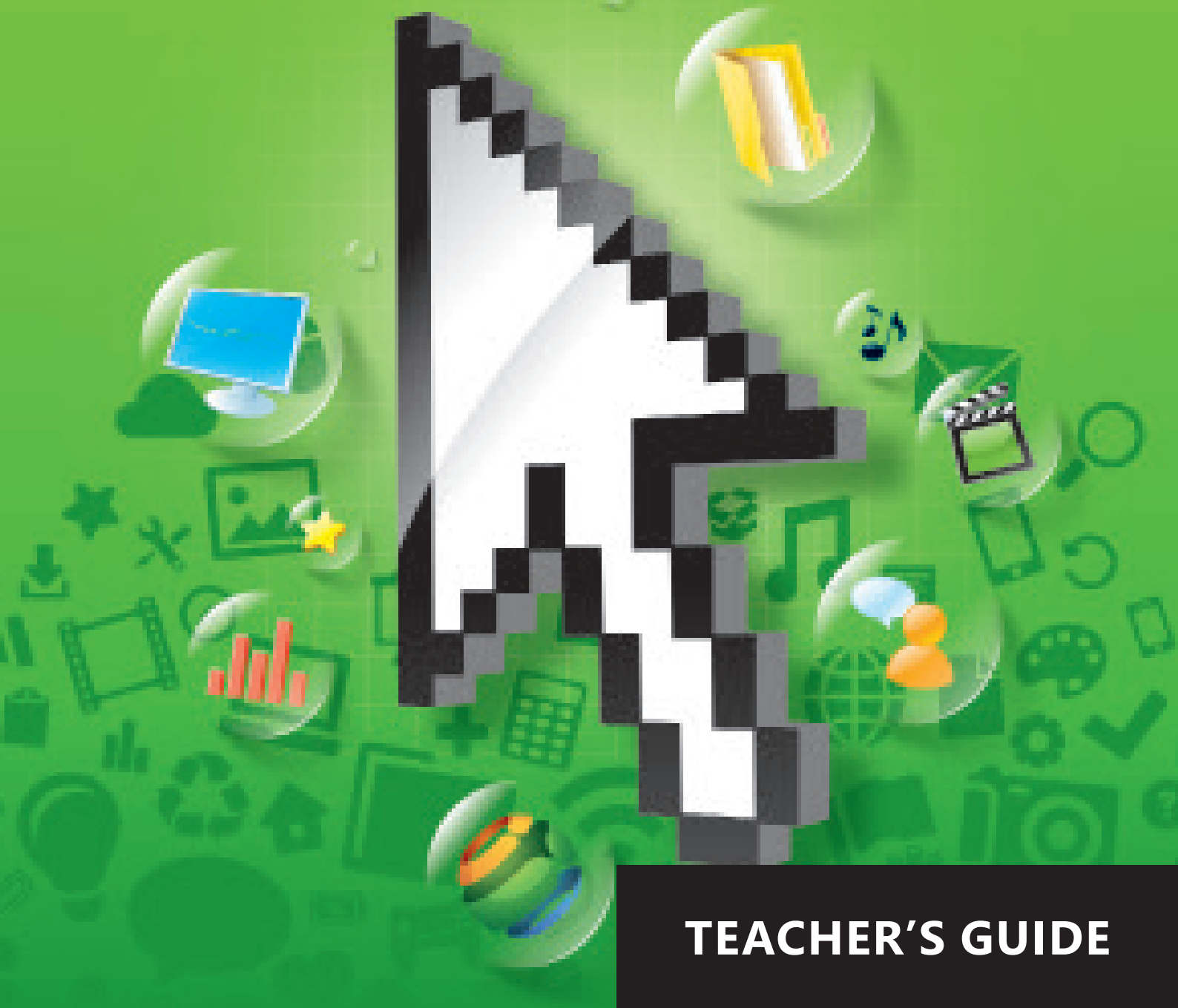


TEENS²

DIGITAL



TEACHER'S GUIDE

OVERVIEW

To make complex calculations in Microsoft Excel.

OBJECTIVES

- To understand the correct order of calculations. More specifically to know that:
 - multiplication and division are done first and then addition and subtraction.
 - If there are parentheses, first do the calculations inside them and then the rest.
- To work with percentages making the proper calculations.
- To realize the different ways to calculate percentages.
- To understand how to calculate the power of a number in different ways.

SKILLS

- To perform more complex calculations in a formula.
- To transform a number to a percentage and more specifically to:
 - Add percentages with the Percent Style button
 - Determine the decimal places
- To calculate a power of a number using the symbol \wedge .
- To use the Power function (x , y).

WHAT IS NEEDED**Prerequisites**

Basic knowledge of Microsoft Excel (to use AutoFill in order to copy, to add columns and rows to a spreadsheet, to know the correct sequence of calculations).

Resources

- Digital Teens 2 Student's Book
- T.2.5.1_Worksheet_1.docx
- T.2.5.1_Worksheet_2.docx
- T.2.5.1_Evaluation_Sheet.docx
- T.2.5.1_Final.xlsx

Tools & Equipment

Microsoft Excel

LEARNING DIFFICULTIES

- Many students have difficulty in following the proper sequence of math calculations as they don't know the basic mathematical rules.
- Some students confuse the function of the percent sign of Percent Style on the Formatting toolbar with the percent sign. When they need to add a percent sign to a number, they select the cell first and then click the Percent Style button on the Formatting toolbar. Doing this, won't only add a percent sign to the number, but it will also multiply the number by 100. On the other hand, if they just want to add a percent sign to a number without multiplying it by 100, they

should just type the symbol.

LESSON DESCRIPTION**A. Start – Brainstorming**

- Ask students questions about the importance of making calculations and using functions in Microsoft Excel. More specifically, you could ask them:
 - How can we analyze imported data in a table?
 - Do you know the proper sequence of math calculations?
 - Have you ever used AutoFill in order to avoid repeating the same process?
 - Have you ever worked with functions in Microsoft Excel? Have you ever used the Power function?
 - Do you know how to calculate percentages?
- Separate students into groups of 2-3.

B. Implementation

- Hand out "T.2.5.1_Worksheet_1.docx." Ask students to do the activity. Open the Excel file "T.2.5.1_Final.xlsx" to show students an example of what their table should look like.
- Then, hand out "T.2.5.1_Worksheet_2.docx." Ask students to complete the activity. During the activity:
 - Explain to students that the total area of the items must be exactly the same as the area of the square (7,850 m²).
 - Help them calculate the percentages if necessary.
 - The total building cost must not exceed \$15,000.
- Tell students that they can consult their Student's Book.
- Encourage discussion amongst students and add that if they have any questions they can ask you.

C. Completion – Evaluation

- Hand out the evaluation sheet to every student and ask them to complete it.
- Collect the sheets and see if they understood all the objectives that we had for this lesson.
- Check which part of the lesson students didn't completely understand and make any changes required in the teaching process.

NOTES

OVERVIEW

To use a variety of functions in order to make more complicated calculations and analyze numerical information.

OBJECTIVES

- To use the proper functions in order to make their calculations correctly.
- To know the type of value they can type in criteria boxes of a function in order to get the desired result.
- To understand what type of value each function returns.
- To realize the differences between the logical functions OR and AND.

SKILLS

- To use the COUNT function in order to calculate the number of cells that contain numbers.
- To display the current date on a worksheet using the TODAY function.
- To use the CONCATENATE function in order to join particular cell contents together.
- To extract a part of a string using the LEFT, RIGHT and MID function.
- To use the SUBSTITUTE function in order to replace part of a text in a cell.
- To use a multiple If function.
- To combine multiple If functions with other functions like AVERAGE, MIN and MAX in order to make more complex calculations.
- To use the logical functions OR and AND.
- To combine a multiple IF function with an AND function.
- To use the COUNTIF function in order to count the number of cells within a range that meets a given condition.

WHAT IS NEEDED**Prerequisites**

- Using basic functions like AVERAGE, MAX and MIN.
- Using the AutoFill tool properly.

Resources

- Digital Teens 2 Student's Book
- T.2.5.2_Worksheet_1.docx
- T.2.5.2_Worksheet_2.docx
- T.2.5.2_Evaluation_Sheet.docx
- "T.2.5.2_Australia Arrivals" folder

Tools & Equipment

Microsoft Excel

LEARNING DIFFICULTIES

- Many students have difficulty in selecting the correct function in order to make correct calculations.
- Many students have problems with the syntax of

more complicated functions.

- Students have difficulty in understanding that they can combine a multiple IF function with other functions.
- Many students get confused with the type of value each function returns.

LESSON DESCRIPTION**A. Preparation**

Place the folder "T.2.5.2_Australia Arrivals" in the My Documents folder.

B. Start – Brainstorming

- Start asking students questions about the importance of making more complicated calculations using various functions in Microsoft Excel. More specifically you could ask them:
 - o How can we calculate the number of cells that contain numbers?
 - o How can we display the current date on a worksheet using a function?
 - o How can we join two particular cell contents?
 - o Do you know how we can combine a multiple IF function with other types of functions?
 - o Which types of values do you think can return a function?
- Separate students into groups of 2-3.

C. Implementation

- Hand out the "T.2.5.2_Worksheet_1.docx". Ask students to do the activity. While students match the function Argument windows with the corresponding results, you can ask them to perform these functions in order to verify their answers.
- Then, hand out the "T.2.5.2_Worksheet_2.docx". Ask students to complete the activity. While students are trying to display the desired results in particular cells:
 - o Tell students that in cell G23 they have to calculate the greater number from the averages that came to Australia last year (New Zealand). Then using the Concatenate function they have to join it with the cell which contains the name New Zealand.
 - o In cell G26 tell students that the American countries are the USA and Canada and they have to use the AND function.
 - o In cell G27 tell students that the Northeast Asian countries are China, Korea, Hong Kong and Taiwan and they have to use the OR function.

D. Completion – Evaluation

- Hand out the evaluation sheet to every student and ask them to complete it.
- Collect the sheets and see if they understood all the objectives that we had for this lesson.
- Check which part of the lesson students didn't

OVERVIEW

To work with references in order to keep a cell, a row or a column constant when copying formulas.

OBJECTIVES

- To understand the differences between relative references and absolute references.
- To distinguish the differences between the various types of absolute references and furthermore to understand that:
 - When copying down, they have to lock the row (Column\$Row)
 - When copying across, they have to lock the column (\$ColumnRow)
 - When copying both down and across they have to lock both the row and the column (\$Column\$Row)
- To understand that they can use the copy/paste function the same way as the AutoFill tool.
- To understand how the content of a cell changes while copying a formula to another cell.
- To understand the meaning of each error message.
- To understand the importance of combining the IF function with an absolute reference.

SKILLS

- To use the various types of absolute references in order to make correct calculations.
- To create and copy a formula using references.
- To create and copy a formula using row absolute references.
- To create and copy a formula using column absolute reference.
- To combine the IF function with an absolute reference.

WHAT IS NEEDED**Prerequisites**

- Knowledge of using basic functions like AVERAGE, MAX, MIN and AutoFill tool.

Resources

- Digital Teens 2 Student's Book
- T.2.5.3_Worksheet_1.docx
- T.2.5.3_Worksheet_2.docx
- T.2.5.3_Evaluation_Sheet.docx
- "T.2.5.3_Sales" folder

Tools & Equipment

Microsoft Excel

LEARNING DIFFICULTIES

- Many students have difficulty in understanding how to use the dollar sign when using the AutoFill tool.
- Students have problems understanding that when the number of a row changes, the cell that has the \$ sign stays the same.

- Students think that the only way to copy a formula using references is with the AutoFill tool.
- Students think that when an error message appears they have to clear the content of each cell, as they do not know that they can edit this particular formula.

LESSON DESCRIPTION**A. Preparation**

Place the folder "T.2.5.3_Sales" in the My Documents folder.

B. Start – Brainstorming

- Start asking students questions about the importance of using references in Microsoft Excel. More specifically you could ask them:
 - How can we keep a cell, row or column constant when copying a formula?
 - Have you ever worked with absolute references?
 - How can we create and copy a formula using an absolute reference?
 - Do you know the importance of combining an If function with an Absolute reference?
- Separate students into groups of 2-3.

C. Implementation

- Hand out the "T.2.5.3_Worksheet_1.docx". Ask students to do the activity. During the activity:
 - Ask them to open a new Excel worksheet in order to perform the worksheet's example.
 - Explain how to change the content of a formula when it is copied to other cells.
- Then, hand out the "T.2.5.3_Worksheet_2.docx". Ask students to complete the activity. While students are working with the Excel file "T.2.5.3_Sales 2012":
 - Help them display the taxes which the e-shop will pay for each item in a row. Students have to:
 - First calculate the sum of revenues of each item (cell F22).
 - Then calculate the Tax of each item (cell F23).
 - Help them calculate the cell J10. Tell them that:
 - When a value is increased by 15%, then the "Final value is = Original value + Original value* 15%".
 - Tell them that when copying both down and across they have to lock both the row and the column (\$Column\$Row).
- While students are combining the If function with an absolute reference:
 - Help them type the criteria correctly.
 - Ask them to keep the cell J3 (20,000) as absolute reference.

D. Completion – Evaluation

- Hand out the evaluation sheet to every student and ask them to complete it.
- Collect the sheets and see if the students understood all the objectives that we had for this

OVERVIEW

To present data as graphs in a more advanced way.

OBJECTIVES

- To distinguish between the different type of charts.
- To understand when we use each type of graph.
- To modify a chart in different ways.
- To realize the importance of inserting a mini chart inside a chart.
- To apply conditional formatting in order to change the way cells look based on what they contain.

SKILLS

- To add different type of charts in a worksheet like a column chart, line chart, area chart, pie chart or scatter chart.
- To move an existing chart to a new worksheet or to a chart as an object to an existing sheet.
- To change the Shape Fill of a chart and more specifically:
 - To fill the shape with a color.
 - To fill the shape with a picture.
 - To fill the shape with a gradient.
 - To use a texture fill.
- To change the title of a chart.
- To change the format of an axis.
- To add a mini chart inside a chart.
- To modify a mini chart.
- To apply Conditional Formatting and more specifically to:
 - Format cells based on their content.
 - Format cells based on their values.
 - Format cells that are above or below an average.
 - To use a formula to determine which cells to format.
 - To format only unique or duplicate values.

WHAT IS NEEDED**Prerequisites**

- Basic knowledge of formatting cells.
- Use functions in order to make calculations.

Resources

- Digital Teens 2 Student's Book
- T.2.5.4_Worksheet_1.docx
- T.2.5.4_Worksheet_2.docx
- T.2.5.4_Worksheet_3.docx
- T.2.5.4_Evaluation_Sheet.docx
- "T.2.5.4_Countries' icons" folder
- "T.2.5.4_Australia Arrival's" folder

Tools & Equipment

Microsoft Excel

LEARNING DIFFICULTIES

- Some students get confused and can't decide

which chart they should create in each case.

- They also have difficulty in understanding that it's never too late to change the type, layout and style of a chart. There is no need to delete and create a chart again.

LESSON DESCRIPTION**A. Preparation**

Place the folders "T.2.5.4_Australia Arrivals" and "T.2.5.4_Countries' icons" in the My Documents folder.

B. Start – Brainstorming

- Start asking students questions about the importance of inserting a chart or graph in a spreadsheet in order to represent information. More specifically you could ask them:
 - How can you represent data in order to make it easier to understand and analyze?
 - How do you know which chart to choose each time?
 - Which type of chart should you use in order to show values over a period of time?
 - Which type of chart should you use when you want to show percentages or parts of something compared to the total?
 - Do you know how to insert a mini chart inside a chart?
 - Can you format cells based on what they contain?
- Separate students into groups of 2-3.

C. Implementation

- First, hand out the "T.2.5.4_Worksheet_1.docx". Ask them to do the activity. Students have to match the chart type with the correct type of information.
- Then, hand out the "T.2.5.4_Worksheet_2.docx". Ask students to open the Excel file with Australia arrivals data which they created in the previous task. During the activity:
 - While students are presenting August's arrivals data as a graph:
 - Help students insert the proper chart layout (Layout 9) in order to be able to add a Vertical and Horizontal Axis title.
 - Help them format their graphs if necessary.
- While students are calculating the percentage of Australian visitors per country during the year:
 - A suggested way to work is:
 - > Calculate the sum of visitors for each country during the year.
 - > Then use the Autofill tool to fill in the rest of the column.
 - > Then calculate the sum of this column.
 - > Finally, create a new column with the corresponding percentages using the proper absolute reference.
 - Explain the importance of presenting the data

OVERVIEW

To import and export data in a spreadsheet.

OBJECTIVES

- To understand the importance of working with CSV files and more specifically:
 - To realize that these files help us transfer large amounts of data from one program to the other.
 - To realize that these files are simple text files with no formatting.
- To import data onto a spreadsheet.
- To export data from a spreadsheet.
- To convert text to a table.

SKILLS

- To import data to an Excel file from a TXT or CSV file and more specifically:
 - To define the value of columns.
 - To define the character that separates values in a text file.
 - To define whether your data contains more than one character between data fields.
 - To define the character that encloses values between the delimiters in a text file.
- To determine the worksheet where you want to put data.
- To convert text to a table.
- To convert a table to text.
- To sort data in a table.
- To export data from Microsoft Excel to a TXT or CSV file.

WHAT IS NEEDED**Prerequisites**

- Basic knowledge of formatting cells.
- To know how to sort data.

Resources

- Digital Teens 2 Student's Book
- T.2.5.5_Worksheet_1.docx
- T.2.5.5_Worksheet_2.docx
- T.2.5.5_Evaluation_Sheet.docx
- "T.2.5.5_New arrivals data" folder

Tools & Equipment

Microsoft Excel

LEARNING DIFFICULTIES

- Some students get confused while trying to move existing data down, up or to overwrite cells.

LESSON DESCRIPTION**A. Preparation**

Place the folder "T.2.5.5_New arrivals data" in the My Documents folder.

B. Start – Brainstorming

- Start asking students questions about the

importance of importing and exporting data onto a spreadsheet. More specifically you could ask them:

- How do we import data onto a spreadsheet?
- Do you know what a CSV file is?
- Do you know how to covert text to a table?
- How can we export data from a spreadsheet?
- Separate students into groups of 2-3.

C. Implementation

- First, hand out the "T.2.5.5_Worksheet_1.docx". Ask them to do the activity. During the activity:
 - Help students convert a file to CSV format.
 - Help them import their CSV file onto the spreadsheet, overwriting existing particular cells.
- Then, hand out the "T.2.5.5_Worksheet_2.docx". Ask them to complete the activity. During the activity:
- Remind students how to sort data according to the worksheet.
- Help them export their data.

D. Completion – Evaluation

- Hand out the evaluation sheet to every student and ask them to complete it.
- Collect the sheets and see if they understood all the objectives that we had for this lesson.
- Check which part of the lesson students didn't completely understand and make any changes required in the teaching process.

NOTES
