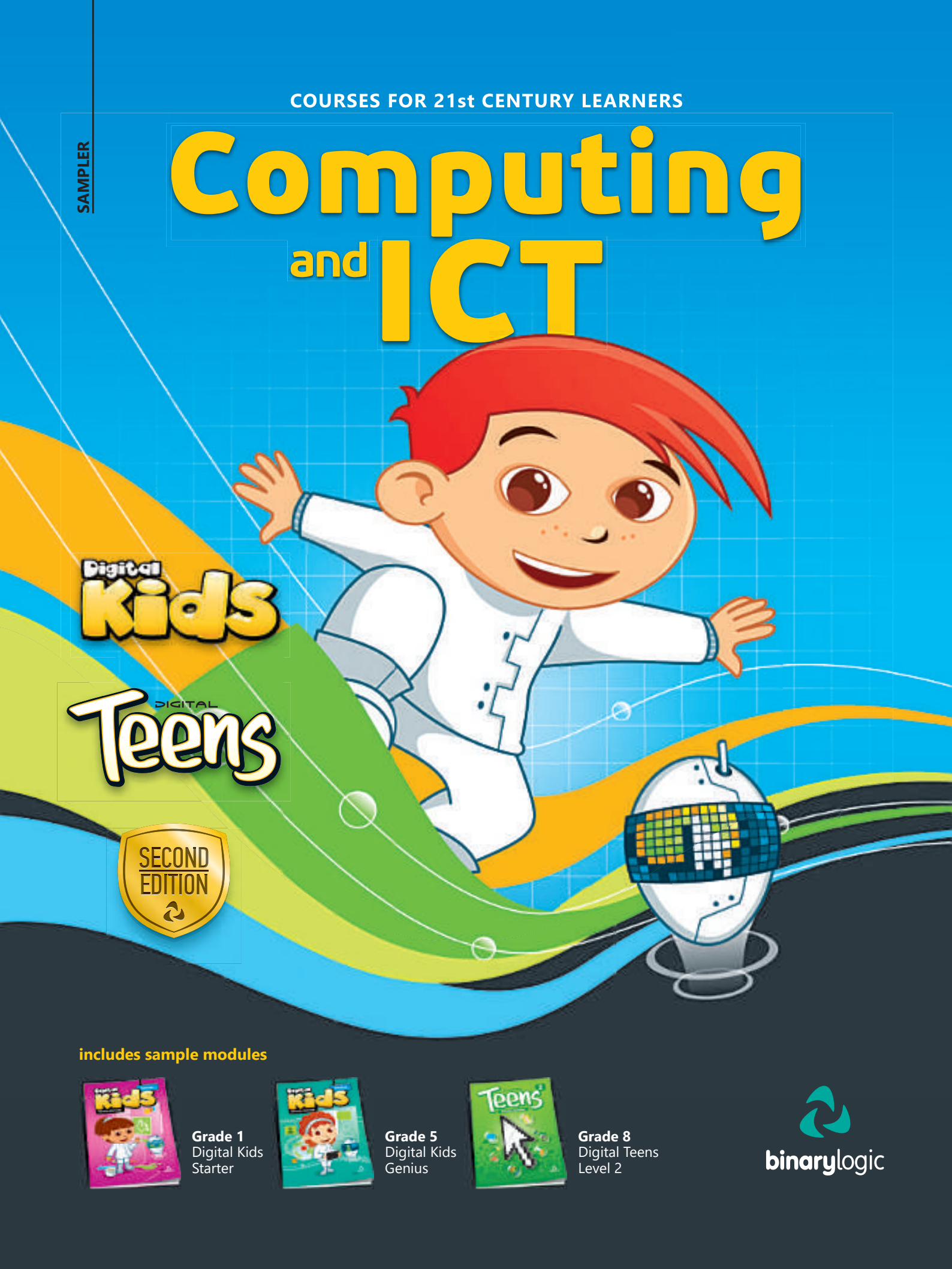
SAMPLER

COURSES FOR 21st CENTURY LEARNERS

# Computing and ICT




**includes sample modules**



**Grade 1**
Digital Kids
Starter



**Grade 5**
Digital Kids
Genius



**Grade 8**
Digital Teens
Level 2

binarylogic

# This sampler includes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# Computing and ICT
## are the new literacy

Information and Communications Technologies (ICT) are now part of the educational experience of children and teenagers in most parts of the world. Taught as a separate subject, as well as being embedded within the curriculum, Computing and ICT is increasingly regarded as a new literacy, alongside reading, writing and numeracy.

Digital Kids and Digital Teens are designed to introduce students to the key Computing concepts and ICT applications they need to use in order to acquire that literacy and to help them understand the impact of technology on our daily lives. The curriculum provides a framework in which Computing and ICT competences and practical skills can be developed within an environment that is appropriate for the age of the students.

# 38 years
## working with technology in schools

### > Serving the learning community

Binary Logic has been working actively with schools, universities and Ministries of Education around the world since 1982 and is well known for the quality of its educational resources and services. The company belongs to the MM Educational Group which was founded in 1974 and since then it has been dedicated to excellence in education. The founders of Binary Logic are educators who decided to incorporate technology early on as they saw the need for innovative ways and methods to enrich students' learning experience. With Belt Study System and ELT SKILLS, we've made English language learning practical, flexible and fun through learning experiences that are interactive and tailored to students' specific needs. In today's everchanging society, we are focusing on the subject of Computing and ICT in schools. Through our innovative curriculum and academic support we have become a worldwide leader.

### > Our experience in school environments

We design complete solutions for real classroom conditions. The students' needs determine the form of our educational material and with our extensive experience in educational technology we are well positioned to meet the challenges in a wide variety of school environments. There are thousands of schools and universities in Europe, the Middle East, Asia and Latin America using educational solutions created by Binary Logic.

binarylogic

binarylogic.net

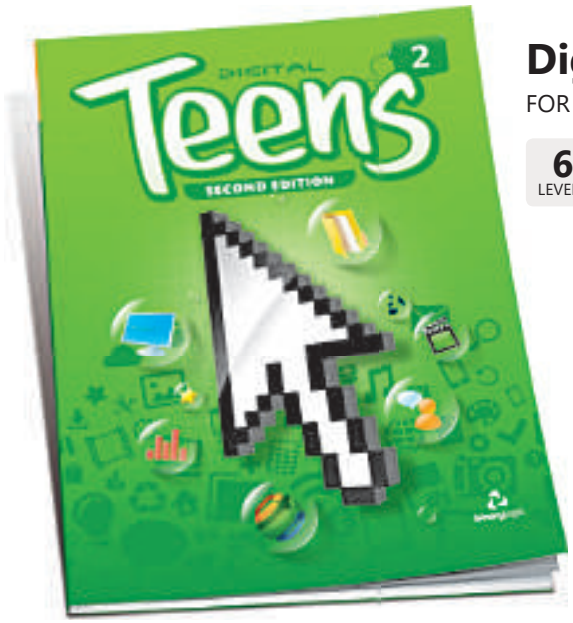
mm educational group

mmedugroup.com


## Digital Kids

FOR PRIMARY SCHOOLS

**6** LEVELS




## Digital Teens

FOR SECONDARY SCHOOLS

**6** LEVELS


## ICT SKILLS

FOR COLLEGES & UNIVERSITIES


## eSkills

FOR SCHOOLS

**12** LEVELS

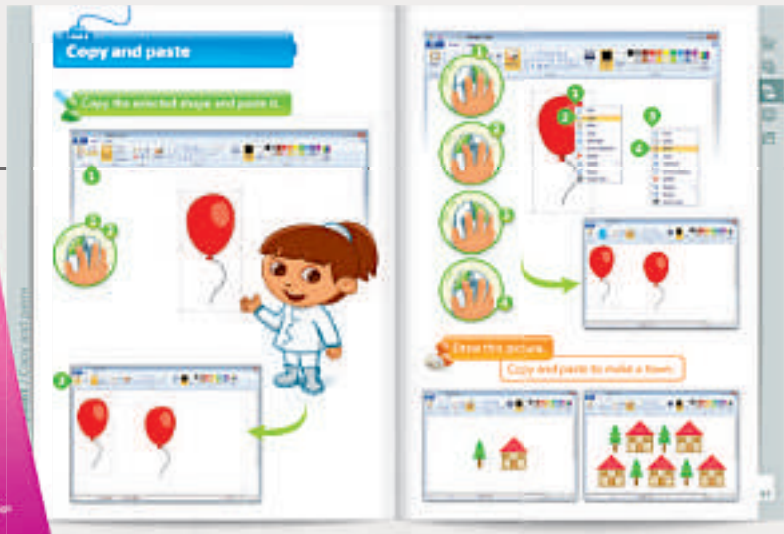
- *Student-centered learning through a fun, hands-on approach*
- *Written and designed by educators*
- *Modern educational material that meets various learning styles*
- *Fully graded and designed for schools*
- *Content aligned to student needs in each age group*
- *Activities based on school subjects in each grade*
- *Language in English edition is graded to facilitate non-native speakers*
- *Available in several languages*
- *Coding and robotics available in different grades*

***Local education with global standards***


*Contact us for custom localized editions*

# Digital Kids Grades 1-6

*for **Primary schools***


Grade 1



Grade 2

Digital Kids Starter and Explorer are specifically created for very young learners!


Grade 3 Grade 4 Grade 5 Grade 6

# **Digital Teens** Grades 7-12

*for **Secondary schools***


Grade 7


Grade 8

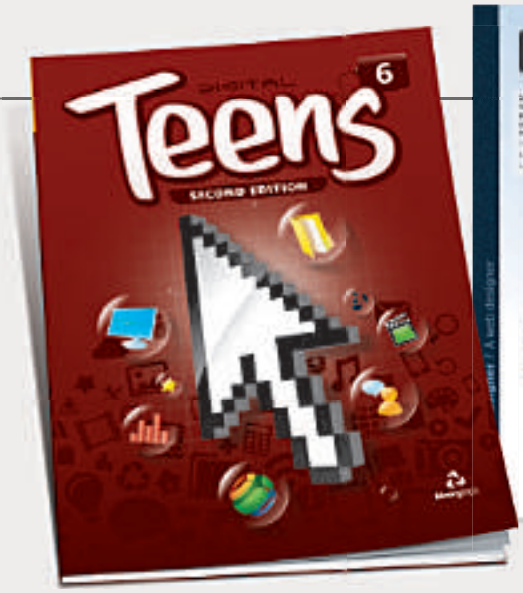

Grade 9

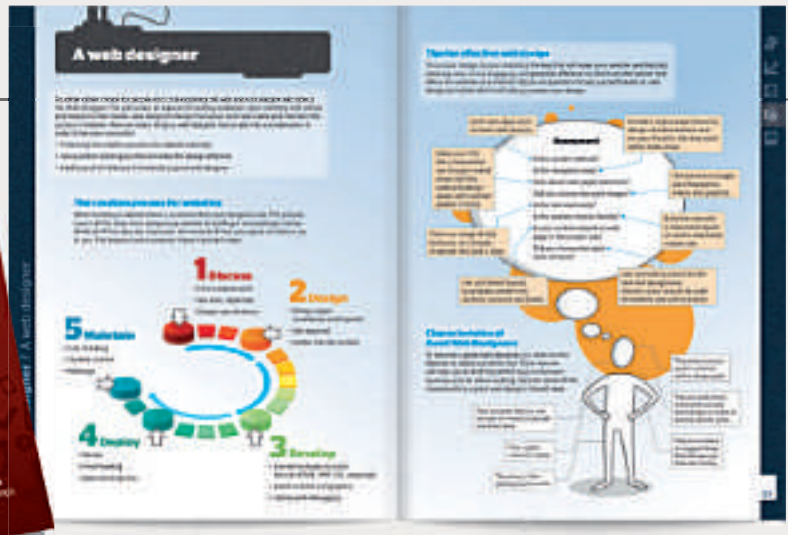

Grade 10


Grade 11

ISTE Standards Seal of Alignment Student Standards Sept. 2018.20

DQ ADOPTER




*Grade 12*

Digital Teens 6 is entirely project-based and helps students practice the Computing and ICT skills they acquired in previous years.

# International Standards

**Digital Kids** and **Digital Teens** follow the latest international Computing and ICT teaching standards

- The series take into consideration the competencies valued in Computing and ICT around the world.
- The curriculum is mapped against national standards and requirements in a number of countries.
- The skills learned reflect the performance standards in demand in an international context.

Digital Literacy Standard Curriculum

The International Society for Technology in Education (ISTE) completed a Seal of Alignment for Readiness review of Digital Kids, Digital Teens, eSkills and ICT Skills and determined that they provide an effective foundation for successfully acquiring the knowledge and applying the skills described by the ISTE Standards for Students.

## Suitable for international exam preparation

***Extra Online Material***

*for example:*

UNIVERSITY of CAMBRIDGE International Examinations

BINARYACADEMY Technology and Information Literacy Certificate

ECDL Foundation

ICDL

CERTIPORT

Microsoft Office Specialist

IC3 FASTTRACK

IC3 DIGITAL LITERACY

IC3 spark

IC3 KEY APPLICATIONS

IC3 LIVING ONLINE

IC3 COMPUTING

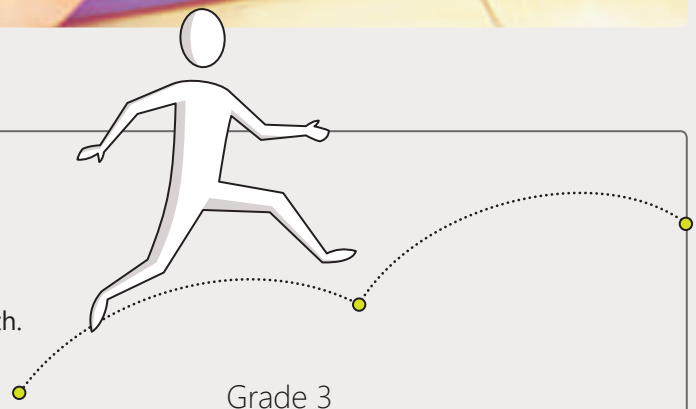
# Curriculum Framework

Content curriculum and resources that are aligned with and support digital age learning

- Designed specifically for young learners and teenagers incorporating the latest developments in pedagogy.
- Provides interesting real-life scenarios and activities to engage and motivate students.
- Promotes key skills: collaboration, communication, teamwork, critical thinking, problem-solving and decision-making.

## Spiral Curriculum

Following the spiral curriculum, students repeat the material at different grade levels, each time at a higher level of difficulty and in greater depth.



Grade 1

**4 Let's type**

1. The notepad
2. Letter and words
3. Move around
4. Select and change a word

Grade 2

**2 I type a letter**

1. I start typing
2. Change the font
3. Insert pictures
4. Save and print

Grade 3

**3 My first article**

1. Work with text
2. Give a title
3. Make a list
4. Check and save

Grade 4

**2 Working with text**

1. Format a paragraph
2. Images - Advanced formatting
3. Spelling and grammar check
4. Print

Grade 5

**1 Creating a document**

1. Advanced formatting
2. Search and replace
3. Working with tables
4. Document views

Grade 6

**1 Designing a document**

1. Presentation graphics
2. Columns and tabs
3. Header and footers
4. The final touch

# Modern educational material

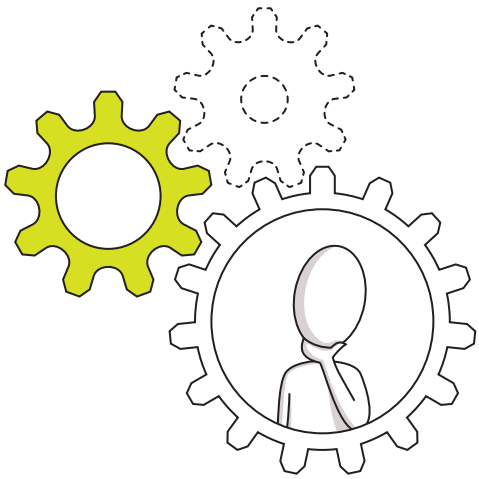
## Project-based learning

The ***Group Work*** section in Digital Kids 1-6 and the Project Task in Digital Teens 7-12 engage students through real life activities. Digital Teens 12 is entirely based on projects.

> Cross-curricular activities based on the school subjects of the same grade

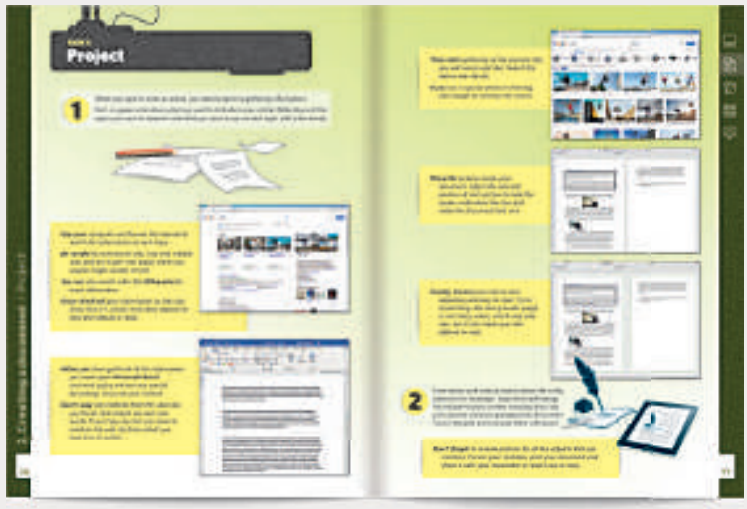
> Promotes collaboration and group work

> For the home or the computer lab




*Digital Kids Racer*

*Digital Kids Flyer*




*Digital Teens 1*

## Flexibility

Digital Kids can be started at grade 1, 2, 3 or 4.

The do you remember? section takes care of important knowledge that the students may have missed.

The Student's Book and the supporting teaching resources accommodate the teacher's teaching style.


*Digital Kids Expert*

*Digital Kids Flyer*

# Developing 21st Century Skills

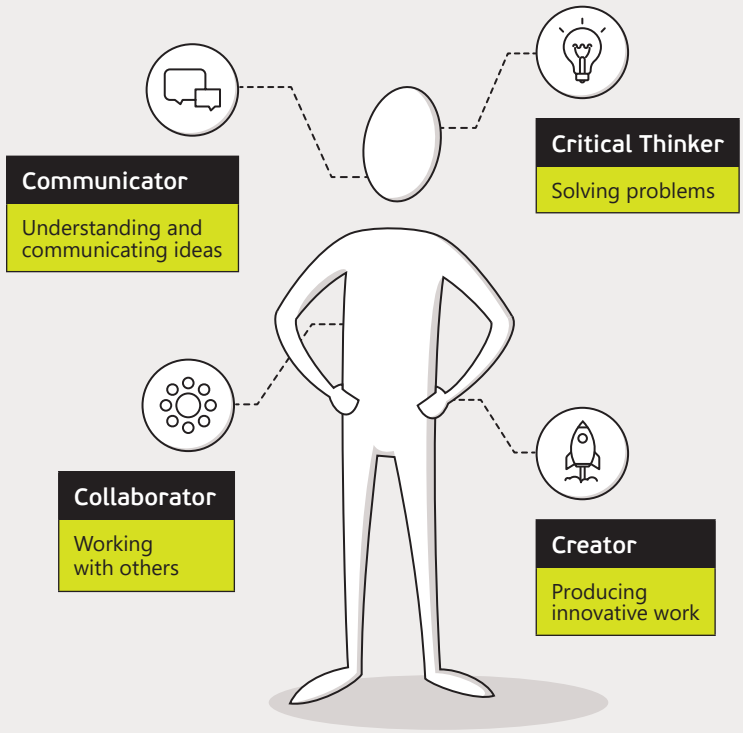
## A complete approach to ICT skills

Digital Literacy is more than the ability to use a computer. Learning to collaborate with others and connect through technology are essential skills.

**Thinking**
Creativity, critical thinking, problem-solving, decision-making and learning

**Working**
Communication and collaboration

**Living**
Digital citizenship, personal and social responsibility




## Learning all modern platforms and tools

Our digital world is not only Windows and Office. As with anything related to technology, new tools are emerging constantly.

Students learn how to work with different kinds of platforms and tools to build real life computer skills. We want them to be able to adapt to change and be equipped to face their future life and work.

Imagine what technology will be like 5 or 10 years from now when your students will be completing their studies.

*Digital Kids Flyer*

*Digital Kids Genius*

*Students learn to gather and use information appropriately and ethically and use social tools responsibly and safely.*

Our Computing and ICT curriculum covers a broad range of technologies and tools. The ***Other platforms*** section at the end of each module shows some of the alternatives available.

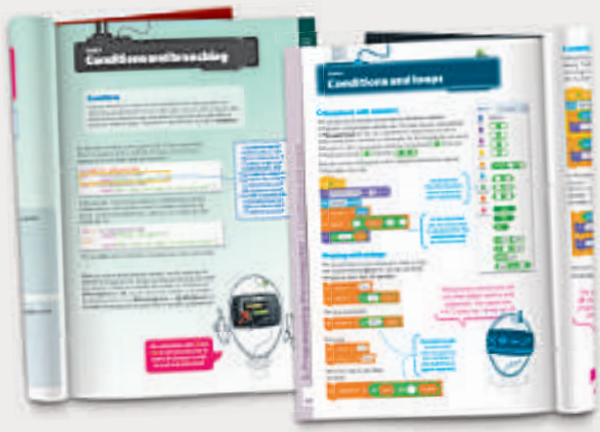
# Programming - Coding - Robotics

Programming helps students understand and apply the fundamental principles and concepts of computing and computer science, including logic, algorithms and data representation.

Our educational material follows a spiral, project-based approach based on the age and school grade of the students.

Programming is introduced at various stages and in various complexity both in primary and secondary grades with different programming tools and languages. Robotics labs are supported with resources for different educational robot kits and virtual platforms.

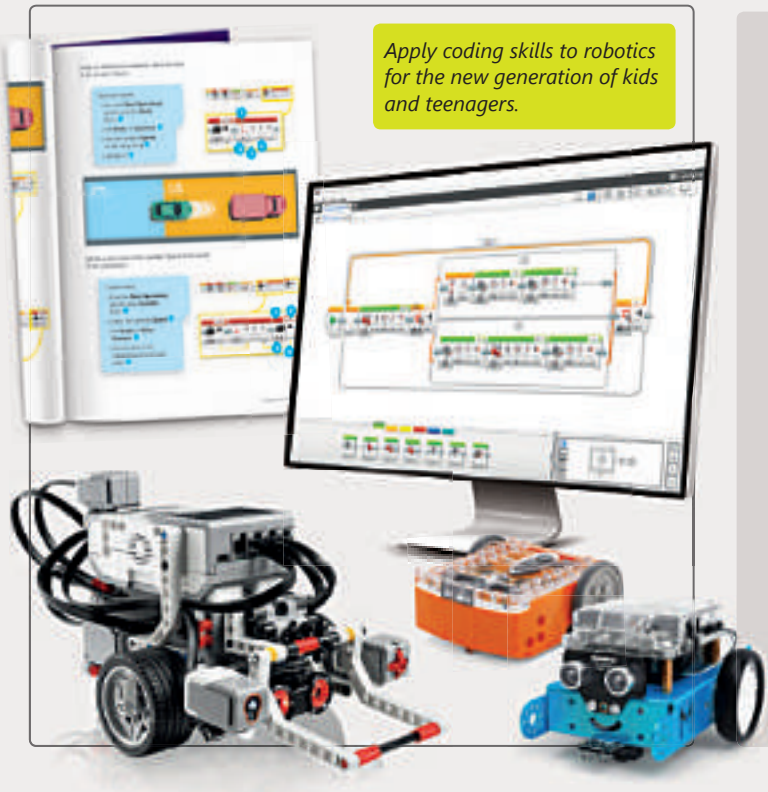
*Short lessons that can match the time that is available in the school curriculum.*



*Extra coding and robotics material for Grades 1-9.*

## Learn how to code in:

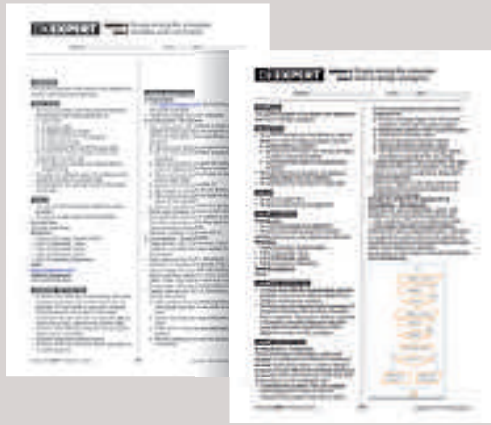
Logo
Small Basic
Scratch
Python
Visual Basic
HTML
MIT App Inventor



*Apply coding skills to robotics for the new generation of kids and teenagers.*

## Teacher support

Teachers get full support to be effective in the computer lab, easily, even if they do not have experience in teaching programming.



# Computing and ICT topics

## Our curriculum for schools ensures that all students:

> Are competent, confident, and creative users of information technology

> Can critically evaluate and apply information technology (including new and unfamiliar technologies) responsibly, collaboratively and effectively to solve problems

> Can analyze problems in computational terms, and can write computer programs in order to solve them

> Can understand and apply the fundamental principles of computer science, including logic, algorithms, data representation, and networks

> Can critically express the individual, cultural and societal impacts of technology, and know how to stay safe, exploit opportunities and manage risks

To accomplish these goals, the following topics are covered with an emphasis on skills needed to build a knowledge-based economy:

> The computer (hardware, peripherals, operating system, file system, security)

> Working on the Internet (web surfing/ searching, email, calendar and contact management, safe computing)

> Multimedia presentations (editing photos, sound, movie clip creation)

> Word processing (with mathematical equations, envelopes and labels)

> Spreadsheets (with charts and data exchange)

> Presentations (with presentation skills)

> Databases (working with various tools to organize information)

> Online communication (blogging, social media, video conferencing)

> Cloud computing and collaboration (online office suites, sharing documents, online meetings, presentation broadcasting, notes management and sharing, mind mapping)

> Digital citizenship (e-safety, privacy, ethics and intellectual property)

> Computer Science concepts (computer systems and networks)

> Introduction to programming – Computational thinking

> Introduction to robotics

> Designing and developing software applications

> Building websites (with online apps and later with HTML/CSS tools)

> Introduction to game development

> Modern technology skills (networking, storage & backup, simple IT troubleshooting, security, cloud storage)

> Project management and diagramming

> Image manipulation and 2D animation techniques

> Video editing and 3D animation techniques

# Student Resources

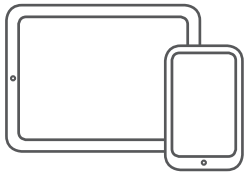
## For any device

> Works on any device with a web browser such as tablets, smartphones and even smart TVs

> Supports Windows, MacOSX, iOS, Android, Linux, Chrome Book

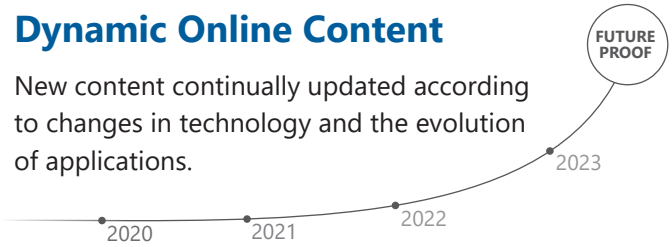
> No need for a DVD drive

> Accessible anywhere anytime



## Dynamic Online Content

New content continually updated according to changes in technology and the evolution of applications.




## Online Resources

Individualized access from school or home according to grade:

> Video tutorials for the applications in the Student's Book and alternative ones

> Digital resources

> Animated Stories for very young students

> Interactive Activities for primary students

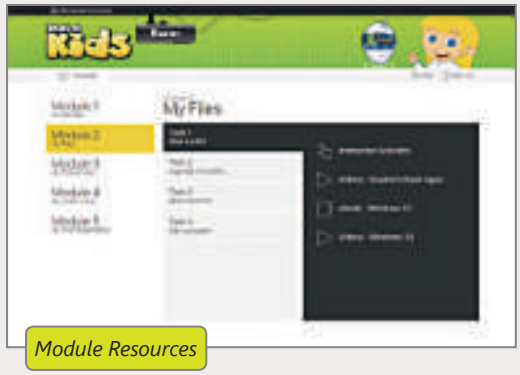
> Extra eBooks for Coding and Robotics

> Extra eBooks for alternative applications

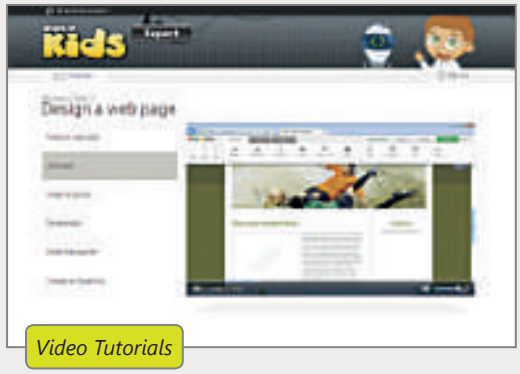
> Extra eBooks for international exams

> Online module tests, certificates and Grades Management Platform (optional)


*Go to **binary-academy.com** to access the Student's Online Resources*




*Module Resources*




*Video Tutorials*


*Online Module Tests*

*Animated Stories - Interactive Activities*

# Teacher Academic Support

## Online Resources

> Teacher's Guide with structured and detailed lesson plans

> Worksheets with extra activities for the computer lab or homework

> Self evaluation sheets

> Practice websites with stable and safe content for children

> All language editions are available to the teacher

## binary-academy.com

All teacher resources are available in editable DOC and PPT files. Everything is online and updated to accommodate technological advances and teacher feedback.

**http://binary-academy.com/dnld**
Download sample Teaching Resources

## Grades Management

Each school that adopts our curriculum has access to our Grades Management Platform.

The **supervisor** can prepare the school environment:

> Create teachers

> Create classes

> Assign teachers to classes

The **teacher** can manage the students' tests and grades:

> Move students to classes

> Unlock online tests for each class

> Enter grades for assignments

> Get reports for tests or grades

> Print certificates

## Assessment Opportunities

**For each task (Lesson)**

> Hands-on activity (individual performance)

> Worksheet (individual or group performance)

> Student self-evaluation questionnaire (student-driven accountability)

**For every module (Unit)**

> Group Work and Projects (project-based learning, collaboration, group performance / presenting results)

> Module Test (online testing, automated grading, individual performance, online record-keeping) - Optional

**End of course (Level)**

> Final Exam (online testing, automated grading, individual performance, successful completion Certificate available) - Optional

## Professional Development

**Become a confident and effective Computing and ICT teacher.**

BinaryAcademy offers Continuing Professional Development (CPD) on how to use our educational material via online and face-to-face training courses.

Our teacher training takes care of the ever-changing challenges in technology and helps you adapt our resources to your teaching style and the specific needs of your school.

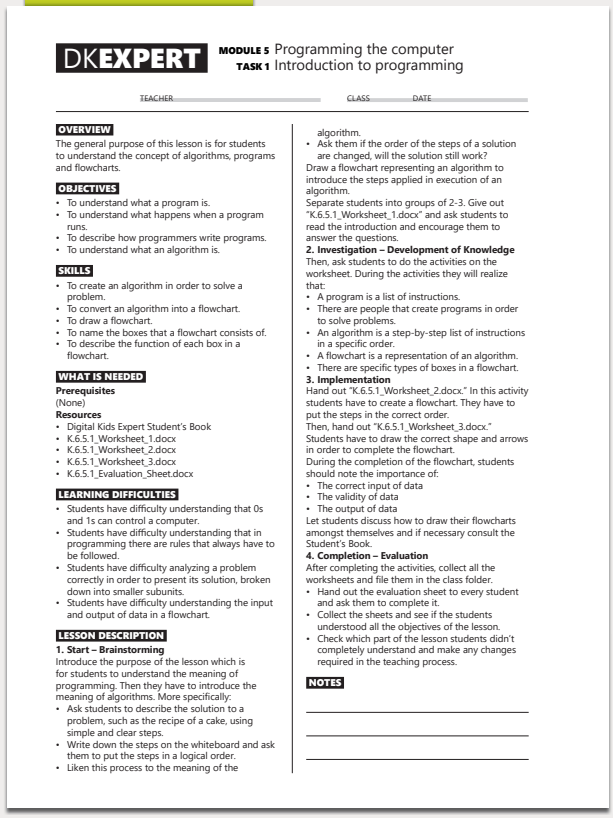

inspire innovate

# Teacher Academic Support

*Resources for **Digital Kids Expert** Module 5 Task 1*

*http://binary-academy.com/dnld*
*Download sample Teaching Resources*

## Lesson Plan



DKEXPERT **MODULE 5** Programming the computer
**TASK 1** Introduction to programming

TEACHER CLASS DATE

**OVERVIEW**
The general purpose of this lesson is for students to understand the concept of algorithms, programs and flowcharts.

**OBJECTIVES**
- To understand what a program is.
- To understand what happens when a program runs.
- To describe how programmers write programs.
- To understand what an algorithm is.

**SKILLS**
- To create an algorithm in order to solve a problem.
- To convert an algorithm into a flowchart.
- To draw a flowchart.
- To name the boxes that a flowchart consists of.
- To describe the function of each box in a flowchart.

**WHAT IS NEEDED**
**Prerequisites**
(None)
**Resources**
- Digital Kids Expert Student's Book
- K.6.5.1_Worksheet_1.docx
- K.6.5.1_Worksheet_2.docx
- K.6.5.1_Worksheet_3.docx
- K.6.5.1_Evaluation_Sheet.docx

**LEARNING DIFFICULTIES**
- Students have difficulty understanding that 0s and 1s can control a computer.
- Students have difficulty understanding that in programming there are rules that always have to be followed.
- Students have difficulty analyzing a problem correctly in order to present its solution, broken down into smaller subunits.
- Students have difficulty understanding the input and output of data in a flowchart.

**LESSON DESCRIPTION**
**1. Start – Brainstorming**
Introduce the purpose of the lesson which is for students to understand the meaning of programming. Then they have to introduce the meaning of algorithms. More specifically:
- Ask students to describe the solution to a problem, such as the recipe of a cake, using simple and clear steps.
- Write down the steps on the whiteboard and ask them to put the steps in a logical order.
- Liken this process to the meaning of the algorithm.
- Ask them if the order of the steps of a solution are changed, will the solution still work?

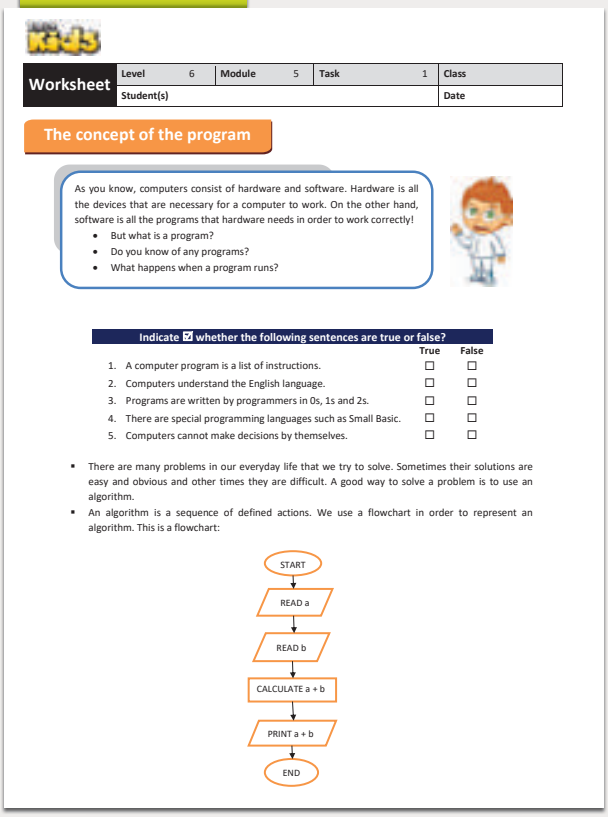
Draw a flowchart representing an algorithm to introduce the steps applied in execution of an algorithm.
Separate students into groups of 2-3. Give out "K.6.5.1_Worksheet_1.docx" and ask students to read the introduction and encourage them to answer the questions.
**2. Investigation – Development of Knowledge**
Then, ask students to do the activities on the worksheet. During the activities they will realize that:
- A program is a list of instructions.
- There are people that create programs in order to solve problems.
- An algorithm is a step-by-step list of instructions in a specific order.
- A flowchart is a representation of an algorithm.
- There are specific types of boxes in a flowchart.

**3. Implementation**
Hand out "K.6.5.1_Worksheet_2.docx." In this activity students have to create a flowchart. They have to put the steps in the correct order.
Then, hand out "K.6.5.1_Worksheet_3.docx." Students have to draw the correct shape and arrows in order to complete the flowchart.
During the completion of the flowchart, students should note the importance of:
- The correct input of data
- The validity of data
- The output of data

Let students discuss how to draw their flowcharts amongst themselves and if necessary consult the Student's Book.
**4. Completion – Evaluation**
After completing the activities, collect all the worksheets and file them in the class folder.
- 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 of the lesson.
- Check which part of the lesson students didn't completely understand and make any changes required in the teaching process.

**NOTES**

## Activity Worksheets



| Worksheet | Level 6 | Module 5 | Task 1 | Class |
|---|---|---|---|---|
| | Student(s) | | | Date |

**The concept of the program**

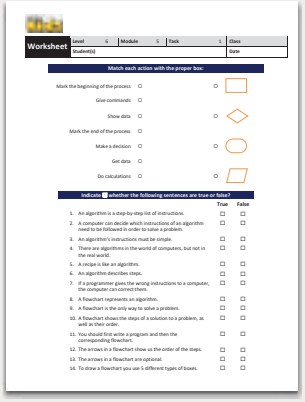
As you know, computers consist of hardware and software. Hardware is all the devices that are necessary for a computer to work. On the other hand, software is all the programs that hardware needs in order to work correctly!
- But what is a program?
- Do you know of any programs?
- What happens when a program runs?

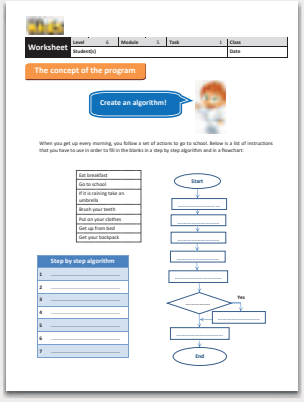
**Indicate ☑ whether the following sentences are true or false?**

| | | True | False |
|---|---|---|---|
| 1. | A computer program is a list of instructions. | ☐ | ☐ |
| 2. | Computers understand the English language. | ☐ | ☐ |
| 3. | Programs are written by programmers in 0s, 1s and 2s. | ☐ | ☐ |
| 4. | There are special programming languages such as Small Basic. | ☐ | ☐ |
| 5. | Computers cannot make decisions by themselves. | ☐ | ☐ |

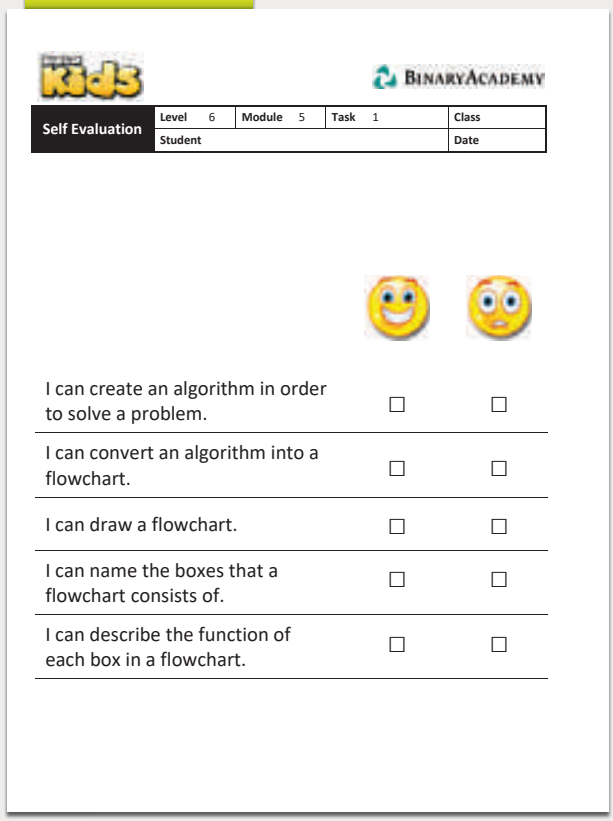
- There are many problems in our everyday life that we try to solve. Sometimes their solutions are easy and obvious and other times they are difficult. A good way to solve a problem is to use an algorithm.
- An algorithm is a sequence of defined actions. We use a flowchart in order to represent an algorithm. This is a flowchart:





## Self Evaluation Sheet



| Self Evaluation | Level 6 | Module 5 | Task 1 | Class |
|---|---|---|---|---|
| | Student | | | Date |

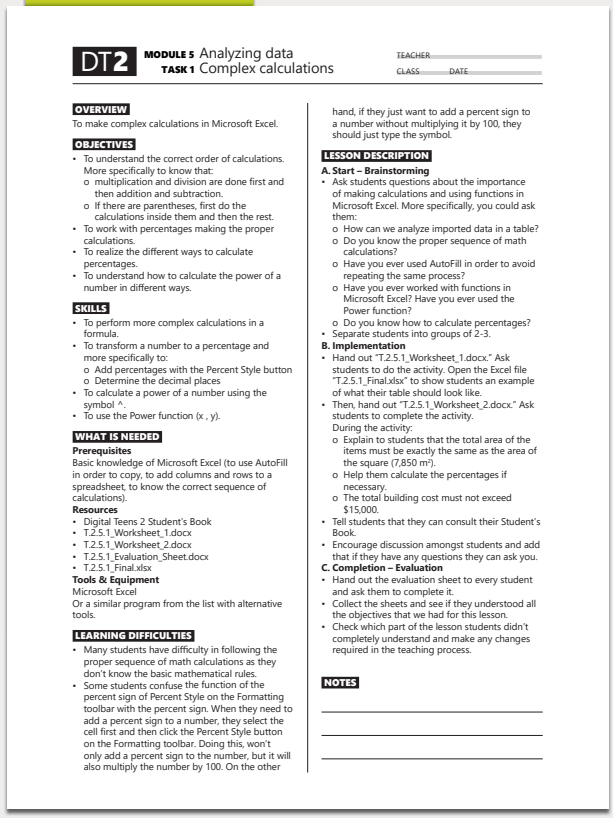
| | | |
|---|---|---|
| I can create an algorithm in order to solve a problem. | ☐ | ☐ |
| I can convert an algorithm into a flowchart. | ☐ | ☐ |
| I can draw a flowchart. | ☐ | ☐ |
| I can name the boxes that a flowchart consists of. | ☐ | ☐ |
| I can describe the function of each box in a flowchart. | ☐ | ☐ |

# Teacher Academic Support

*Resources for **Digital Teens 2** Module 5 Task 1*

*http://binary-academy.com/dnld*
*Download sample Teaching Resources*


## Lesson Plan



DT2 **MODULE 5** Analyzing data
**TASK 1** Complex calculations

TEACHER
CLASS DATE

**OVERVIEW**
To make complex calculations in Microsoft Excel.

**OBJECTIVES**
- To understand the correct order of calculations. More specifically to know that:
  - o multiplication and division are done first and then addition and subtraction.
  - o 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:
  - o Add percentages with the Percent Style button
  - o Determine the decimal places
- To calculate a power of a number using the symbol ^.
- 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
Or a similar program from the list with alternative tools.

**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.

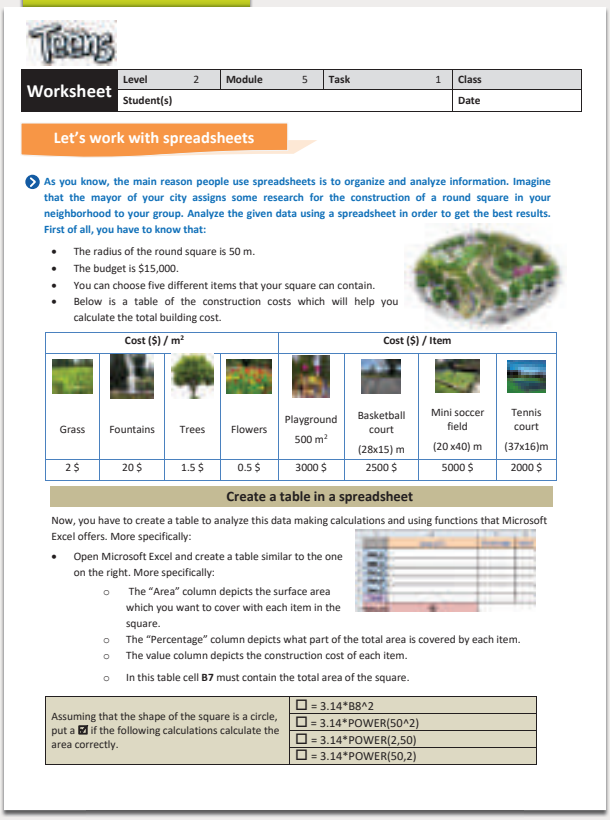
**LESSON DESCRIPTION**
**A. Start – Brainstorming**
- Ask students questions about the importance of making calculations and using functions in Microsoft Excel. More specifically, you could ask them:
  - o How can we analyze imported data in a table?
  - o Do you know the proper sequence of math calculations?
  - o Have you ever used AutoFill in order to avoid repeating the same process?
  - o Have you ever worked with functions in Microsoft Excel? Have you ever used the Power function?
  - o 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:
  - o Explain to students that the total area of the items must be exactly the same as the area of the square (7,850 m²).
  - o Help them calculate the percentages if necessary.
  - o 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**

## Activity Worksheets



Teens

| Worksheet | Level 2 | Module 5 | Task 1 | Class |
|---|---|---|---|---|
| | Student(s) | | | Date |

**Let's work with spreadsheets**

**As you know, the main reason people use spreadsheets is to organize and analyze information. Imagine that the mayor of your city assigns some research for the construction of a round square in your neighborhood to your group. Analyze the given data using a spreadsheet in order to get the best results. First of all, you have to know that:**

- The radius of the round square is 50 m.
- The budget is $15,000.
- You can choose five different items that your square can contain.
- Below is a table of the construction costs which will help you calculate the total building cost.

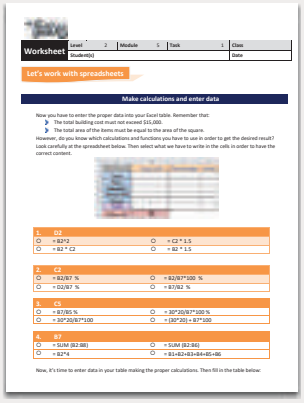
| Cost ($) / m² | | | | Cost ($) / Item | | | |
|---|---|---|---|---|---|---|---|
| Grass | Fountains | Trees | Flowers | Playground 500 m² | Basketball court (28x15) m | Mini soccer field (20 x40) m | Tennis court (37x16)m |
| 2 $ | 20 $ | 1.5 $ | 0.5 $ | 3000 $ | 2500 $ | 5000 $ | 2000 $ |

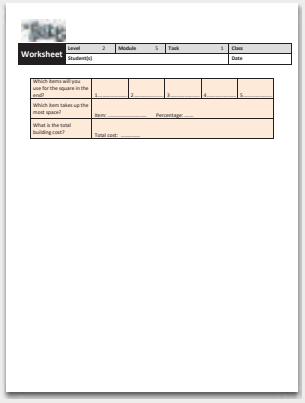
**Create a table in a spreadsheet**

Now, you have to create a table to analyze this data making calculations and using functions that Microsoft Excel offers. More specifically:

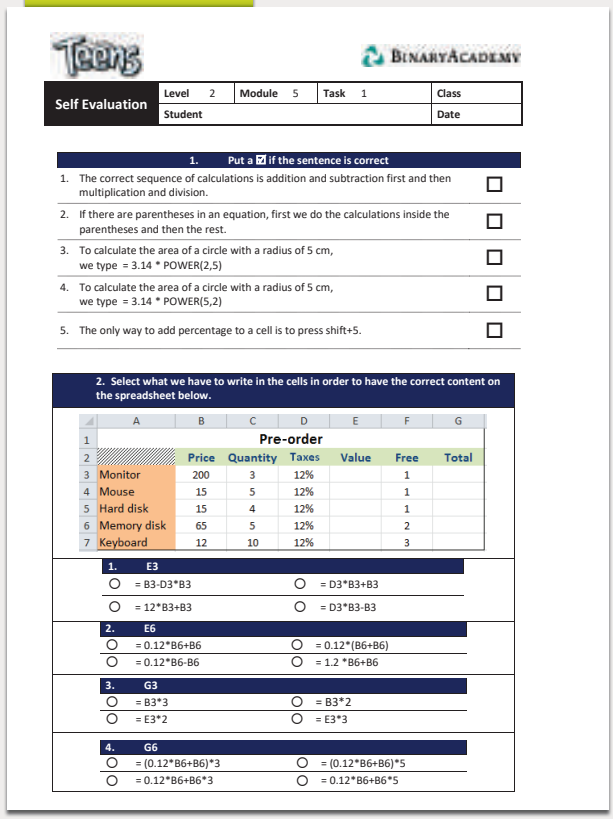
- Open Microsoft Excel and create a table similar to the one on the right. More specifically:
  - o The "Area" column depicts the surface area which you want to cover with each item in the square.
  - o The "Percentage" column depicts what part of the total area is covered by each item.
  - o The value column depicts the construction cost of each item.
  - o In this table cell **B7** must contain the total area of the square.

| Assuming that the shape of the square is a circle, put a ☑ if the following calculations calculate the area correctly. | ☐ = 3.14*B8^2 |
|---|---|
| | ☐ = 3.14*POWER(50^2) |
| | ☐ = 3.14*POWER(2,50) |
| | ☐ = 3.14*POWER(50,2) |





## Self Evaluation Sheet



Teens BINARYACADEMY

| Self Evaluation | Level 2 | Module 5 | Task 1 | Class |
|---|---|---|---|---|
| | Student | | | Date |

**1. Put a ☑ if the sentence is correct**

1. The correct sequence of calculations is addition and subtraction first and then multiplication and division. ☐
2. If there are parentheses in an equation, first we do the calculations inside the parentheses and then the rest. ☐
3. To calculate the area of a circle with a radius of 5 cm, we type = 3.14 * POWER(2,5) ☐
4. To calculate the area of a circle with a radius of 5 cm, we type = 3.14 * POWER(5,2) ☐
5. The only way to add percentage to a cell is to press shift+5. ☐

**2. Select what we have to write in the cells in order to have the correct content on the spreadsheet below.**

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | Pre-order | | | | | | |
| 2 | | Price | Quantity | Taxes | Value | Free | Total |
| 3 | Monitor | 200 | 3 | 12% | | 1 | |
| 4 | Mouse | 15 | 5 | 12% | | 1 | |
| 5 | Hard disk | 15 | 4 | 12% | | 1 | |
| 6 | Memory disk | 65 | 5 | 12% | | 2 | |
| 7 | Keyboard | 12 | 10 | 12% | | 3 | |

**1. E3**
- ○ = B3-D3*B3
- ○ = D3*B3+B3
- ○ = 12*B3+B3
- ○ = D3*B3-B3

**2. E6**
- ○ = 0.12*B6+B6
- ○ = 0.12*(B6+B6)
- ○ = 0.12*B6-B6
- ○ = 1.2 *B6+B6

**3. G3**
- ○ = B3*3
- ○ = B3*2
- ○ = E3*2
- ○ = E3*3

**4. G6**
- ○ = (0.12*B6+B6)*3
- ○ = (0.12*B6+B6)*5
- ○ = 0.12*B6+B6*3
- ○ = 0.12*B6+B6*5

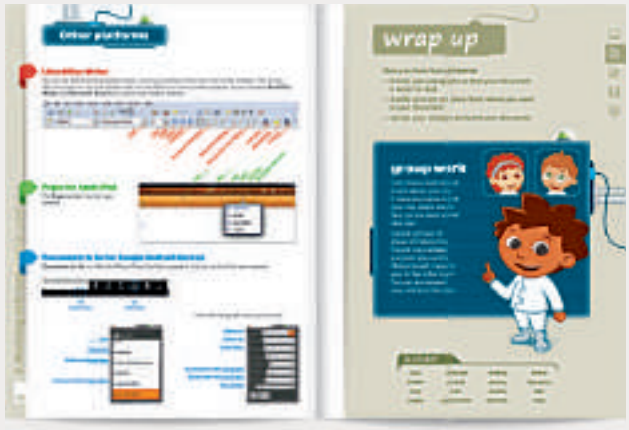
# Effective Teaching Methodology

*Let's have a look inside **Digital Kids Flyer** (Grade 4)*


- Module 1
- Module 2
- Module 3
- Module 4
- Module 5

- Task 1
- Task 2
- Task 3
- Task 4

## Student's Book




- Other Platforms section
- Group Work Activity & Vocabulary

## Student's Online Resources

- Online Module Test

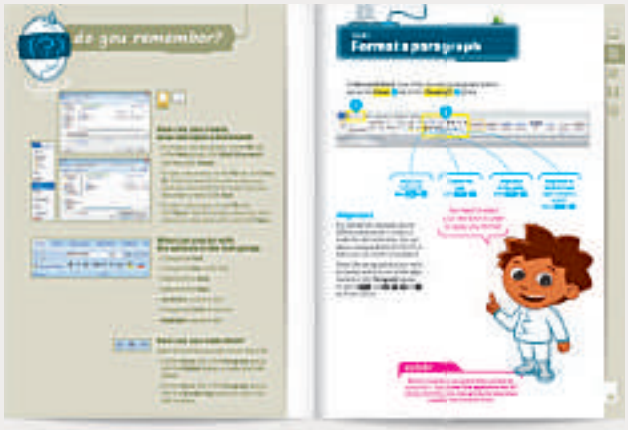
*Student's Material*

*Teacher's Material*

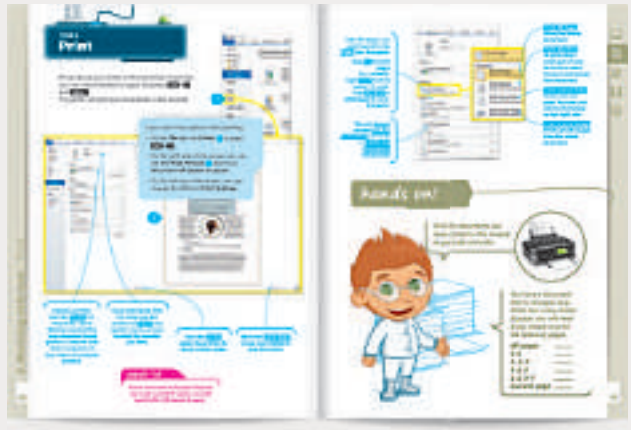
*Downloadable Content*

*Modifiable Content*

## Student's Book



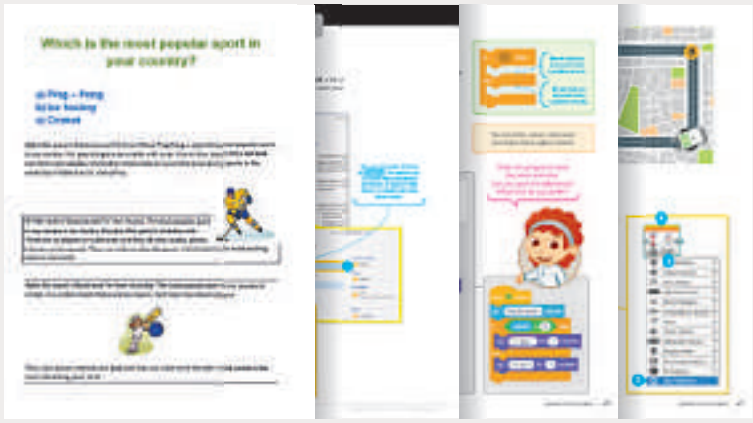
Do you Remember section



Theory

Hands On Activity

## Student's Online Resources



Digital Documents for Practice

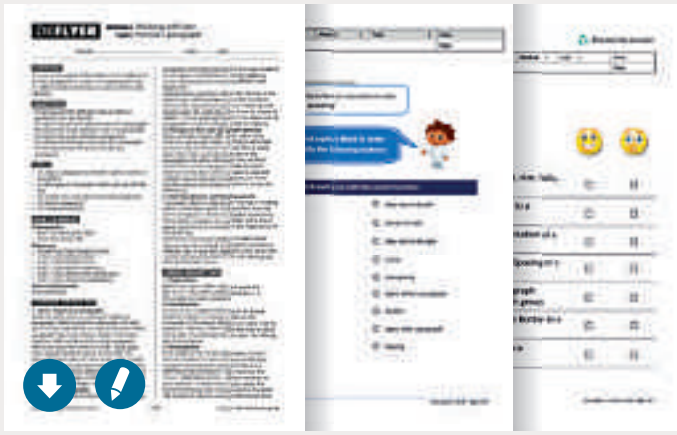
Video Tutorials

eBooks

Animated Stories

Interactive Activities

## Teacher's Online Resources



Teacher's Guide with Lesson Plans

Activity Worksheets

Self Evaluation Sheets

Video Tutorials

# Scope & Sequence

*what students will learn*

## Digital Kids Starter (Grade 1)

### ❶ My computer
1. Dinosaurs and computers
2. They are every where
3. The computer
4. Click and type

### ❷ Let's start
1. My desktop
2. Start a program
3. Text and pictures
4. My work space

### ❸ Let's paint
1. Free drawing
2. Make shapes
3. Copy and paste
4. Save my picture

### ❹ Let's type
1. The notepad
2. Letter and words
3. Move around
4. Select and change a word

### ❺ Let's surf
1. The Internet
2. Communicate
3. Have fun
4. Learn

## Digital Kids Explorer (Grade 2)

### ❶ I use the computer
1. My computer
2. My desktop
3. Mouse and keyboard
4. My work space

### ❷ I type a letter
1. I start typing
2. Change the font
3. Insert pictures
4. Save and print

### ❸ I visit the world
1. How to surf
2. The web page
3. Educational games
4. Copy from the web

### ❹ I have friends
1. My email
2. Send a message
3. Read and reply
4. Email rules

### ❺ I give commands
1. Logo and the turtle
2. Move the turtle
3. Draw a shape
4. Let's have fun!

## Digital Kids Racer (Grade 3)

### ❶ My devices
1. Store
2. Print
3. Capture
4. Interact

### ❷ My files
1. What is a file?
2. Organize my folders
3. Search and find
4. Start a program

### ❸ My first article
1. Work with text
2. Give a title
3. Make a list
4. Check and save

### ❹ My wired world
1. Search for anything
2. Knowledge treasure sites
3. Be polite
4. Safety online

### ❺ My first presentation
1. All about slides
2. Insert text
3. Insert pictures
4. Presenting is cool

## Digital Kids Flyer (Grade 4)

### ❶ Learning the basics
1. My desktop
2. Files and folders
3. Control panel
4. Protect my computer

### ❷ Working with text
1. Format a paragraph
2. Images - Advanced formatting
3. Spelling and grammar check
4. Print

### ❸ Communicating online
1. My friends
2. Forward an email
3. Send a file
4. Email tips

### ❹ Working with media
1. Create a sound clip
2. View images and videos
3. Fix a photo
4. Apply photo effects

### ❺ Presenting your ideas
1. Transitions and animations
2. Set the timing
3. Insert a sound or video clip
4. Transfer data across apps

### ❻ Working with numbers
1. What is a spreadsheet?
2. Row - Column - Cell
3. Insert numbers and text
4. Simple calculations

## Digital Kids Genious (Grade 5)

### ❶ Creating a document
1. Advanced formatting
2. Search and replace
3. Working with tables
4. Document views

### ❷ Producing multimedia
1. Use capture devices
2. Create and edit a sound clip
3. Find and use multimedia material
4. Create an animated story

### ❸ Using communication tools
1. Internet and the web
2. Communication tools
3. Sharing your moments
4. Be secure online

### ❹ Sharing your ideas
1. Blogging
2. Social media
3. Safety rules
4. Intellectual property

### ❺ Formatting numbers
1. Format a cell
2. Make calculations
3. Create a graph
4. Print a sheet

### ❻ Collecting information
1. Gather data
2. Introduction to databases
3. Create a database
4. Sort and print

## Digital Kids Expert (Grade 6)

### ❶ Designing a document
1. Presentation graphics
2. Columns and tabs
3. Header and footers
4. The final touch

### ❷ Building a website
1. What is a web page
2. Design a web page
3. Add more pages
4. Publishing the web page

### ❸ Analyzing data
1. More calculations
2. Functions
3. References
4. More charts

### ❹ Handling data
1. Structured information
2. Use a data entry form
3. Filter the data
4. Create a report

### ❺ Programming the computer
1. Introduction to programming
2. How to design a program
3. Variables and commands
4. More programming

### ❻ Let's have fun
1. Fun with shapes
2. What is datalogging
3. Robots!
4. Create your computer game

# Scope & Sequence

*what students will learn*

## Digital Teens 1 (Grade 7)

### ❶ Learning the basics
- Computers and devices
- The operating system
- Files and folders
- Basic settings
- Hints and tips
- Project

### ❷ Creating a document
- Formatting text
- Advanced font formatting
- Images and graphics
- Working with tables
- Check and print
- Project

### ❸ Getting online
- Surfing the web
- Use online resources
- Send and receive email
- Organizing email
- Be safe online
- Project

### ❹ Working with numbers
- Rows and columns
- Advanced formatting
- Simple calculations
- Logical functions
- Create a chart
- Project

### ❺ Presenting your ideas
- Slides, text and images
- Transitions and animations
- Sound and video
- Charts and graphs
- Tips and tricks
- Project

## Digital Teens 2 (Grade 8)

### ❶ Collecting information
- Introduction to databases
- Filter and sort
- Keys and relationships
- Contact management
- Lab data collection
- Project

### ❷ Designing a document
- Tabs and columns
- Headers and footers
- HTML and PDF
- Mail merge
- Advanced topics
- Project

### ❸ Multimedia presentations
- Storyboarding
- Capture and edit multimedia
- Record your voice
- Fix photos and add effects
- Create an animated story
- Project

### ❹ Communicating online
- Networking basics
- What is a blog?
- Social Media
- Communication tools
- Digital citizenship
- Project

### ❺ Analyzing data
- Complex calculations
- Functions
- References
- Advanced charts
- Import and export data
- Project

## Digital Teens 3 (Grade 9)

### ❶ Handling databases
- Structured information
- Data entry forms
- Queries
- Reports
- Import and export data
- Project

### ❷ Documents for a purpose
- Text documents
- Spreadsheets
- Presentations
- Project 1 – Leaflet
- Project 2 – Labels
- Project 3 – Market research

### ❸ Programming the computer
- What is a program?
- Variables and commands
- Conditions and branching
- Functions and subroutines
- Have fun!
- Project

### ❹ Deep diving
- Advanced networking
- Servers and storage
- I'm an IT administrator
- Data and network security
- Cloud storage
- Project

### ❺ ICT is fun
- Design your website
- Publish your website
- Design your own game
- Add gameplay interactions
- Science projects
- Project

## Digital Teens 4 (Grade 10)

### ❶ Computer science basics
- Data manipulation
- Computer architecture
- Operating systems
- Network fundamentals
- Computers in society
- Project

### ❷ Working online
- Working with documents online
- Online meetings
- Presentation broadcasting
- Notes management
- Mind mapping
- Project

### ❸ Advanced imaging
- Image essentials
- Layers
- Image adjustments
- Retouch and enhance
- 2D animation creation
- Project

### ❹ Desktop Publishing
- From etching to DTP
- Basic tools
- Single-page design
- Multi-page document I
- Multi-page document II
- Project

### ❺ Developing applications
- Programming concepts
- Decisions and repetition
- Database management
- Classes, objects and inheritance
- User interface and testing
- Project

## Digital Teens 5 (Grade 11)

### ❶ Building a website
- Design a web page
- Web hosting and SEO
- HTML and CSS
- Insert content
- Web forms
- Project

### ❷ Graphics design
- Vector graphics
- Coloring and shaping
- Adding text and reshaping
- Making curves
- More design tools
- Project

### ❸ Interactive applications
- Getting started
- Designing the UI
- Animating objects
- Adding interactivity
- Working with sound and video
- Project

### ❹ Advanced multimedia
- Video shooting
- Video editing
- Visual effects
- The final touch
- 3D animation
- Project

### ❺ Project management
- What is a project?
- Organizing tasks
- Create a Gantt chart
- Create a diagram
- Changing colors and fonts
- Project

## Digital Teens 6 (Grade 12)

### ❶ Teacher
- The gradebook
- A school event
- A topic presentation
- A school trip
- The school newspaper
- The school blog

### ❷ Sales manager
- Make a proposal
- Daily report
- Sales notebook
- Sales reports
- A new product
- A customer database

### ❸ Digital marketer
- Plan your marketing stategy
- Email marketing campaign
- A brand blog
- Create blog content
- Blog and social media
- Social media audit

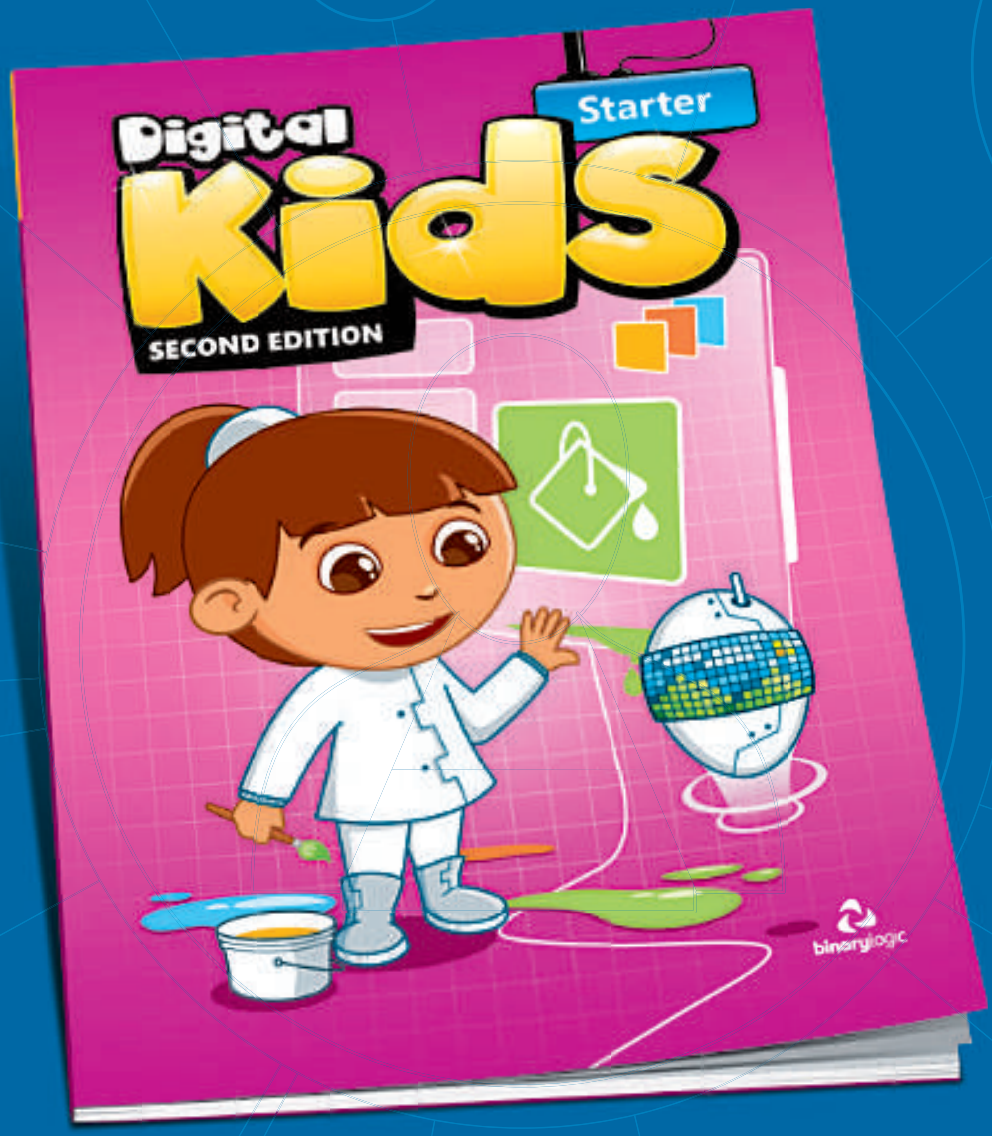
### ❹ Web designer
- Newsletter template
- Code an email newsletter
- Design a one column website
- Code a one column website
- Design a two column website
- Build a two column website

### ❺ Application developer
- Organize the data
- Handling a database
- Start building your app
- Images and videos
- Add a new record
- Search with a filter

Welcome to

# Digital Kids Starter

Key features and sample pages

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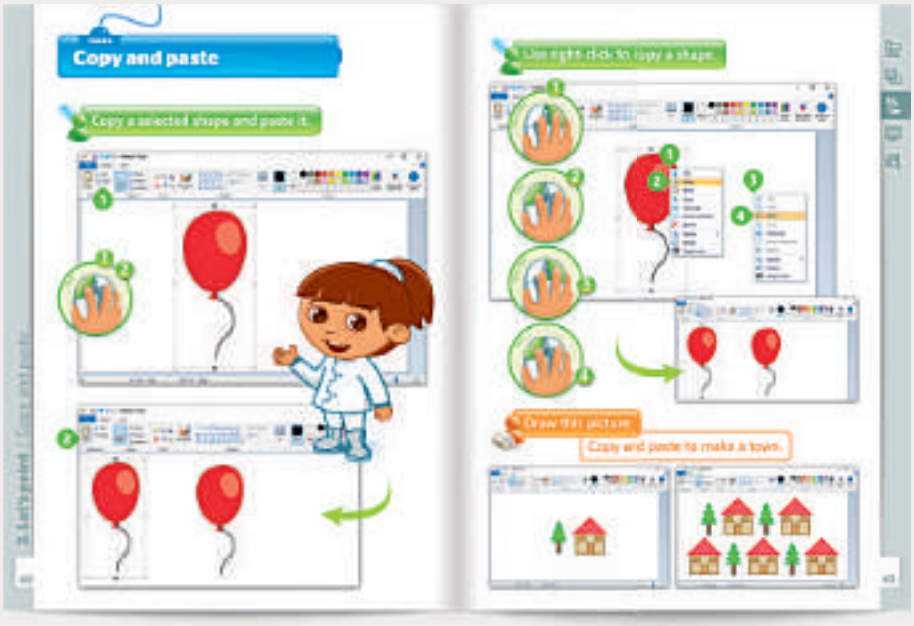
# Key Features

An innovative approach to teaching Computing and ICT written by a team of educators.

*Follows latest Computing and ICT teaching standards & requirements.*

Each book has four or five modules. Each module provides a range of tasks and activities that help students to develop their Computing and ICT skills and allow teachers to monitor the students' progress.


*Clear learning objectives and functional skills.*

Clear explanations and illustrative contemporary examples.

The activities are based on school subjects taught in each grade.

*New content continually updated according to changes in technology.*

Students learn how to work with many different platforms and tools. The online video tutorials guide the students through each task.

# 2. Let's start

Computing and ICT - Sample Pages
**DIGITAL KIDS STARTER MODULE 2**
**1** GRADE

TASK 1

# My desktop

This is my desktop.

I always start my work here.

## Match.

TASK 2

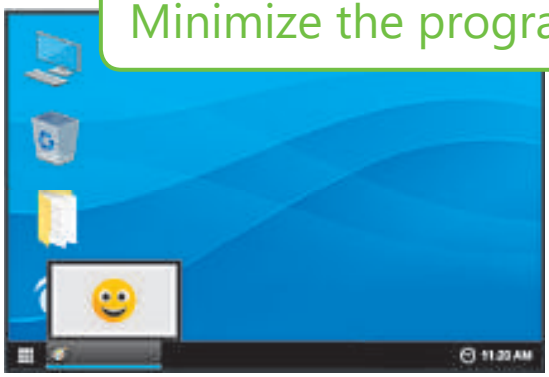
# Start a program

To start a program.

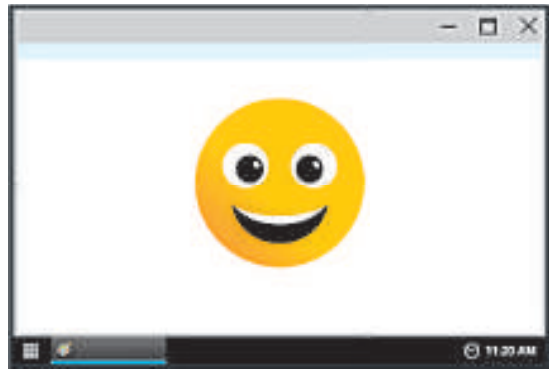
double-click its icon.

# The program window.


Minimize the program.



Maximize the program.

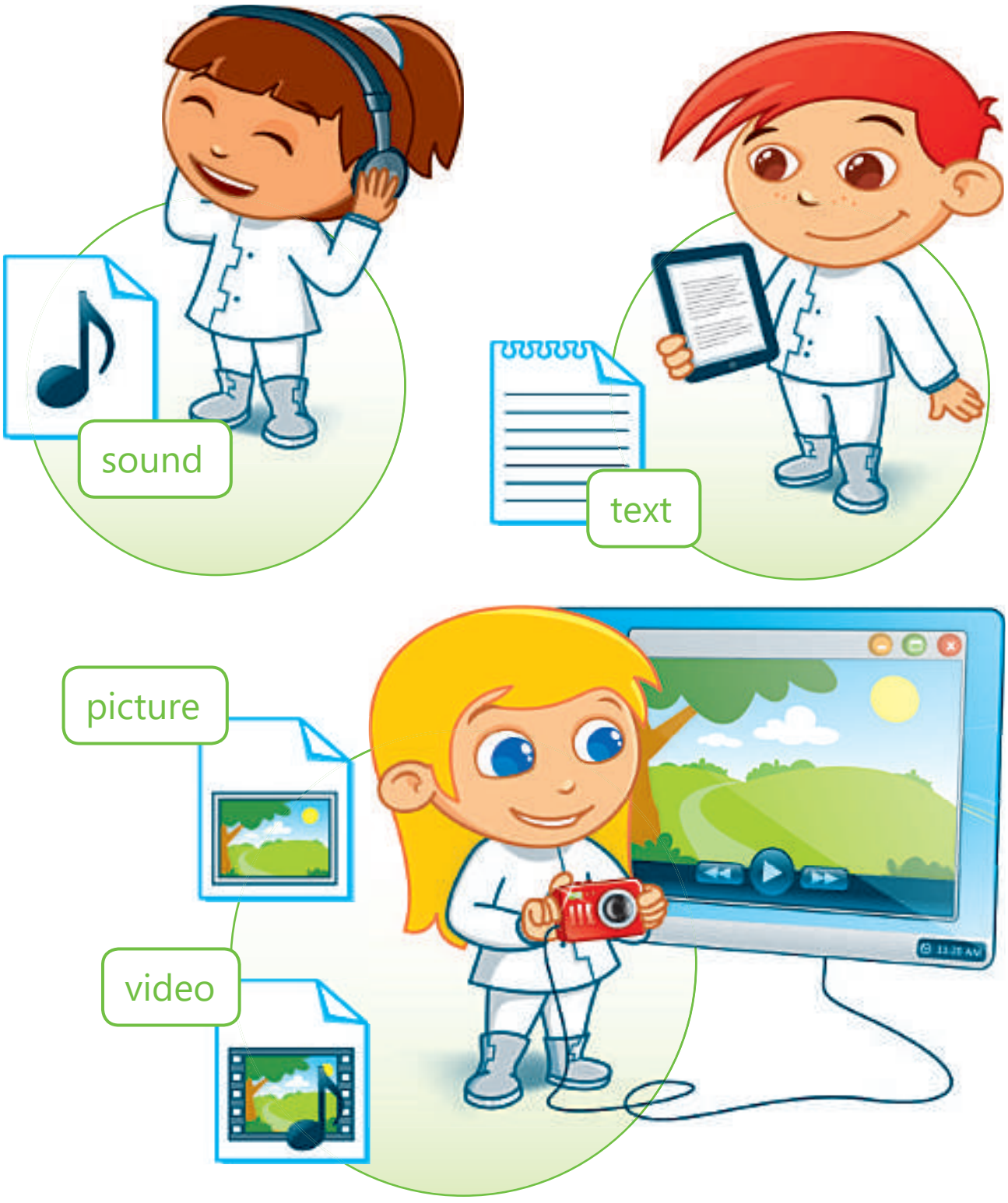


Close the program.

TASK 3

# Text and pictures

Your digital files for learning and having fun.



## Match.


TASK 4

# My workspace

Keep your computer and desk clean.

Be careful with the cables.

Don't eat or drink in the computer room.

## Sit in the correct way.

## Who is right? Mark with ✓.

## Who is wrong? Mark with ✗.

Welcome to

# Digital Kids Genius

Key features and sample pages


discover more at **binarylogic.net**

# Key Features

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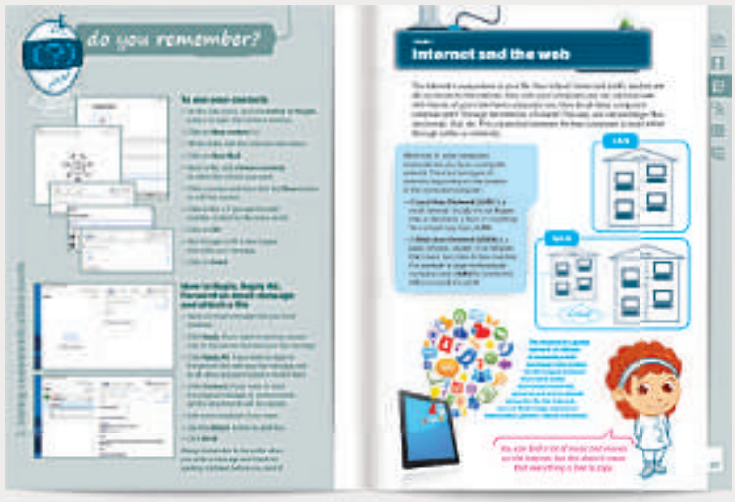
*Follows latest Computing and ICT teaching standards & requirements.*

Each book has four or five modules.
Each module provides a range of tasks and activities that help students to develop their Computing and ICT skills and allow teachers to monitor the students' progress.

The ***"do you remember?"*** section focuses on important points which students need to revise.





*Clear learning objectives and functional skills.*

Clear explanations and illustrative contemporary examples.

The activities are based on school subjects taught in each grade.

*Project-based learning*

The group-work activity consolidates skills previously taught and encourages students' collaboration. Most group-work activities are cross-curricular.

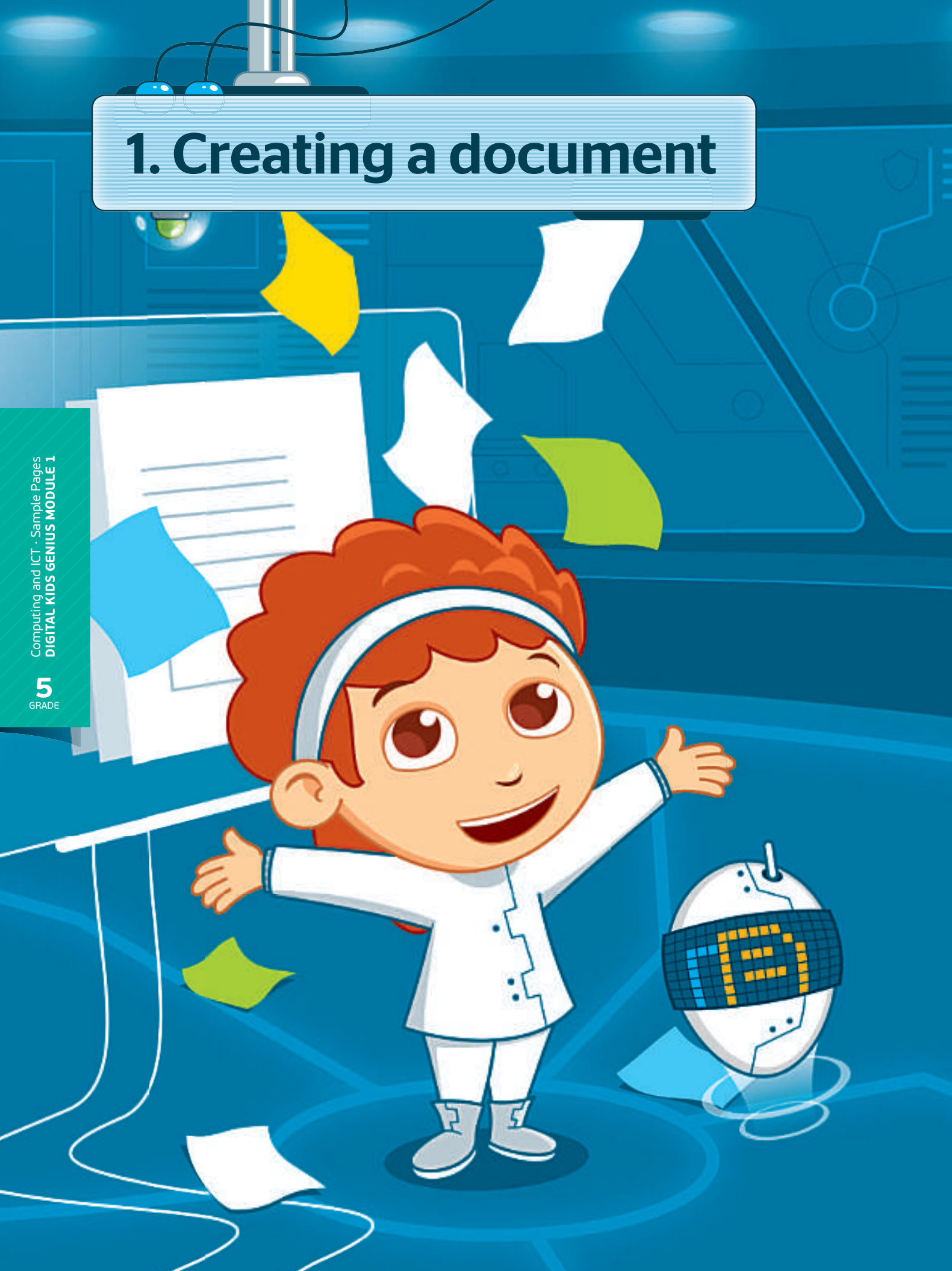
*New content continually updated according to changes in technology.*

Students learn how to work with many different platforms and tools.

The ***"Other platforms"*** section at the end of each module shows some of the available alternatives. The online video tutorials guide the students through each task.

New vocabulary is organized in related topics.

# 1. Creating a document



**Hi! Welcome back!**

**It's time to learn how to make your documents more attractive and easier to read. Sometimes you have to find and replace words or phrases clearly. Also, you may want to show some information and make it stand out from the rest of the text. What do you do? Use a table, of course! Are you ready to start? Let's go!**

## Learning objectives

In this module you will learn:

> the correct use of spacing between lines and characters.

> how to find or replace a word quickly, anywhere in the document.

> how to edit and format tables.

> to choose the best document view according to your needs.



## Skills

After this module you will be able to:

> change the character spacing of a word.

> find and replace a word or a phrase.

> create and format tables.

> change the view of your document.

## Tools

> Microsoft Word

> LibreOffice Writer

> Apple Pages

> Docs to Go for Google Android

# do you remember?




## How to choose a font

> Change the **Font**.

> Change the **Size** of the font.

> Make the font **Bold**.

> Make the font **Italic**.

> **Underline** the font.

> Change the **Color** of the font.


## How to format a paragraph

> **Align** a paragraph.

> Adjust the **Line Spacing**.

> Put a **Border** around the text.

> Insert **Bullets** or **Numbering**.

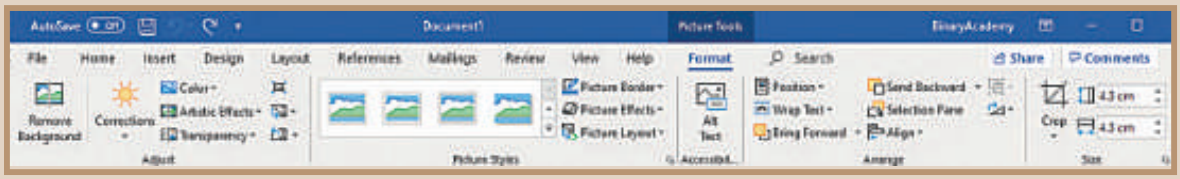
## How to format a picture

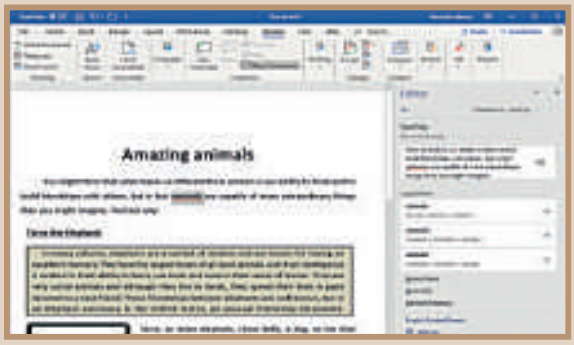
> Remove the **Background** of an image.

> Change the **Style** of an image.

> Change the **Position** of an image.

> Change the **Wrap** of the text around the image.




## How to check for mistakes

> On the **Review** Tab, in the **Proofing** group, click **Spelling & Grammar**.

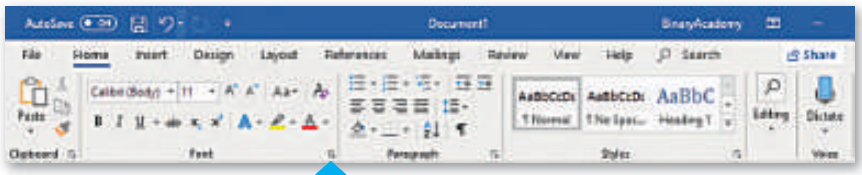
> In the window that will appear select the word you want from **Suggestions** and click **Change.**

> If you want to ignore the word, click **Ignore Once**.

TASK 1

# Advanced formatting

You already know how to quickly format a paragraph. Now let's explore some more options. In **Microsoft Word**, most of the advanced formatting options are on the **Home** tab.




## Character Spacing

Characters are the letters, numbers and symbols of the text. Character spacing is the distance between the letters of a word. We use this for many reasons: Sometimes you need more space between characters to make your text easier to read or you want to make the reader pay attention to a specific word without changing the word or phrase to bold or underlining it.

To apply character spacing:

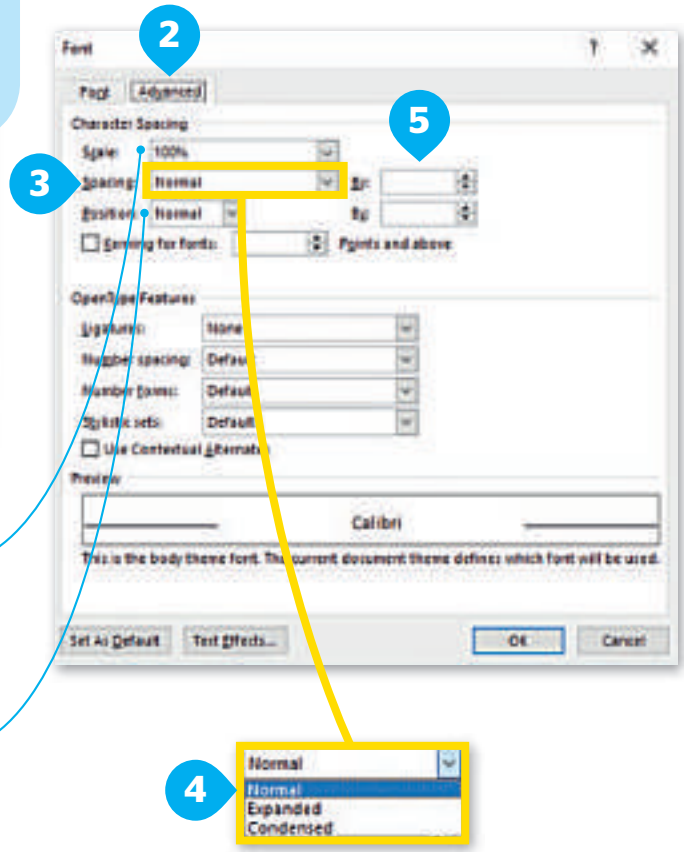
> Select a word or phrase.

> On the **Home** tab, in the **Font** group, click the expand button. 1

> In the **Font** window that will appear click **Advanced** tab. 2

> In the **Spacing** 3 drop down list, select **Expanded** if you want to increase the space or **Condensed** if you want to decrease the space. 4

> In the **By** text box 5 you can adjust the spacing in points (3pt is about 1 mm).




**Scale** can change the width of the characters. More than 100% will make the characters wider and less than 100% will make them narrower.

**Position** moves the characters you selected above or below the line of the rest of the text (baseline).

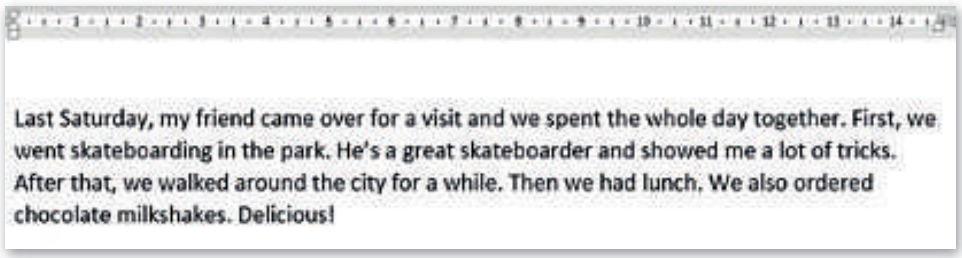
**SMART TIP**

**Position is not the same as Superscript or Subscript. It doesn't change the size of the font, like they do.**

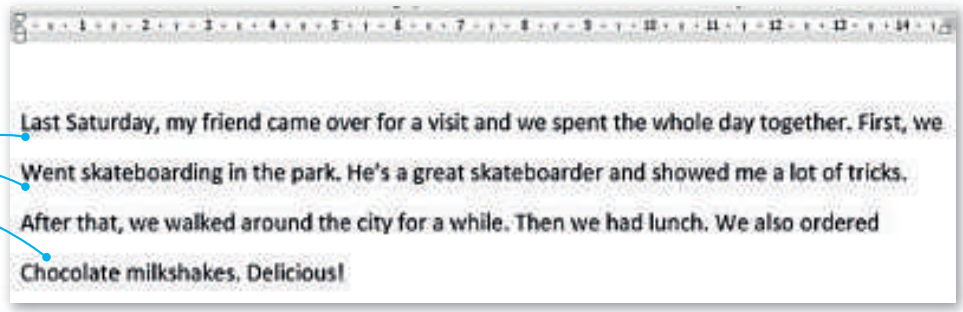
## Lines and paragraphs

When you type a lot of text, you should follow some rules. For example, when you create a paragraph, keep typing until you finish it. Don't press Enter ↵ after each line. The program will take care of everything and wrap your text to the next line automatically.

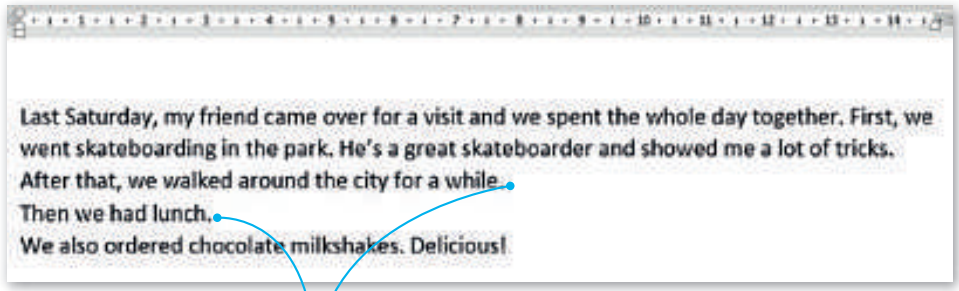
This is a paragraph with continuous typing:




Press Enter ↵ only when you want to create a new paragraph or add a new item in a list with bullets or numbers. The program will automatically add more space between paragraphs to make the text easier to read.



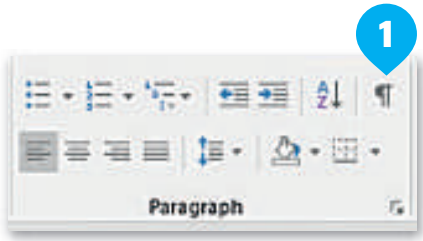

**Take a look! There is extra space between the lines and capital letters in the middle of the sentences! This is a sign that you have pressed Enter ↵ at the end of a line, when probably you shouldn't have.**



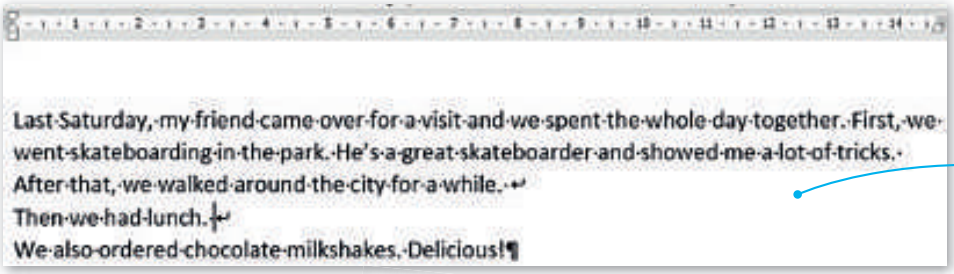

**Press Shift ⇧ + Enter ↵ to break the line without a new paragraph.**

## Show / Hide non-printable characters

To see if you have pressed Enter ↵ or Shift ⇧ + Enter ↵ try the following steps: On the **Home** tab, in the **Paragraph** group, click the **Show/Hide** button. 1 By clicking this button you can see these non-printable characters on your document where you have pressed Enter ↵, Space Bar, Tab ↹, etc.




Look at this example:




↵ is for Shift ⇧ + Enter ↵

¶ is for Enter ↵

· is for Space Bar

→ is for Tab ↹

*Don't worry about these symbols. You don't have to hide them before printing. They are not printable. To hide them, just click on the **Show/Hide** button again.*

# hands on!

*Type three paragraphs on how you spent your last weekend. Remember the rules about the use of Enter ↵.*

*Type the following text and format it the same way on your computer. Don't use the spacebar to create extra spacing!*

**The Solar System**

**There are eight planets in our Solar System. Starting from the Sun, there's Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Some planets are bigger and some are smaller than Earth. Some are hotter and some are colder.**

TASK 2

# Search and replace

Sometimes you want to find a word or phrase somewhere in the text and replace it with another one. If the document is large, you need a lot of time to read all of it. Imagine trying to find a single word or phrase in a document with 20 pages! Difficult, isn't it?
Let's see how we can find any word in our document easily.

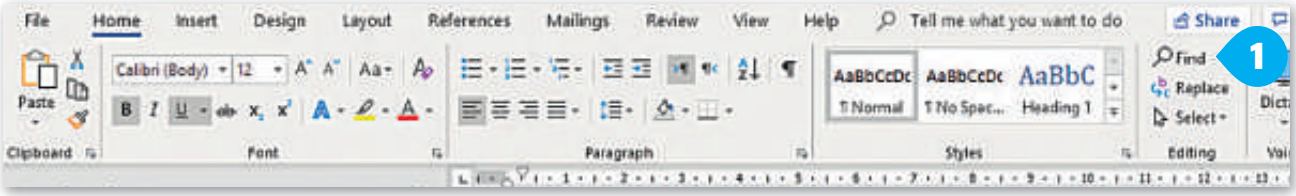
To find a word or phrase:

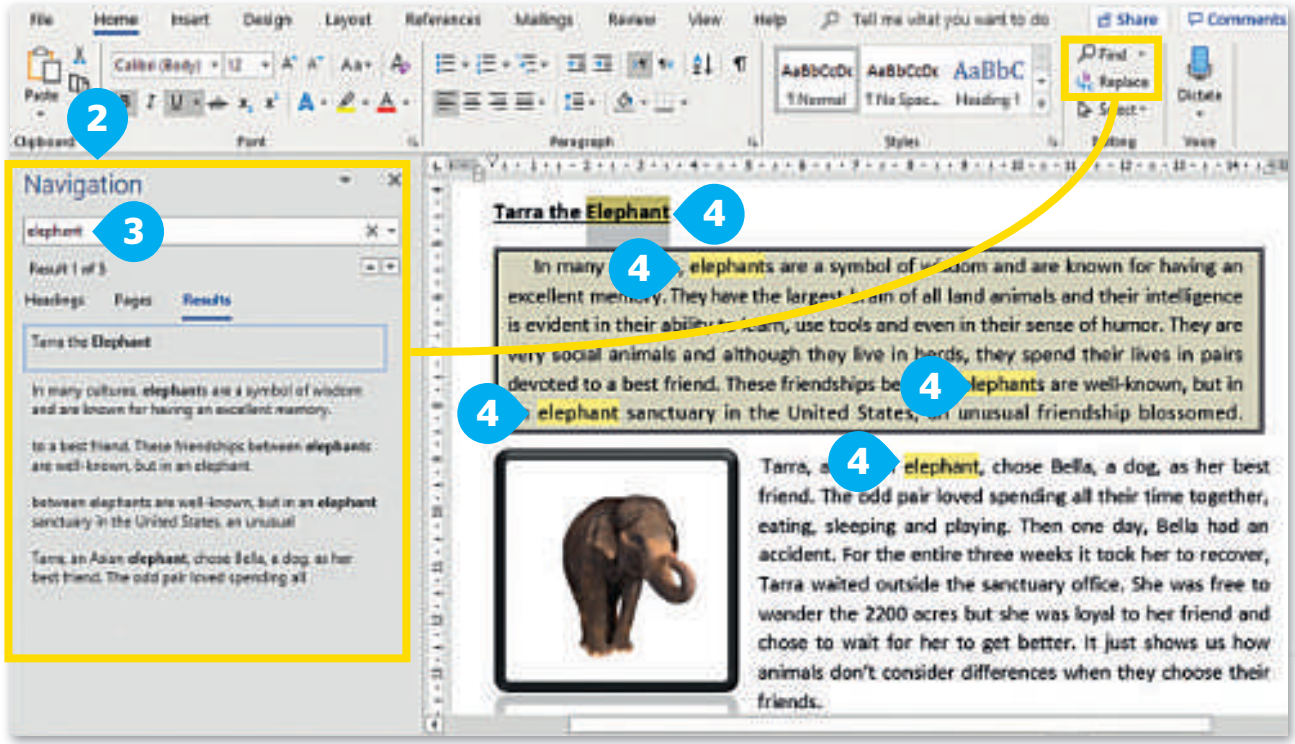
> On the **Home** tab, in the **Editing** group, click **Find**. 1

> The **Navigation** panel 2 will appear on the side.

> In the **Search Document** text box, type the word you want 3 and press **Enter** ↵.

> The program will find and highlight all the places in your document containing the word or phrase you typed. 4



**Microsoft Word** has a tool that can search an entire document to find the word or phrase you want and instantly replace it with another one. It's called **Find and Replace**.

To replace a word or phrase:

> On the **Home** tab, in the **Editing** group, click **Replace**. 1

> The **Find and Replace** 2 window will appear.

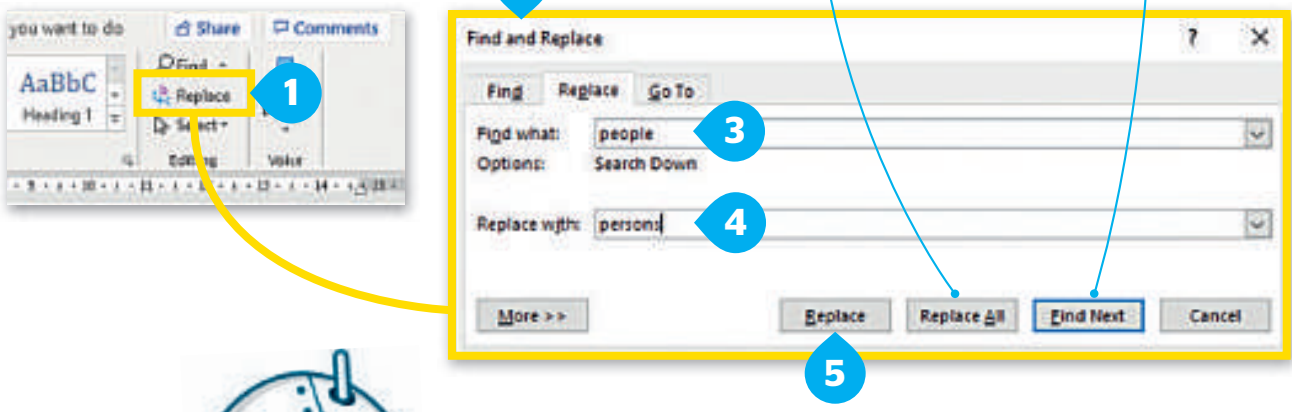
> In the **Find what** text box, type the word or phrase you want to find. 3

> In the **Replace with** text box, type the new word or phrase. 4

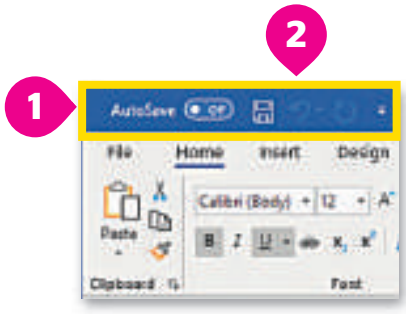
> Click **Replace**. 5

**Replace All finds the word/phrase and replaces it with the word/phrase you want everywhere in your document. Double check before you click it.**

**Find Next shows the next place that this word or phrase exists in your document.**




*Bz...Press* Ctrl + H *to open the* ***Find and Replace*** *dialog box...Bz*



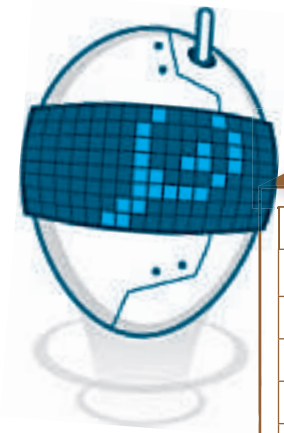

*If you change your mind about a word or phrase you replaced, or if you make a mistake, you can correct it with* ***Undo****. On the* ***Quick Access Toolbar*** 1 *at the top of the program window, click the* ***Undo button*** 2 *or press* Ctrl + Z.

# hands on!

*Type the following text and try to replace the words below with synonyms from* ***Thesaurus****:*

***voyage, reached, famous, explored.***

***Captain James Cook was a famous explorer. He was born in England in 1728. In 1768, he went on his first voyage to the South Seas. On April 19th 1770, he reached and explored the East Coast of Australia. Cook named the place he reached first*** **Point Hicks,** ***after one of his sailors.***



*Bz...Find the words:*

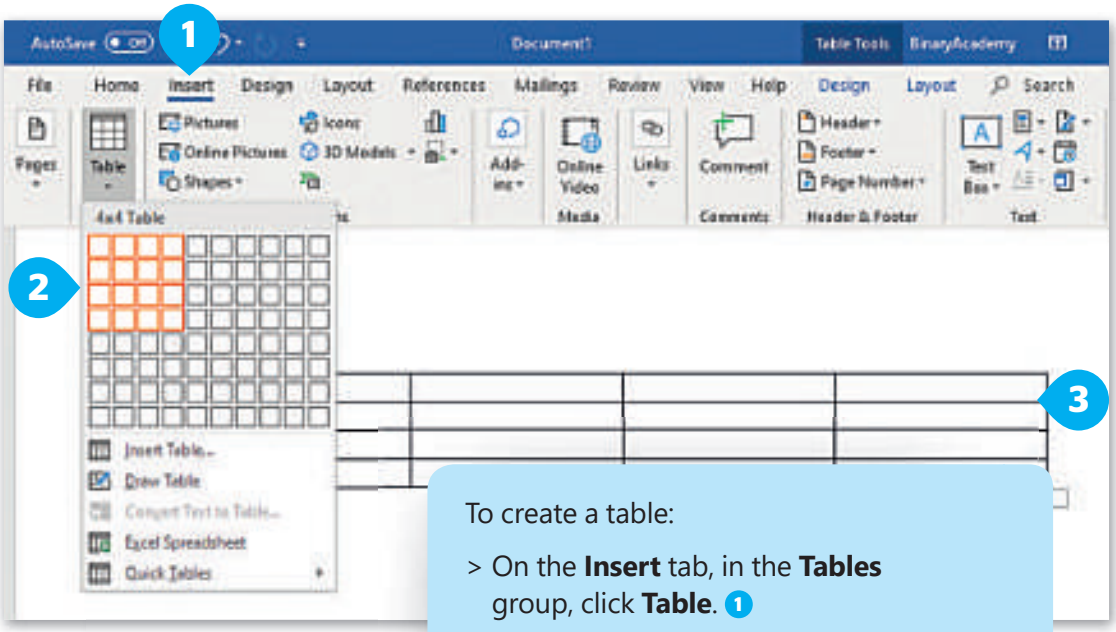
***Find, Replace, Table, Advanced, Spacing, Character.***

| A | N | E | R | L | O | A | V | R | E | P | I | O | P | A | C | S | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H | R | E | F | E | G | H | J | U | I | R | C | M | B | Y | H | K | L |
| Z | S | F | I | N | D | D | A | T | E | X | G | E | V | S | L | E | E |
| E | F | E | G | H | D | V | R | G | T | R | E | P | L | A | C | E | N |
| C | J | F | D | X | V | O | Q | C | K | E | B | E | E | P | O | H | V |
| A | N | T | T | V | I | R | U | H | Q | C | Z | Z | C | D | G | R | E |
| E | R | F | A | B | H | E | R | D | G | T | A | E | R | B | G | R | H |
| A | F | D | B | D | V | S | E | R | T | Y | B | F | B | D | F | R | V |
| E | E | W | L | Q | B | C | H | A | R | A | C | T | E | R | R | E | F |
| K | G | Z | E | A | V | B | S | O | A | N | W | B | Y | U | N | M | I |
| R | V | K | J | D | V | S | E | L | T | Y | B | F | B | D | F | R | V |
| E | V | S | P | A | C | I | N | G | C | T | A | N | E | R | L | O | A |
| I | M | Y | N | K | G | Z | O | N | V | B | S | F | B | D | F | R | V |
| H | R | E | F | E | G | H | J | G | T | A | D | V | A | N | C | E | D |
| R | V | U | M | O | A | V | R | E | O | A | V | R | E | P | I | O | A |

TASK 3

# Working with tables

When you want to work with numbers and other data, you use a spreadsheet. But what do you do when you want to show organized information in a text document? For example, you may want to group the personal details of your classmates together, like their names, last names, addresses and phone numbers, or your school schedule. In this case, you can you use a table. This kind of table doesn't have four legs! It's a grid with rows, columns and cells, like on a spreadsheet.




To create a table:

> On the **Insert** tab, in the **Tables** group, click **Table**. 1

> In the menu that appears, select the size of the table you want by moving your mouse vertically and horizontally across the boxes. For example, choose 4x4 to create a table with 4 rows and 4 columns. 2

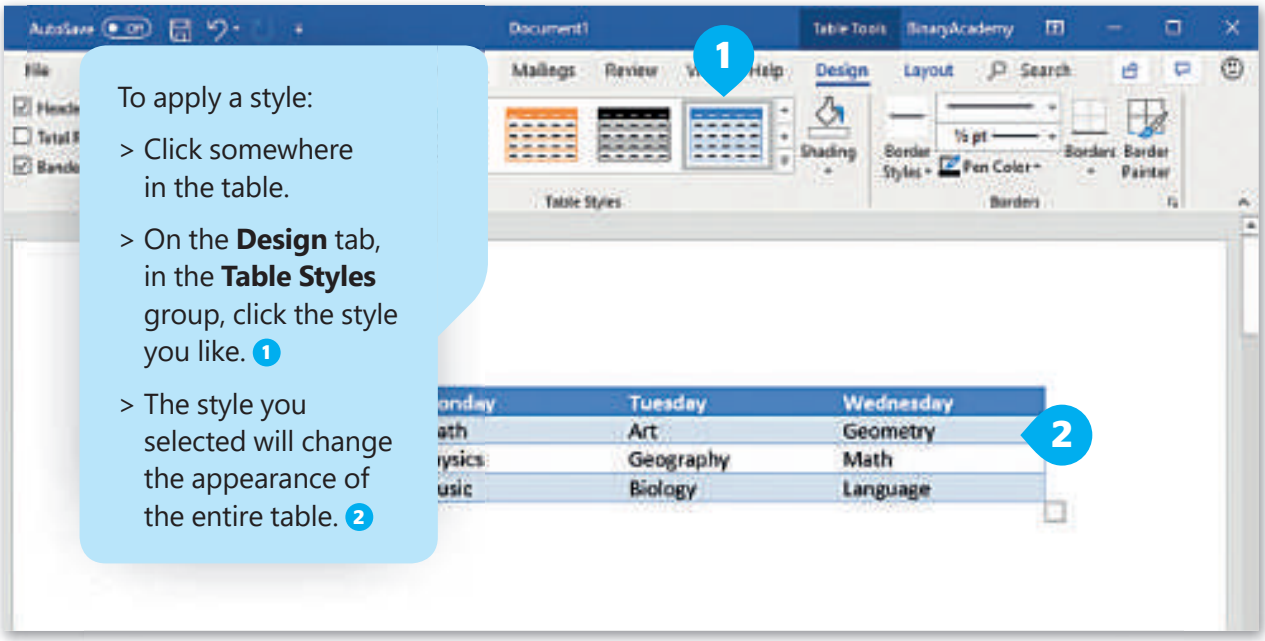
> A table will appear in your document. 3

> To type text, just click inside a cell and start typing.

*A table consists of rows, columns and cells, but they don't have names like on a spreadsheet. If you want to do complex calculations, use **Microsoft Excel** and then copy all the cells to your document as a table.*

## Formatting a table

It's very easy to format your table using the **Table Styles** group, or create a custom format.




To apply a style:

> Click somewhere in the table.

> On the **Design** tab, in the **Table Styles** group, click the style you like. 1

> The style you selected will change the appearance of the entire table. 2

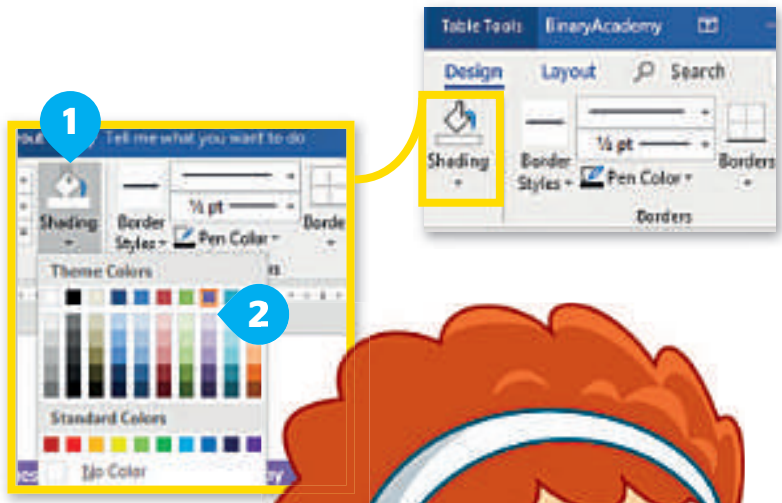
You can also make a custom style if you want to. To do this, you can use the **Borders** or **Shading** buttons. **Borders** inserts lines around a table or inside a grid and **Shading** colors the cells.

To use shading:

> Select the area of the table you want to change the color of.

> On the **Design** tab, in the **Table Styles** group, click **Shading**. 1

> Click the color you want to apply to your table. 2



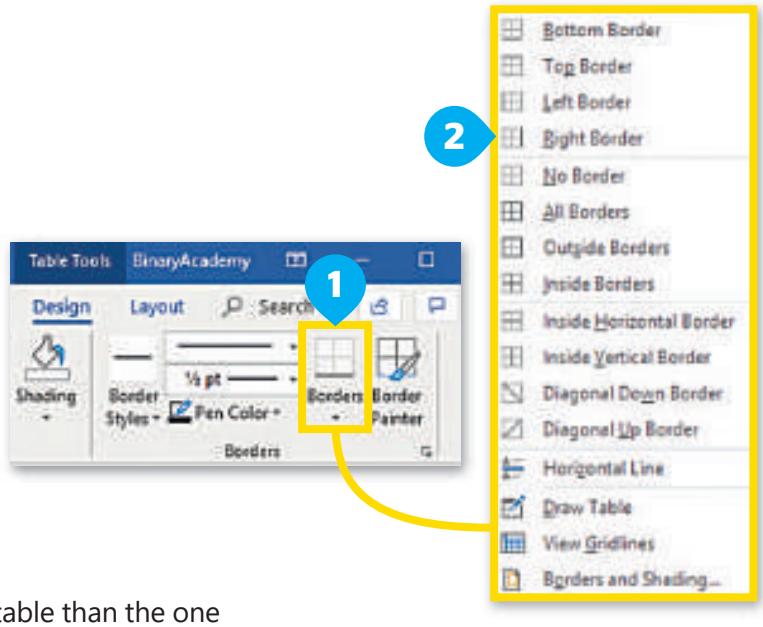

*As always, you first select the area you want to format and then apply any format you choose from the menus.*

To use a border:

> Select the area of the table you want.

> On the **Design** tab, in the **Borders** group, click the small arrow. 1

> Click the type of border you want. For example **Right Border**. 2




## Edit your table

Sometimes you may want a larger table than the one you created. Good news! You don't need to start all over again. You can add rows and columns to an existing table.

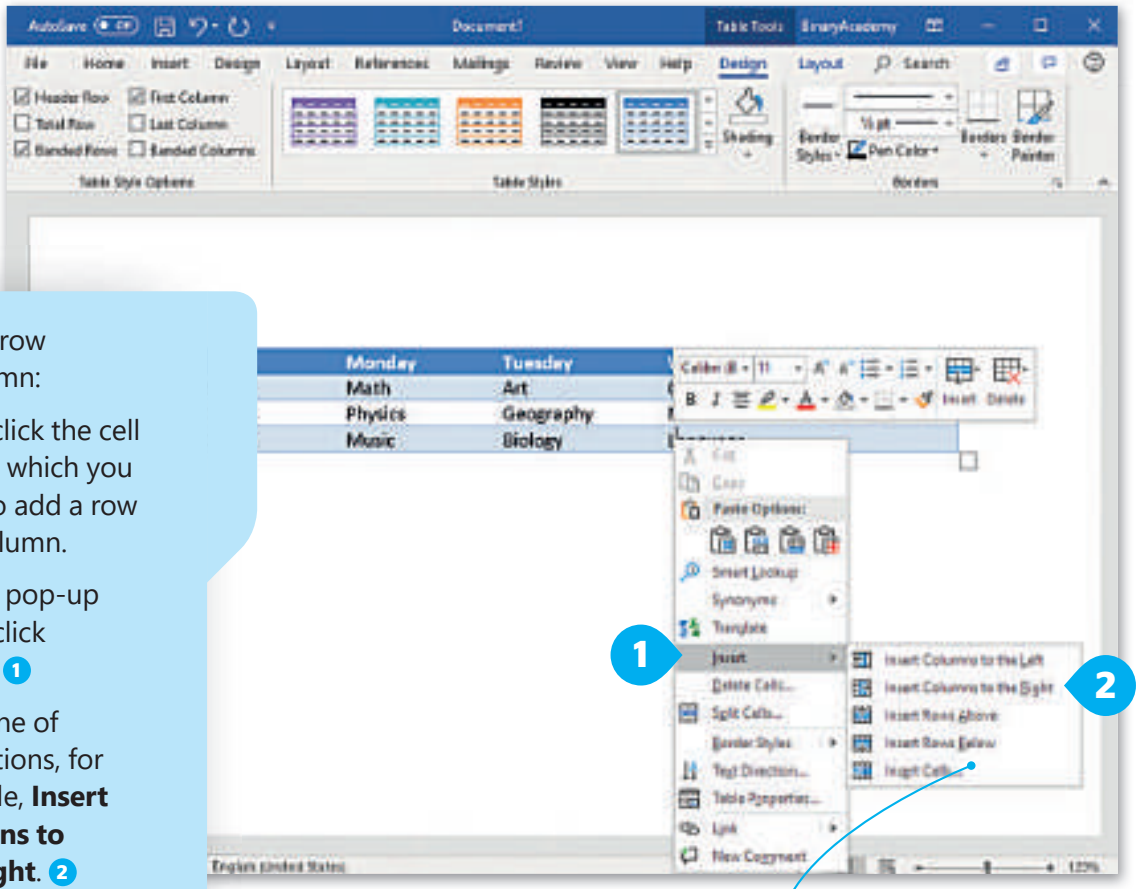
To add a row or a column:

> Right-click the cell next to which you want to add a row or a column.

> On the pop-up menu click **Insert**. 1

> Click one of the options, for example, **Insert Columns to the Right**. 2

> A new column will appear on the right side of the selected cell.




**You can also Insert Columns to the Left, Insert Rows Above, Insert Rows Below or Insert Cells... to add a single column, row or cell in the table.**

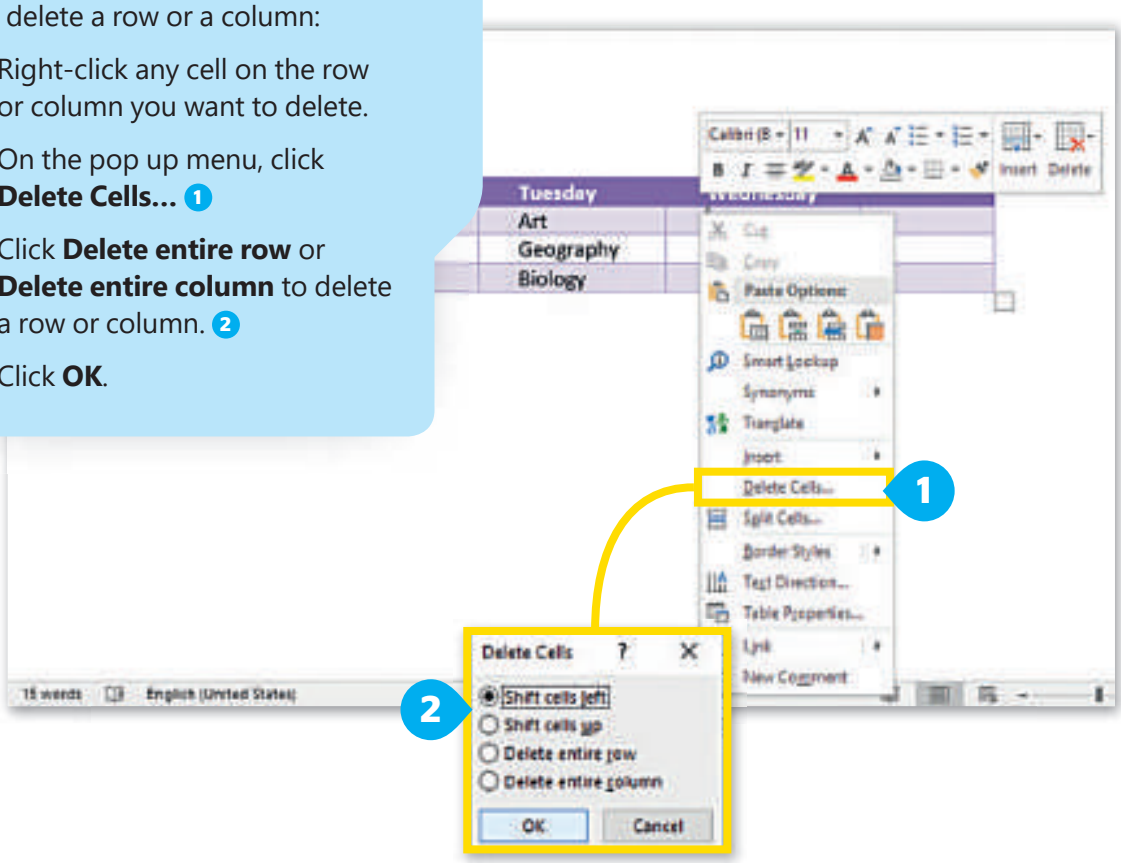
To delete a row or a column:

> Right-click any cell on the row or column you want to delete.

> On the pop up menu, click **Delete Cells...** 1

> Click **Delete entire row** or **Delete entire column** to delete a row or column. 2

> Click **OK**.



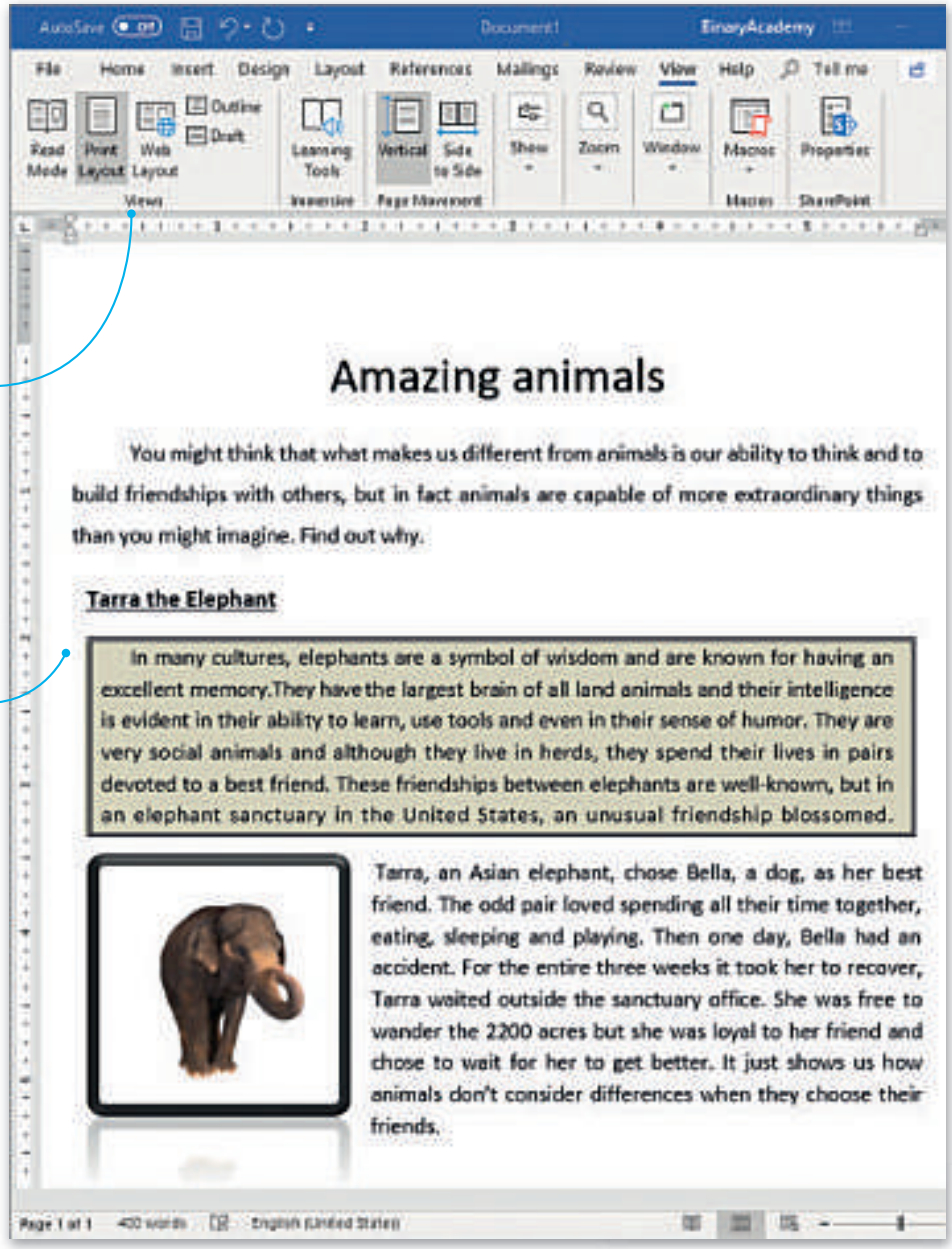

## hands on!

*Create a table for your school schedule. Put the days in columns, the hours in rows and the subjects in the cells. Format the schedule as you like. Use a big font size and print it for your desk.*

TASK 4

# Document views

Sometimes the document that you create is not for printing. You may want to share it on the Internet or just create a long list of ideas. To work more effectively, you can view your document in different ways, like **Print Layout** or **Web Layout**.




You can explore these options on the **View** tab, in the **Views** group.

The **Print Layout** is the default view for Microsoft Word. It shows you how the document will look on paper. It's better to use this document view if you are going to print your work.

## BE SAFE

**Sometimes you spend a lot of time in front of your computer. You don't want to injure your neck or back so remember to sit properly when you work at your computer. "Mens sana in corpore sano" as the ancient Romans have said - a healthy mind in a healthy body.**

## Read documents

The best way to read a document is to select the **Read Mode**. This type of view includes some features that have been designed for reading instead of writing.

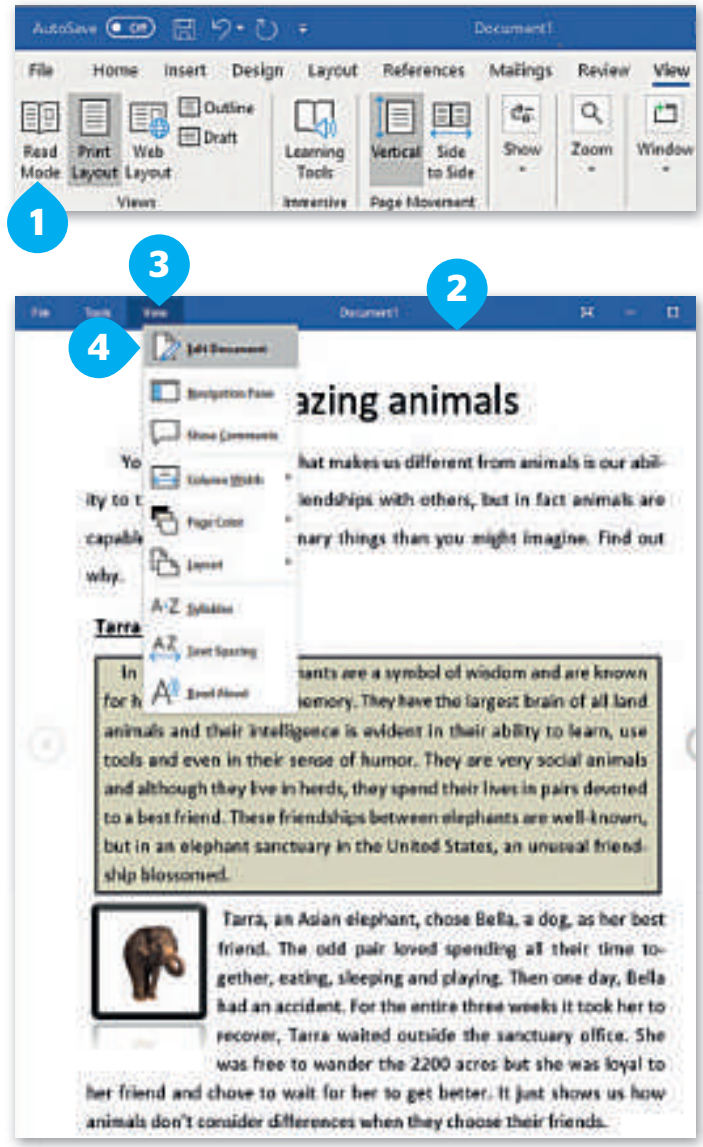
To see your document in Read mode:

> On the View tab, in the Views group, click **Read Mode**. 1

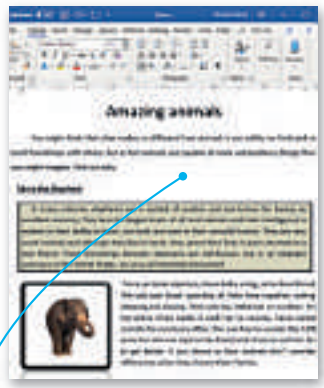
> The document will cover the entire screen and most of the buttons are hidden. 2

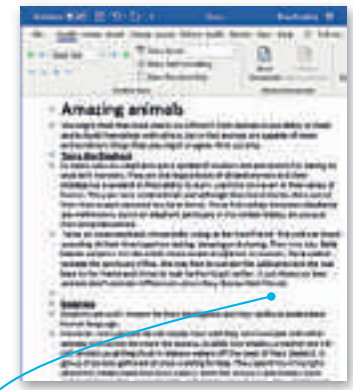
> To edit the document click the **View** tab. 3

> In the pop-up menu that appears, click on **Edit document**. 4




*Read Mode automatically resizes the text, using larger columns and fonts to view the document and make it bigger and easier to read.*





**Web Layout** shows your document as a web page. Use this layout if you prepare text and pictures for the Internet.

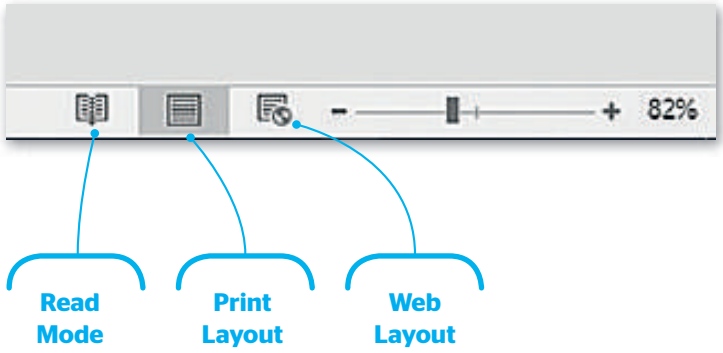
**Outline** is a special view that makes text look like a list of items.

The default view in older versions of Microsoft Word was **Draft**. In this view, you cannot see the actual margins of the page. Use this layout only if your computer screen is too small for Print Layout.

## Zoom in and out

Use the zoom slider on the bottom right corner of your window to make your document appear larger or smaller on screen. If you want to work on small details, zoom in (>100%). If you want to see the whole page or more than one page together, zoom out (<100%). Of course, this will not change the size that the text or pictures are printed when you print the document.

*Bz...You can change the view of your document much faster with the small buttons on the status bar at the bottom of the program next to the zoom slider.*




# hands on!

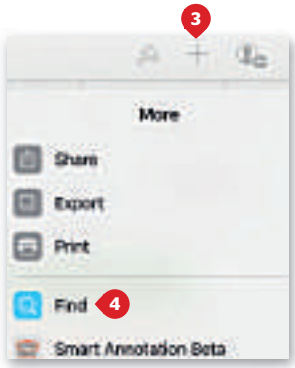
*Are the following sentences **true** or **false**?*

1. *The default view in **Microsoft Word** is **Draft**.*
   ***True*** ☐ ***False*** ☐
2. *You use **Web Layout** to see how the text will appear on the web.*
   ***True*** ☐ ***False*** ☐
3. *You always have to use **Outline** before you print a document.*
   ***True*** ☐ ***False*** ☐
4. *When your document is in **Print Layout**, it looks exactly as it's going to be printed.*
   ***True*** ☐ ***False*** ☐
5. *You can edit your document in **Full Screen Reading**.*
   ***True*** ☐ ***False*** ☐

# Other platforms

## Apple Pages for iOS

With **Apple Pages**, you can easily insert tables and find words or phrases.

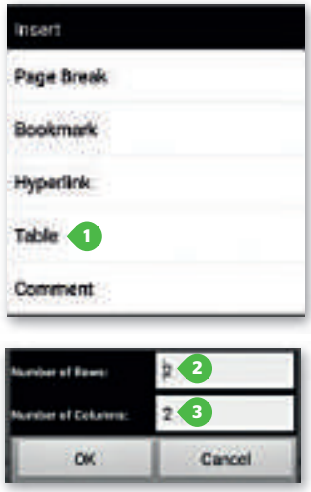



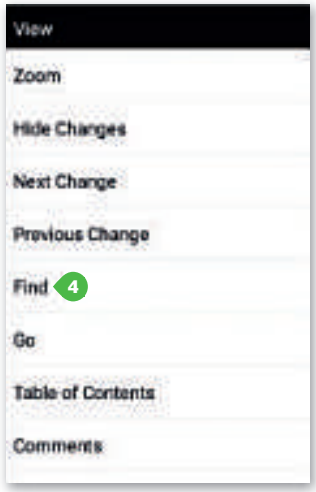


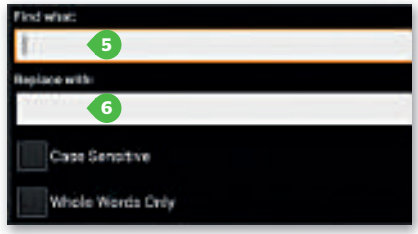
> Tap to tables. 1
> Tables templates. 2
> Tools button. 3
> Find tool. 4
> Type the word you want to find. 5
> Choose Find and Replace 6 to replace the word.

## Docs to Go for Google Android

In **Docs to Go**, you can insert tables or find words with a few taps.

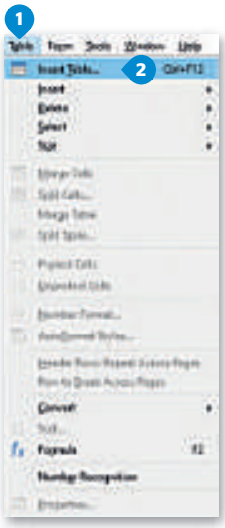




> Insert table. 1
> Type the number of rows you want. 2
> Type the number of columns you want. 3
> Tap view to open Find. 4
> Type the word/phrase you want to find. 5
> Type the new word/phrase you want to replace the first one with. 6

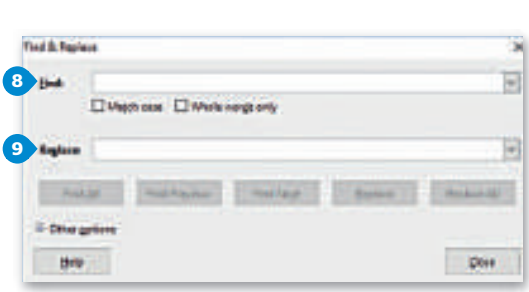
## LibreOffice Writer

Don't forget! **LibreOffice Writer** is like an old version of **Microsoft Word**. Learn one and you can easily learn the other. Inserting tables or finding and replacing words or phrases will be very familiar procedures for you.





> Click Table. 1
> Click Insert Table. 2
> Insert table. 3
> Type the number of columns. 4
> Type the number of rows. 5


> Click Edit. 6
> Click Find & Replace. 7
> Type the word/phrase you want to find. 8
> Type the word/phrase you want to replace the first one with. 9

# wrap up

**Now you have learned how to:**

> change the space between the characters of a text.

> use Enter ↵ and Shift ⇧ + Enter ↵ correctly to make spaces between lines.

> find a word in a text quickly.

> replace a word or phrase with another one.

## group work

Organize a picnic.
Write a small text about a place near your school and what you want to do there. Use tables to organize what you need to bring with you, for example food, games, etc. and who will bring what.

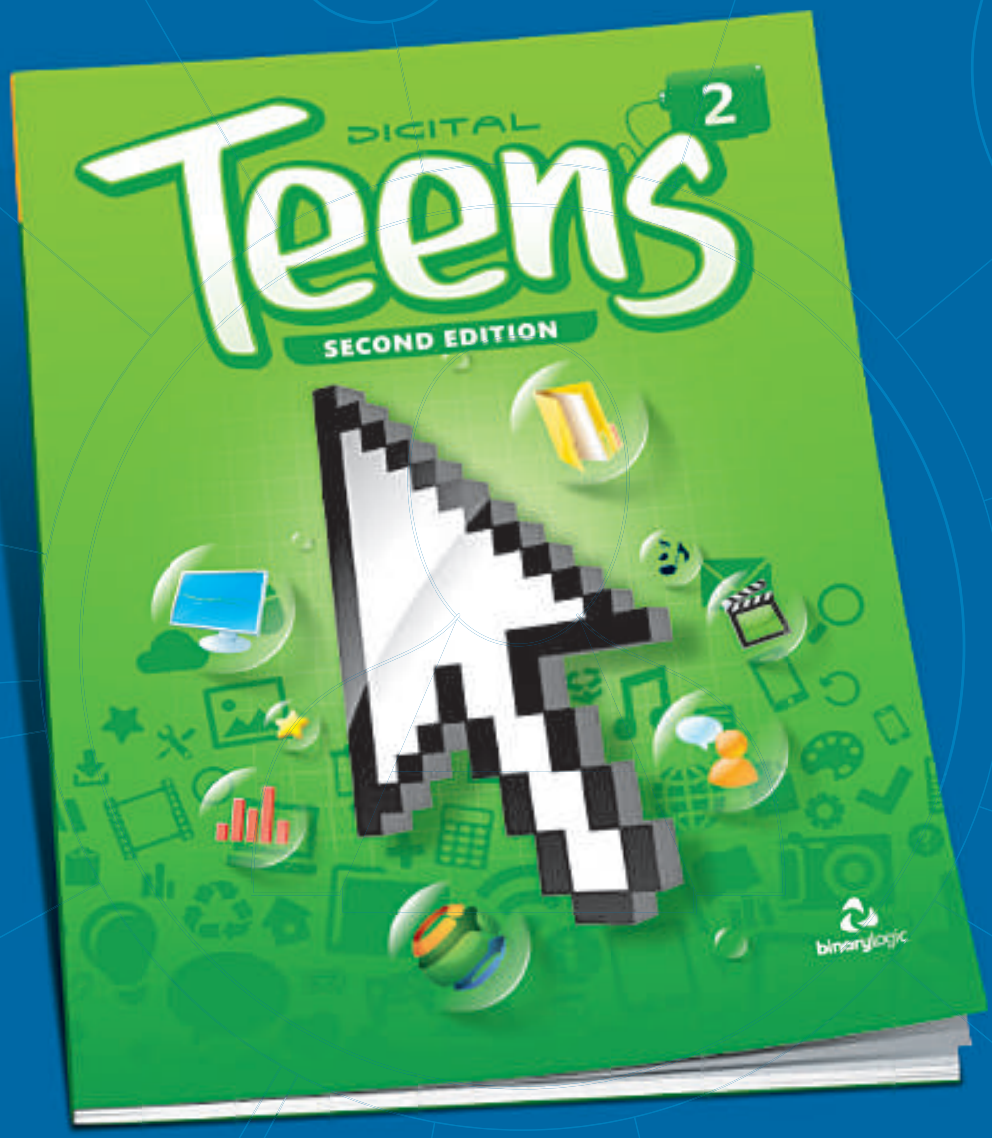
## GLOSSARY

| | | | |
|---|---|---|---|
| active cell | column | layout | replace |
| baseline | document view | outline | row |
| cell | grid | position | scale |

Welcome to

# Digital Teens 2

Key features and sample pages





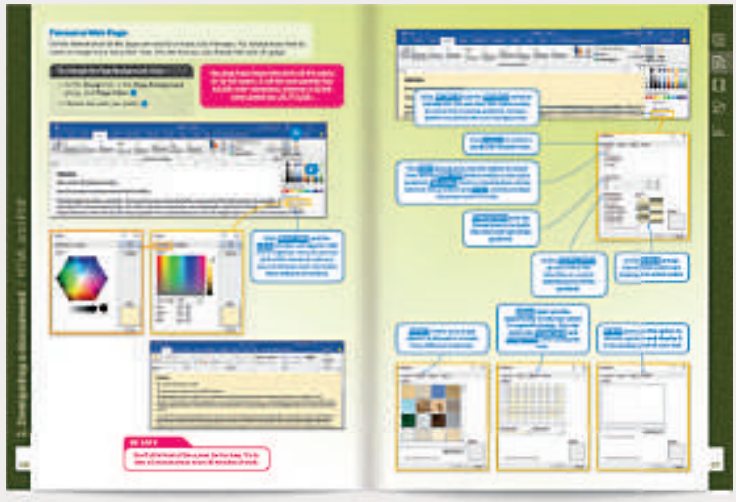
discover more at **binarylogic.net**

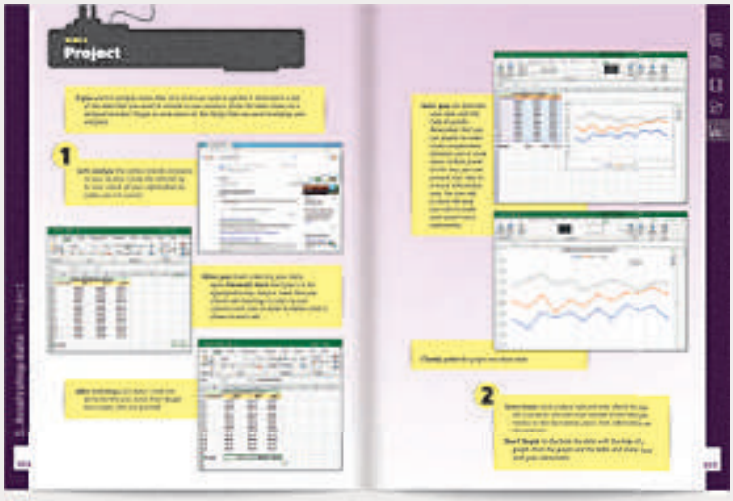
# Key Features

An innovative approach to teaching Computing and ICT written by a team of educators.

*Clear learning objectives and functional skills.*

Each book has four or five modules.
Each module provides a range of tasks and activities that help students to develop their ICT skills and allow teachers to monitor the students' progress.






*Project-based learning*

Clear explanations and illustrative contemporary examples.

The activities are based on school subjects taught in each grade and are designed to engage students through real life projects.

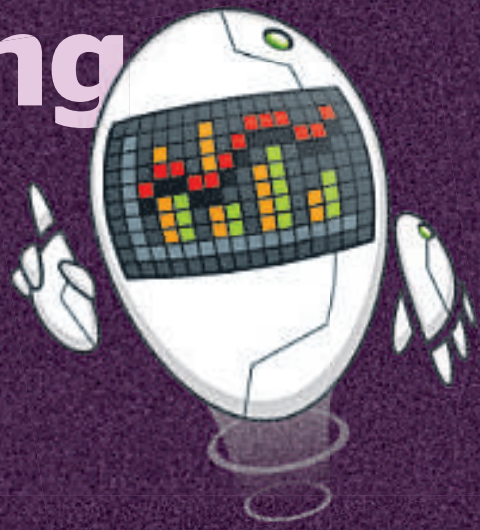
*New content continually updated according to changes in technology.*

Students learn how to work with many different platforms and tools.

The *"**Other platforms**"* section at the end of each module shows some of the available alternatives. The online video tutorials guide the students through each task.

New vocabulary is organized in related topics.

# 5. Analyzing data



It's time to master your math. In this module, you are going to use Microsoft Excel to make complex calculations without mistakes. You will learn to present your information with different types of charts and to format the data so that it is easier to understand. You will also learn how to transfer your data and use it in any other program.



## Learning objectives

In this module you will learn:

> how to make complex calculations.
> how to use Excel's functions for faster calculations.
> how to work with logical functions.
> how to avoid mistakes in calculations.
> how to present information with charts.
> how to emphasize information using formatting.
> how to exchange data with other programs.

## Skills

After this module you will be able to:

> work with powers and percentages.
> use advanced functions.
> create conditions using multiple IF functions.
> use relative and absolute references.
> understand and correct error messages.
> format different types of charts.
> create mini charts.
> apply conditional formatting to cells.
> import and export data as a CSV file.

## Tools

> Microsoft Excel
> Apple Numbers
> Sheet To Go
> LibreOffice Calc

TASK 1

# Complex calculations

You know how to make simple calculations using **Microsoft Excel**. What about a complex algebraic expression? Well, it's time to make difficult things much easier and faster.

## Calculation rules

When you do complex calculations and there is more than one part to the formula, the order of the calculations is from left to right, but any part of the formula in parentheses will be calculated first.

***The calculation order:***

| | |
|---|---|
| 1 | Firstly, do the operations in parentheses. |
| 2 | Secondly, do the calculations with exponents. |
| 3 | Then, do the multiplications and divisions. |
| 4 | And in the end, do the additions and subtractions. |

***The basic calculations and their symbols in Microsoft Excel are:***

| | |
|---|---|
| * | multiplication |
| ^ | exponent |
| / | division |
| + | addition |
| - | subtraction |
| % | percentage |

**Let's find the result of** `((2021^2/2021)-2020)^2021`

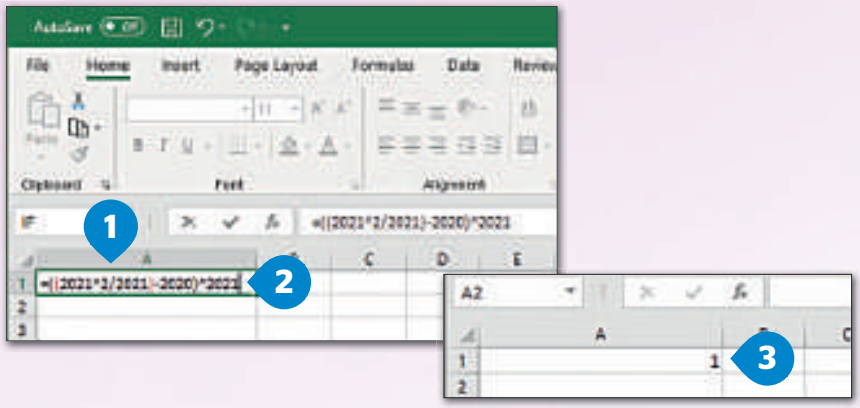
**To calculate the formula:**

> On a worksheet, click cell **A1**. 1

> Type `=`, to start the formula.

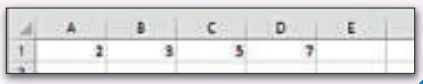
> Type the mathematical formula `((2021^2/2021)-2020)^2021`. 2

> Press **Enter ↵**. 3




**Let's try another one!** This time, you are going to write a formula which will contain a cell reference. In this way, you will produce a result that may change if the data in those cells also change.

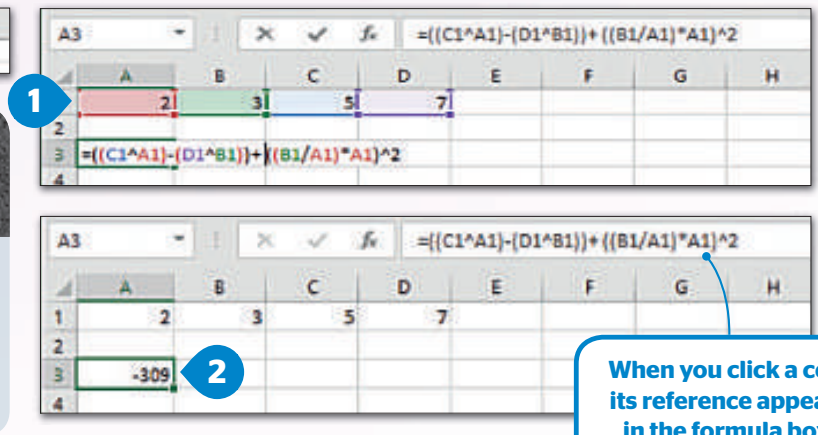
Type the numbers below:




**To calculate the expression `((C1^A1)-(D1^B1))+((B1/A1)*A1)^2`:**

> Click cell **A3** and type `=((C1^A1)-(D1^B1))+((B1/A1)*A1)^2`. 1

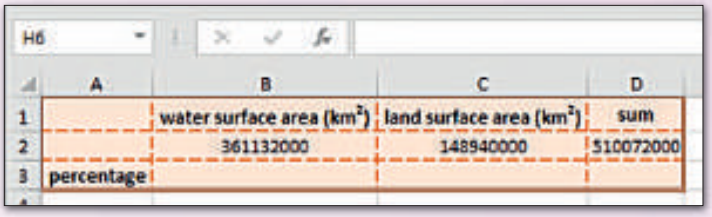
> Press **Enter ↵**. 2



## Work with percentages

Working with percentages is a little bit tricky. Pay attention and pretty soon, everything will be clear!

Type this table:



| | A | B | C | D |
|---|---|---|---|---|
| 1 | | water surface area (km²) | land surface area (km²) | sum |
| 2 | | 361132000 | 148940000 | 510072000 |
| 3 | percentage | | | |

You can change the value displayed from a decimal number to a percentage by applying the percentage format. Microsoft Excel multiplies the cell by 100 and displays the result with the percentage sign.

### To transform a number to a percentage:

> Click cell **B3** and type **=B2/D2**. 1

> Click cell **C3** and type **=C2/D2**. 2

> Select the cells which contain the numbers you want to format, in this case **B3** and **C3**. 3

> On the **Home** tab, in the **Number** group, click the Expand button. 4

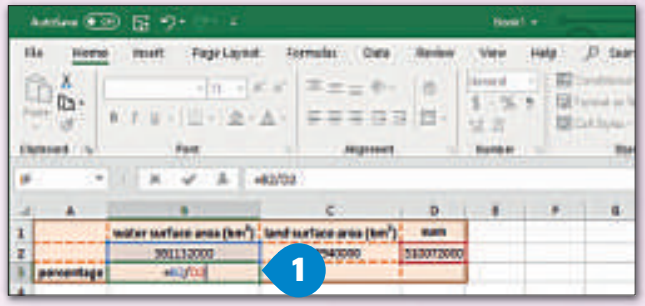
> In the **Format Cells** window, click the **Number** tab. 5

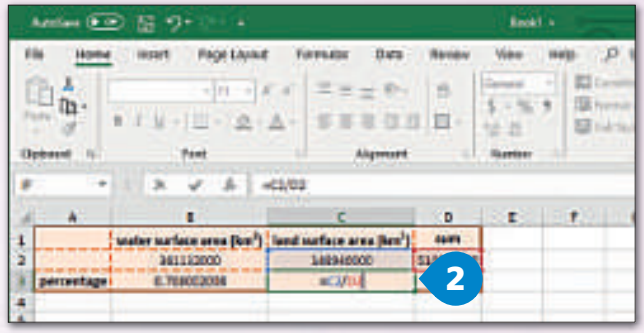
> In the **Category** list, click **Percentage**. 6

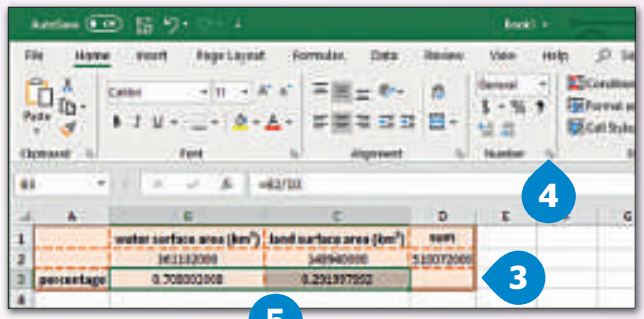
> Type a number in the **Decimal places** text box, e.g. 2. 7

> Click **OK**. 8

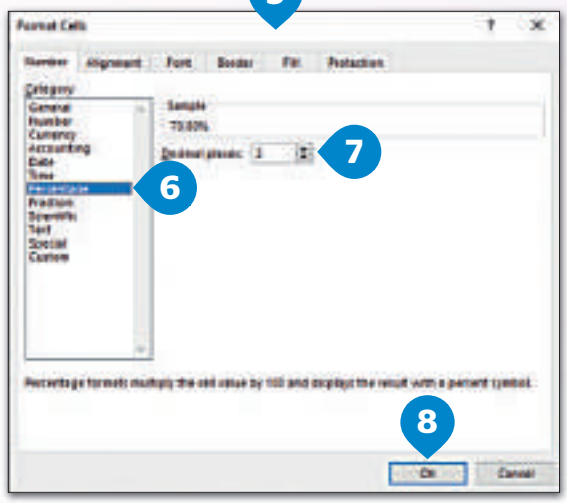
> The numbers now appear as percentages. 9

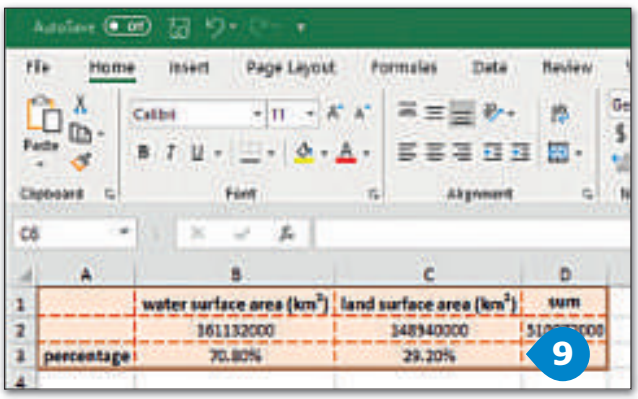



***You can also add percentage by clicking the Percent Style button in the Number group of the Home tab.***



## Calculate powers

The **Power** function returns the result of a number raised to a given power.

Type the following table as it is below:

| | A | B | C |
|---|---|---|---|
| 1 | base | power | result |
| 2 | 12 | 2 | |
| 3 | 3 | 5 | |
| 4 | 5 | 2 | |

*You can use the function POWER(x;y) instead of using the ^ symbol.*

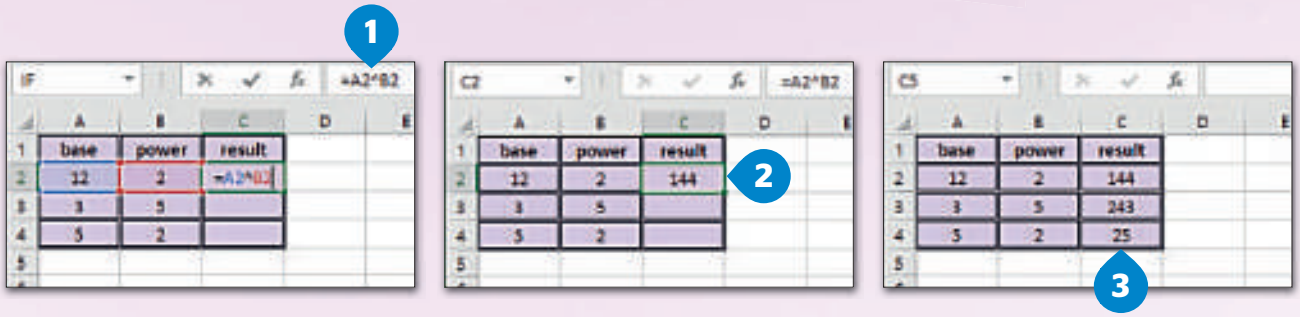
**To calculate powers:**

> Click cell **C2**.

> In the **Formula Bar**, type **=A2^B2**. 1

> Press **Enter ↵**. 2

> Repeat the steps for cells **C3** and **C4**. 3




## hands on!

***Your school did some research to find out which is the most interesting subject for students. In the questionnaire below you can see the votes for each subject. Now, using the Microsoft Excel program type the text and numbers as they are shown in the worksheet below. Calculate the total number of votes and the percentage of votes given to each subject. Fill the empty cells with the appropriate formula and format cells B4:F4 with a percentage symbol.***

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | *Questionnaire* | | | | | | | | |
| 2 | Lesson | Physics | Mathematics | English Literature | History | Chemistry | | Sum | |
| 3 | Votes | 192 | 100 | 178 | 52 | 100 | | | |
| 4 | Percentage | | | | | | | | |
| 5 | | | | | | | | | |

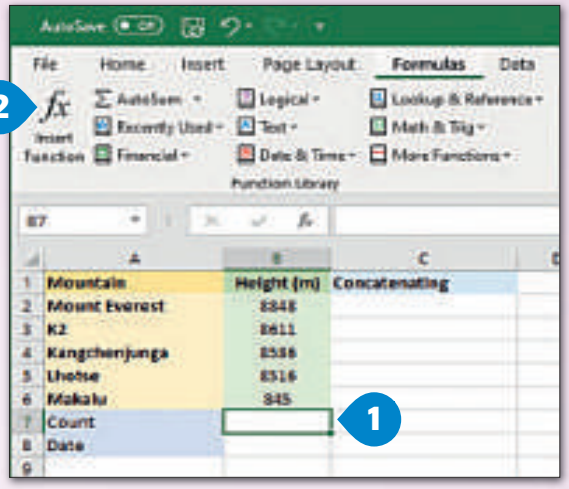
TASK 2

# Functions

As you know, **Microsoft Excel** can help you calculate and analyze numerical information with the help of a wide variety of functions.

Type the table:

| | A | B | C |
|---|---|---|---|
| 1 | Mountain | Height (m) | Concatenating |
| 2 | Mount Everest | 8848 | |
| 3 | K2 | 8611 | |
| 4 | Kangchenjunga | 8586 | |
| 5 | Lhotse | 8516 | |
| 6 | Makalu | 845 | |
| 7 | Count | | |
| 8 | Date | | |
| 9 | | | |
| 10 | =mountains&"*& | | |
| 11 | | | |
| 12 | This is a spreadsheet | | |




## COUNT

The **COUNT** function is used to calculate the number of cells that contain numbers.

### To add **COUNT** function:

> Click the cell where you want to create the function, in this example, cell **B7**. 1

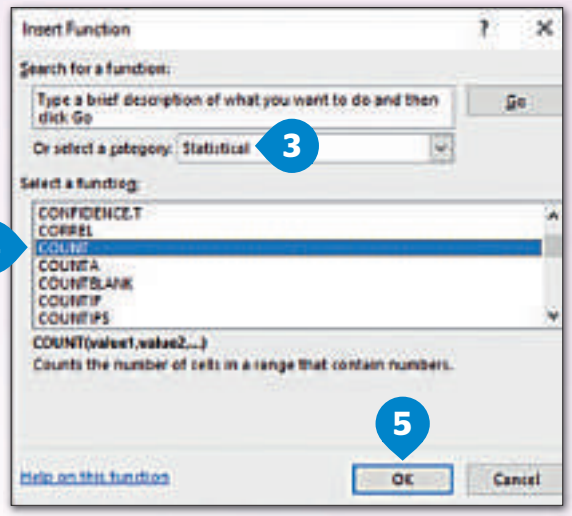
> In the **Formulas** tab, in the **Function Library** group, click **Insert Function**. 2

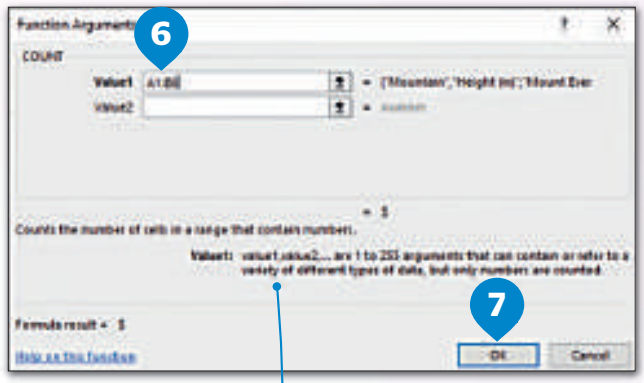
> On the **Insert Function** window, in the **Or select a category** list, click **Statistical**. 3

> Click **COUNT** 4 and click **OK**. 5

> In the **Function Arguments** window, in the **Value1** box, type **A1:B6**. 6 It is the range of cells which you want to count.

> Click **OK**. 7




| | A | B | C |
|---|---|---|---|
| 1 | Mountain | Height (m) | Concatenating |
| 2 | Mount Everest | 8848 | |
| 3 | K2 | 8611 | |
| 4 | Kangchenjunga | 8586 | |
| 5 | Lhotse | 8516 | |
| 6 | Makalu | 845 | |
| 7 | Count | 5 | |
| 8 | Date | | |
| 9 | | | |
| 10 | =mountains&"*& | | |
| 11 | | | |
| 12 | This is a spreadsheet | | |

**Even if you don't know the purpose of a function, you can always read the description. It explains in simple words what the selected function is going to calculate.**

## TODAY

To have the current date displayed on your worksheet, use the **TODAY** function.

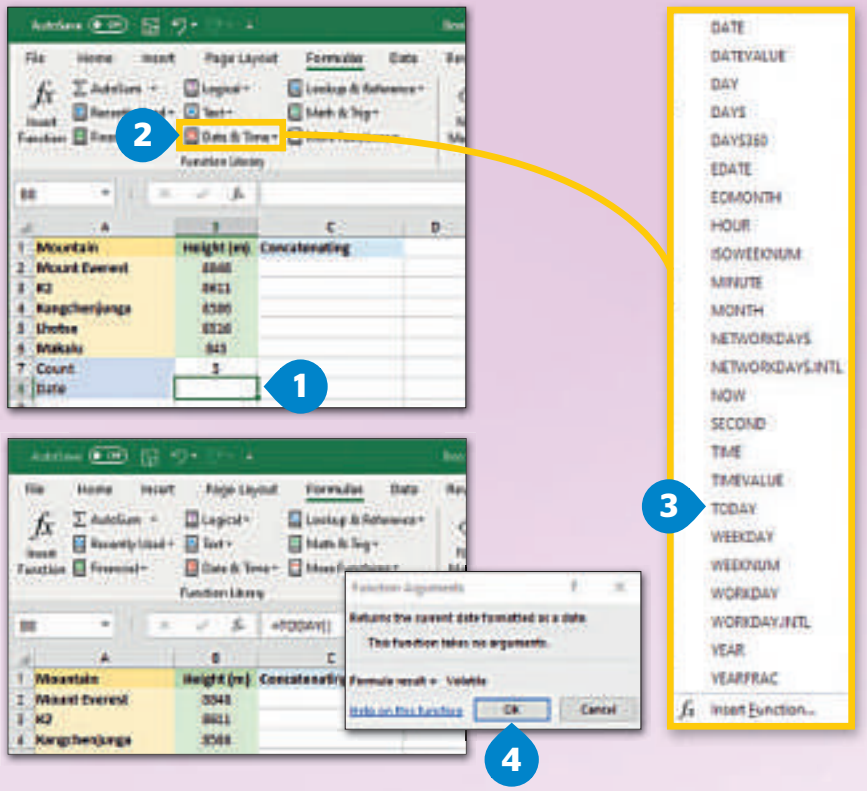
**To use the TODAY function:**

> Click cell **B8**, the location where you want your results to be displayed. 1

> On the **Formulas** tab, in the **Function Library** group, click **Date & Time**. 2

> In the list, click **TODAY**. 3

> In the **Functions Arguments** window, click **OK**. 4




## CONCATENATE

To join cell contents, you can use the **CONCATENATE** function.

**To use the CONCATENATE function:**

> Click cell **C2**. 1

> On the **Formulas** tab, in the **Function Library** group, click **Insert Function**. 2

> In the **Insert Function** window, in the **Or select a category list**, click **All**. 3

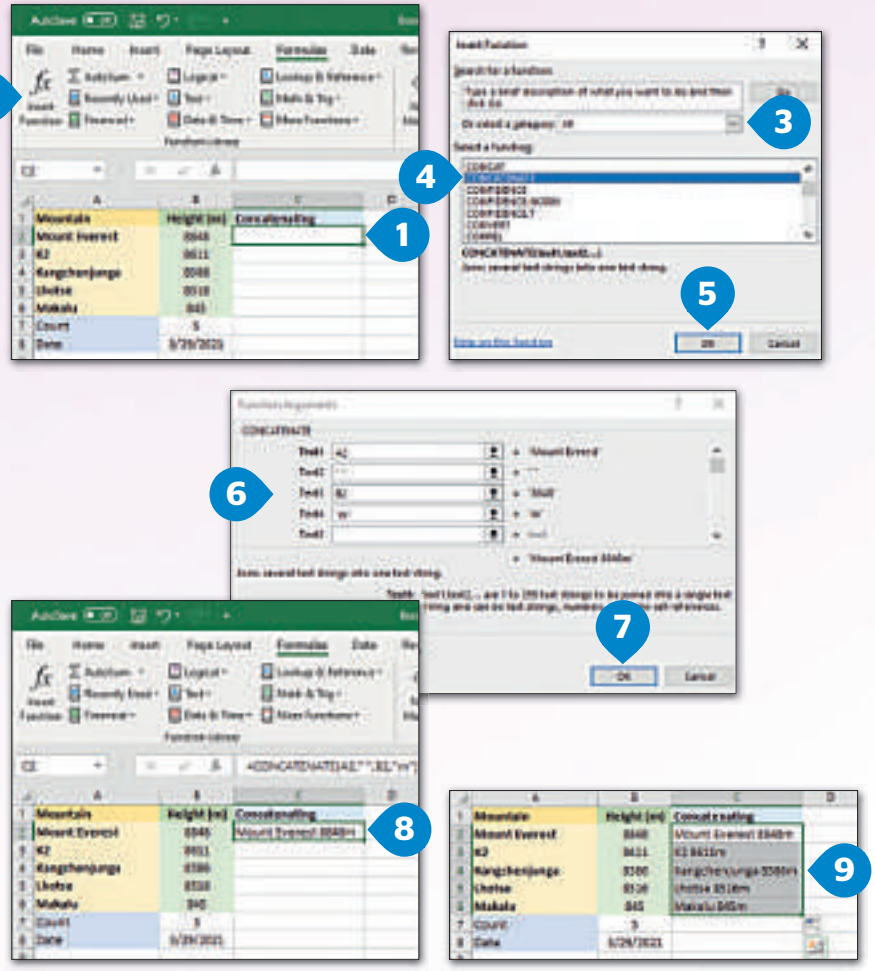
> Click **CONCATENATE**. 4

> Click **OK**. 5

> In the **Function Arguments** window, in **Text1** box type A2, in **Text2** type " " and in **Text3** type B2, in **Text4** type "m". 6

> Click **OK**. 7

> Use the **Autofill** tool 8 to complete the other rows. 9



## LEFT, RIGHT, MID

If you want to extract a part of a string (substring) use the **LEFT**, **RIGHT** and **MID** functions.

**To use the MID function:**

> Click cell **B10**. 1

> On the **Formulas** tab, in the **Function Library** group, click **Text**. 2

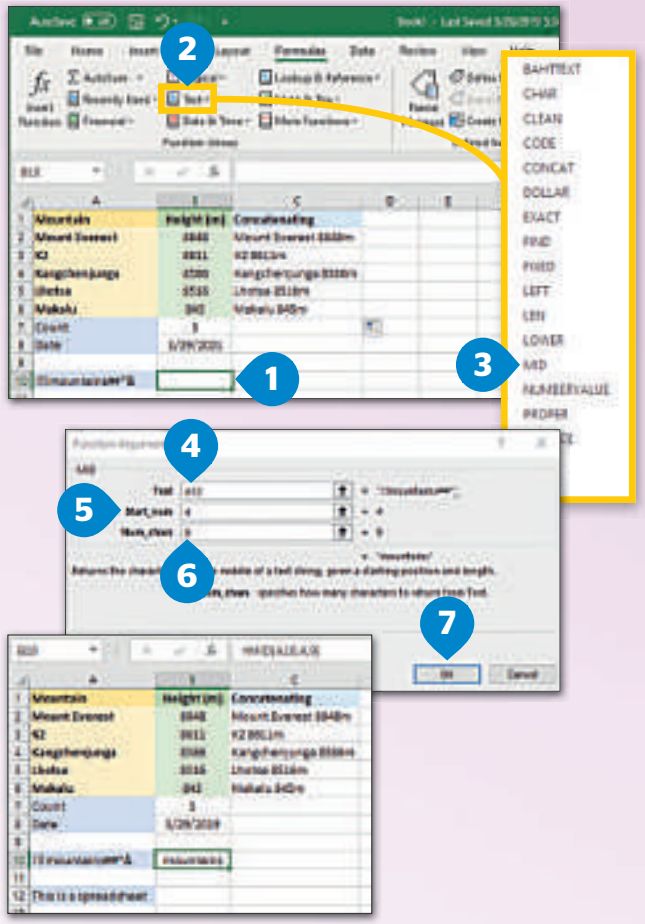
> In the list, click **MID**. 3

> In the **Function Arguments** window, in the **Text** box type A10. 4 It's the cell from which you are going to extract characters.

> In the **Start_num** box, type 4. 5 It's the position of the first character you want to extract.

> In the **Num_chars** box, type 9. 6 You are specifying how many characters you want to extract.

> Click **OK**. 7




***Similarly, you can use LEFT and RIGHT functions to extract text from the left or right of a text respectively***

## SUBSTITUTE

If you want to replace part of a text in a cell, use the **SUBSTITUTE** function.

**To use the SUBSTITUTE function:**

> Click cell **A13**.

> On the **Formulas** tab, in the **Function Library** group, click **Text**. 1

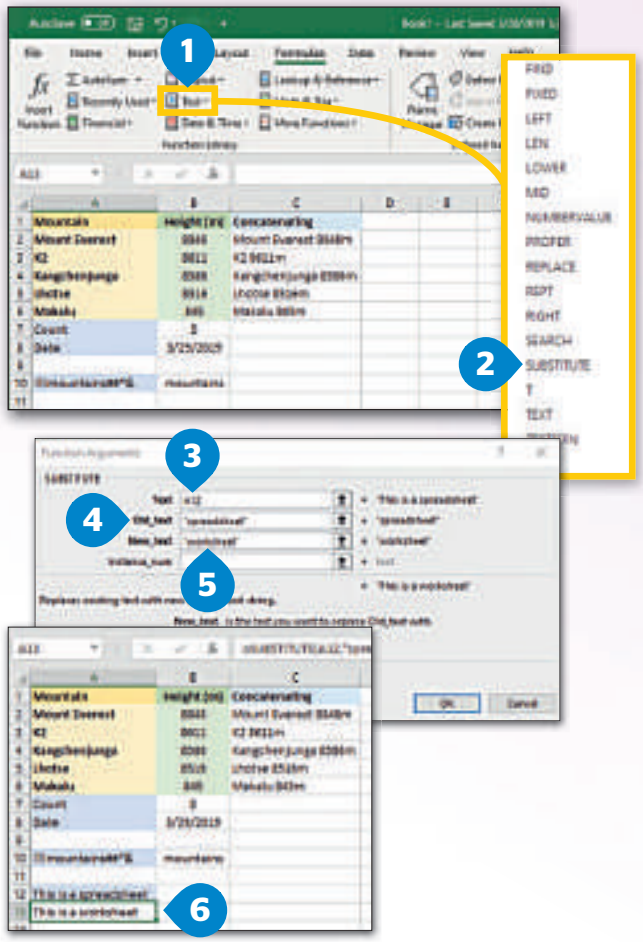
> In the list, click **SUBSTITUTE**. 2

> In the **Function Arguments** window, in the **Text** box, type A12. 3 It's the cell that contains the part of the text which you are going to replace.

> In the **Old_text**, type spreadsheet. 4 This is the word you want to change.

> In the **New_text**, type worksheet. 5 This is the new word.

> Click **OK**. Your text has been replaced. 6



## Multiple IF

Now that you know how to use functions, let's do something a little more complicated. Do you remember **IF**? Let's see how you can use it to get more results.

Type the following two tables in separate sheets as they are:

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Grades 1st semester | | | | | | | | |
| 2 | Students | Orals | Test | Test grades | Results | Or | And | Check | |
| 3 | Johanson | 85 | 82 | | | | | | |
| 4 | Peterson | 60 | 55 | | | | | | |
| 5 | Clarkson | 53 | 40 | | | | | | |
| 6 | Phils | 96 | 95 | | | | | | |
| 7 | Stewarts | 75 | 71 | | | | | | |
| 8 | | | | | | | | | |
| 9 | Cells greater than or equal to 60 | | | | | | | | |

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | Competition | | | |
| 2 | | Round 1 | Round 2 | Medals | |
| 3 | Team 1 | 5 | 6 | | |
| 4 | Team 2 | 9 | 9 | | |
| 5 | Team 3 | 7 | 8 | | |
| 6 | Team 4 | 4 | 5 | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |

Let's say you want to work with students' grades.

If a student has a score of more than 90, then he/she gets an "A",
otherwise (= else if) if he/she has more than 70 then he/she will get a "B",
otherwise (= else if) if he/she has more than 60 then he will get a "C".
Below 60 (= else) the student has the indication that he/she has to "Work Harder."

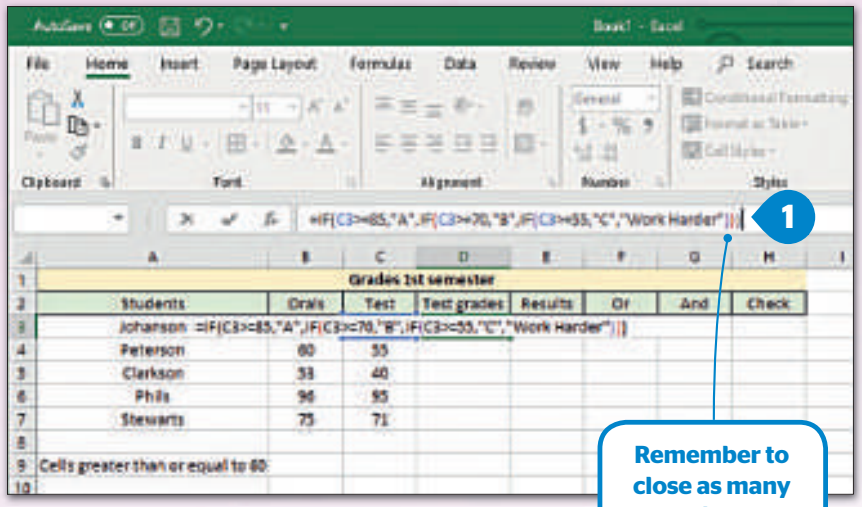
**To add this simple Multiple IF:**

> Click cell **D3**.

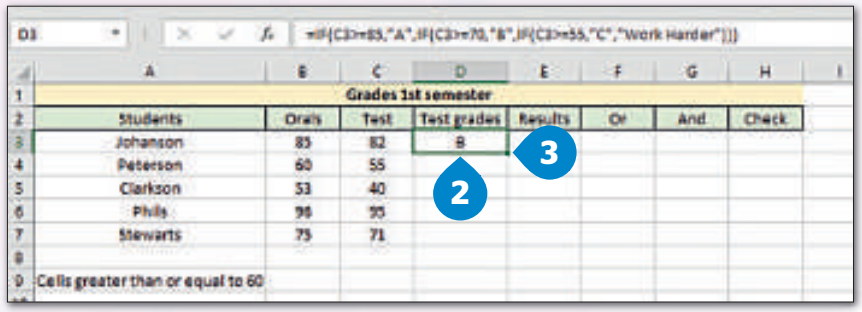
> In the **Formula** bar type `=IF(C3>=85,"A",IF(C3>=70,"B",IF(C3>=55,"C","Work Harder")))` 1

> Press **Enter ↵**. 2

> Click the fill handle 3 and use the **Autofill** tool to fill the rest of the cells with data. 4




***Microsoft Excel 2007 and later versions allow you up to 67 levels of Multiple IF.***




| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Grades 1st semester | | | | | | | | |
| 2 | Students | Orals | Test | Test grades | Results | Or | And | Check | |
| 3 | Johanson | 85 | 82 | B | | | | | |
| 4 | Peterson | 60 | 55 | C | | | | | |
| 5 | Clarkson | 53 | 40 | Work Harder | | | | | |
| 6 | Phils | 96 | 95 | A | | | | | |
| 7 | Stewarts | 75 | 71 | B | | | | | |
| 8 | | | | | | | | | |
| 9 | Cells greater than or equal to 60 | | | | | | | | |

4

To make multiple **IF** a little more complex than the previous one, let's add a multiple **IF** on cell D3 of the sheet2 which will show the following:

If the total score is equal to or greater than 18, then the team will take a gold medal, when (=else if) the score is more than 15, then the team will take a silver medal, when (=else if) the score is more than 10, then the team will take a bronze medal, and if it's under 10 (=else), the team will not take a medal.

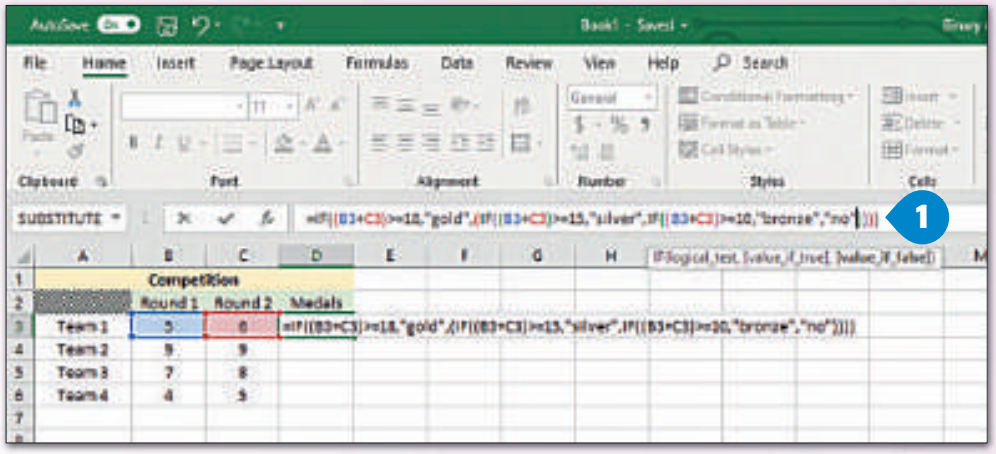
## To add **Multiple IF**:

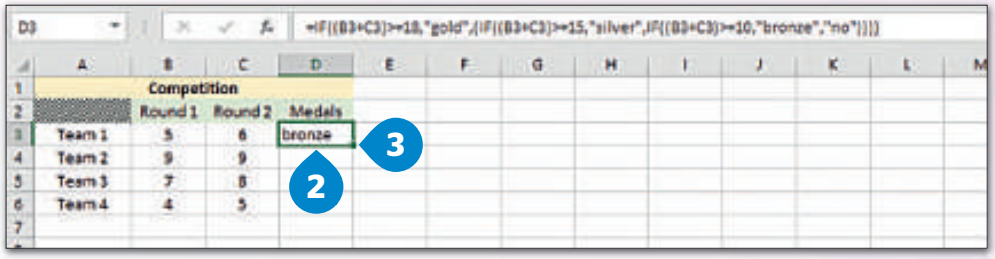
> Click cell **D3** of **sheet2**.

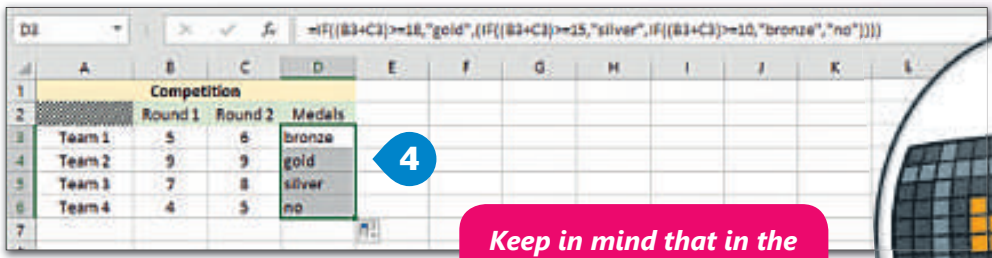
> In the **Formula** bar, type `=IF((B3+C3)>=18,"gold",(IF((B3+C3)>=15,"silver",IF((B3+C3)>=10,"bronze","no"))))`. 1

> Press **Enter** ↵. 2

> Click the fill handle 3 and use the **Autofill** tool to fill the rest of the cells. 4




***Keep in mind that in the criteria boxes you can type a single word or a small phrase, or you can do complex calculations and even use other functions as well.***

Finally, let's add a multiple **IF** that makes use of the **AVERAGE** formula to cell **E3** of **sheet1**, which will show the following:
If the average grade is more than 80, then the student will get the description "excellent student", when (=else if) the average grade is more than 60, then he/she will get the description "mediocre student", otherwise (=else if) he/she will get the description "poor student".

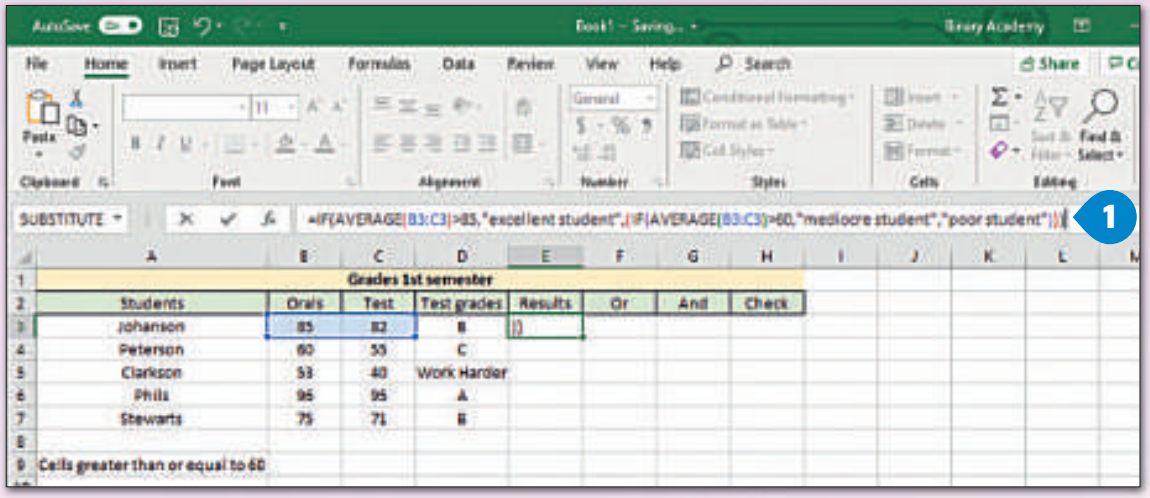
## To combine a multiple IF statement with the AVERAGE function:

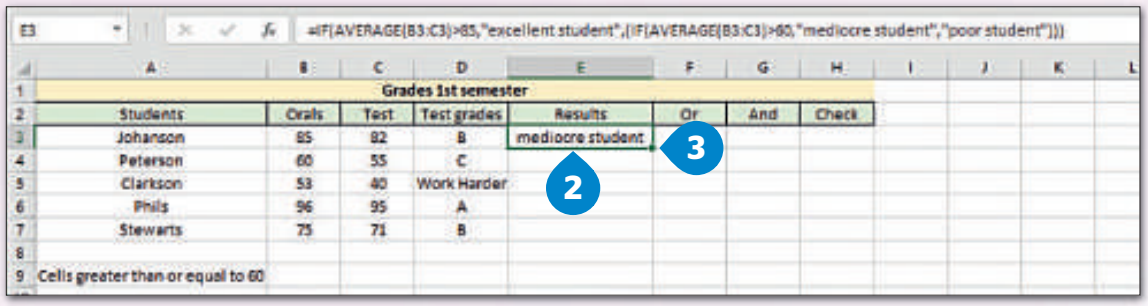
> Click cell **E3**.

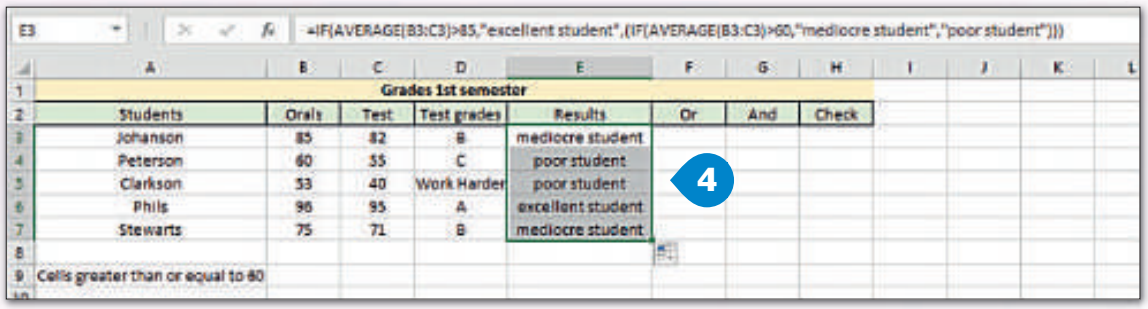
> In the **Formula** bar, type `=IF(AVERAGE(B3:C3)>85,"excellent student",(IF(AVERAGE(B3:C3)>60,"mediocre student","poor student")))`. 1

> Press **Enter** ↵. 2

> Click the fill handle 3 and use the **Autofill** tool to fill the rest of the cells. 4




**BE SAFE**

**To protect your neck or back from injury, remember to sit properly when you work on your computer, especially when it's for many hours. "Mens sana in corpore sano" as the ancient Roman and Greek philosophers said - a healthy mind in a healthy body.**

## IF and AND together

**IF** the orals grades are greater than or equal to 55 **AND** the test grades are greater than or equal to 55, then the student will pass, otherwise, the student will fail.

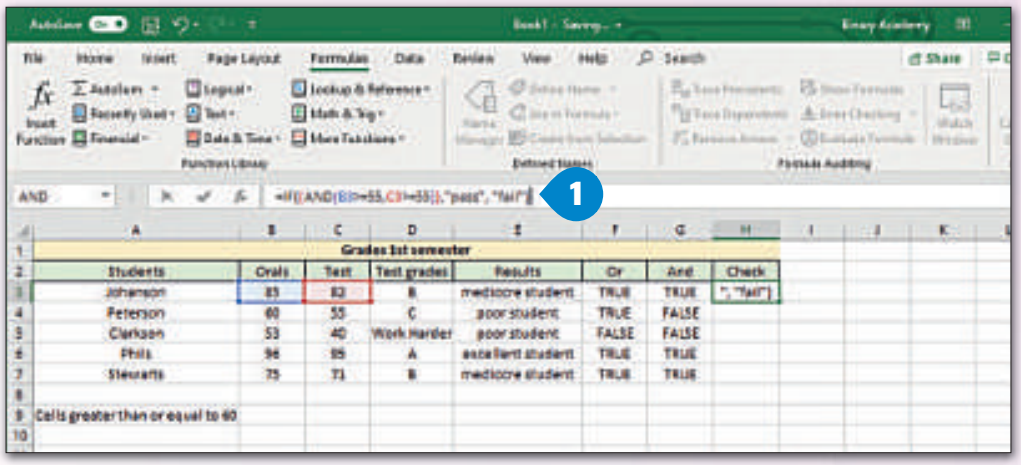
### To combine a multiple IF with AND:

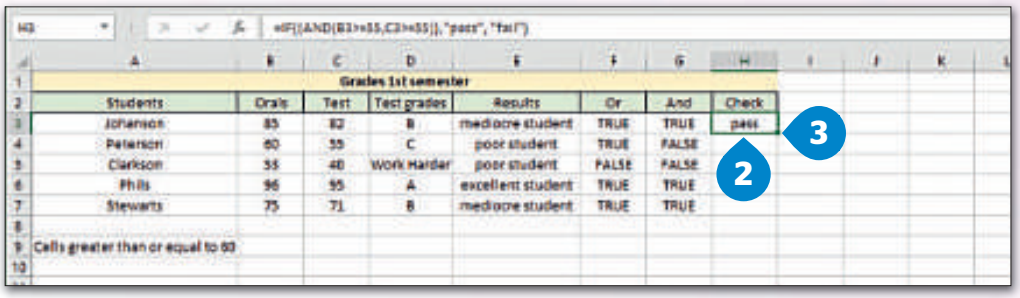
> Click **H3**.

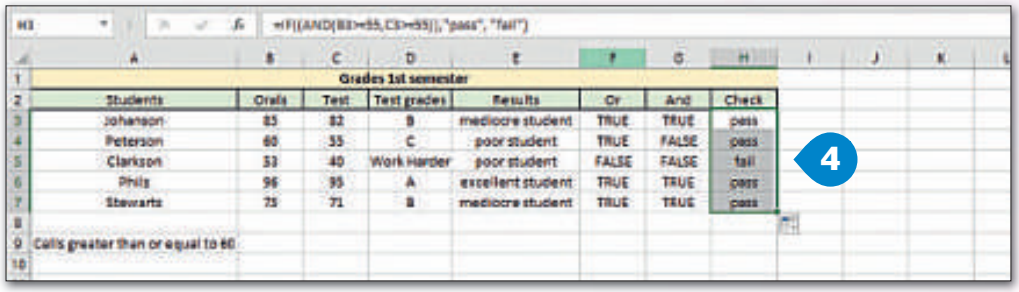
> In the **Formula** bar, type `=IF((AND(B3>=55,C3>=55)),"pass", "fail")`. 1

> Press **Enter** ↵. 2

> Click the fill handle 3 and use the **Autofill** tool to fill the rest of the cells. 4



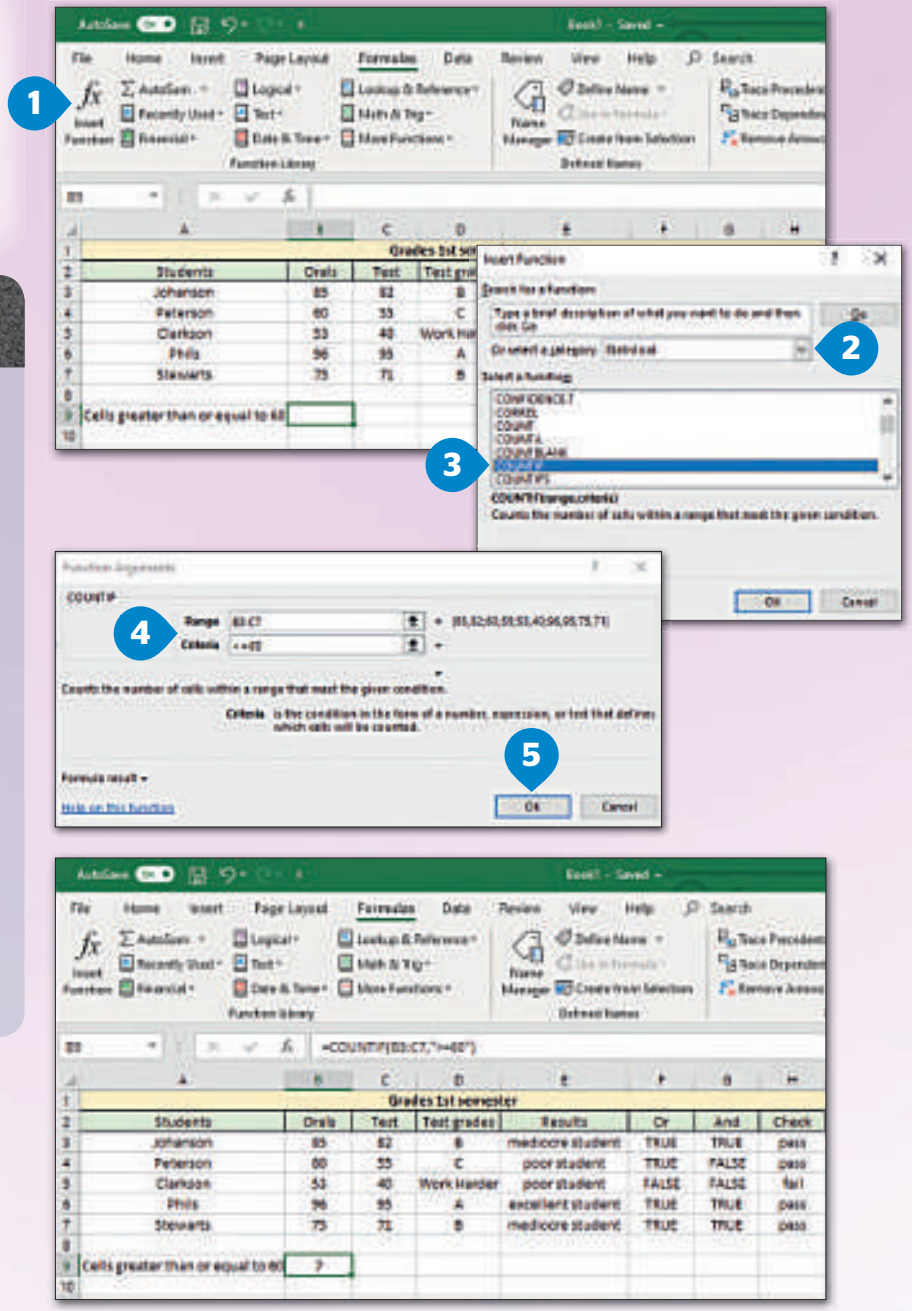




**SMART TIP**

**Many countries use a comma as a decimal separator, while others use a dot. Find which decimal separator is used in your country here: http://en.wikipedia.org/wiki/Decimal_mark**

## COUNTIF

If you have a table and you want to find out how many cells have a value of more than 60, then you can use the **COUNTIF** function.




### To use the COUNTIF function:

> Click the cell you want to add your function to, in this example, cell **B9**.

> On the **Formulas** tab in the **Function Library** group, click **Insert Function**. 1

> In the **Or select a category** list, click **Statistical**. 2

> Click **COUNTIF**. 3

> In the **Function Arguments** window, in the **Range** box, type `B3:C7` and in the **Criteria**, type `>=60`. 4

> Click **OK**. 5



## hands on!

***Type the following table and fill in the cells with the appropriate functions. In cell I3 use the AND function to check if cells C3 to E3 have values less than or equal to 75 and in cell H3 to find out how many cells have a value of more than 65.***

| | A | B | C | D | E | F | G | H | I |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | Results | | | | | | |
| 2 | Last Name | First Name | 1st semester | 2nd semester | 3rd semester | Average | Full name | Count | Check |
| 3 | Philips | John | 86 | 88 | 89 | | | | |
| 4 | Papas | Alex | 52 | 56 | 53 | | | | |
| 5 | Morrison | Jim | 86 | 90 | 96 | | | | |
| 6 | James | Tim | 56 | 60 | 75 | | | | |
| 7 | Peterson | Anna | 68 | 67 | 65 | | | | |
| 8 | Adams | Tom | 67 | 73 | 74 | | | | |
| 9 | | | | | | | | | |

TASK 3

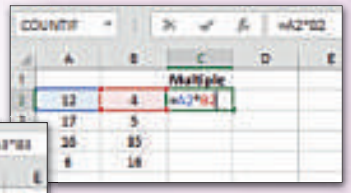
# References

As you know, a cell takes its name from the column letter and row number to which it belongs. A cell reference is the "address" of the cell and identifies its location. When you want to copy the same formula to new cells, you can use the relative and absolute references. See how below!

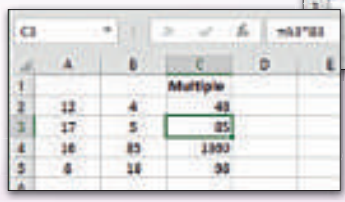
## Relative Reference

Relative Reference is the cell reference. When you copy a cell that has a formula, the formula changes automatically. The change depends on the relative position of rows and columns.

For example, type the contents of columns A and B below and in cell **C2**, type **=A2*B2**.



If you copy the formula **A2*B2** to cell **C3**, it will become **A3*B3**.

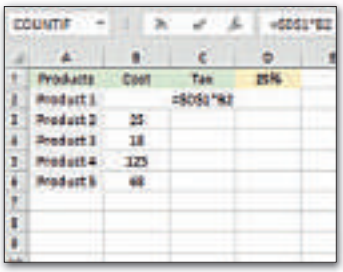


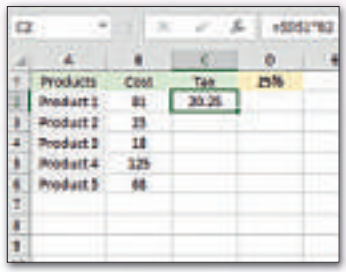
## Absolute Reference

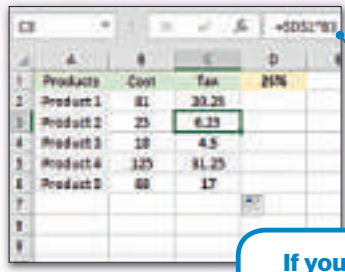
Sometimes you want to keep a cell, a row or a column constant when copying a formula. You have to declare this when you create the formula by using the **$** (dollar sign). This way, you create an absolute reference which doesn't change when it's copied or "filled".

| | |
|---|---|
| $E$1 | The cell doesn't change when it is copied. Both the column and the row remain the same. |
| $E1 | The row changes when it is copied, but the column remains the same. |
| E$1 | The column changes when it is copied, but the row remains the same. |

For example, type the contents of columns A and B below and in cell **C2**, type **=$D$1*B2**.







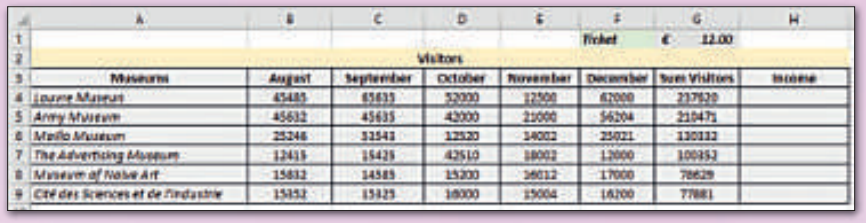
***Notice that when the number of the row changes, the cell that has the $ sign stays the same.***

**If you fill the formula $D$1*B2 into column C, the formula will change to become $D$1*B3, $D$1*B4, etc.**

**SMART TIP**

**An easy way to remember how to use the dollar sign is to think about how you want to use the Autofill tool. If you want to use it horizontally, then type the dollar sign in front of the letter (column). If you want to use it vertically, type it in front of the number (row).**

Let's see another example.
Type the following table:



## To create and copy a formula using references:

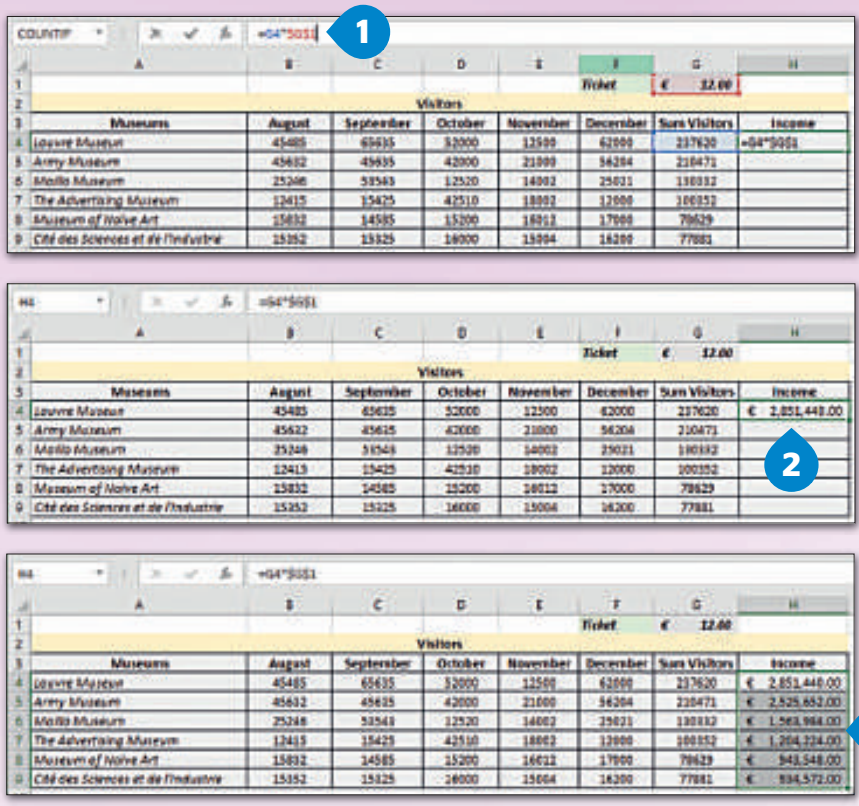
> Click cell **H4**.

> In the **Formula** bar, type the formula **=G4*$G$1**. 1

> Press **Enter** ↵. 2

> Click the cell **H4** again and use the **Autofill** tool. 3

***You can use the Copy, Paste commands as well, instead of the Autofill tool.***



## To create and copy a formula using row absolute reference:

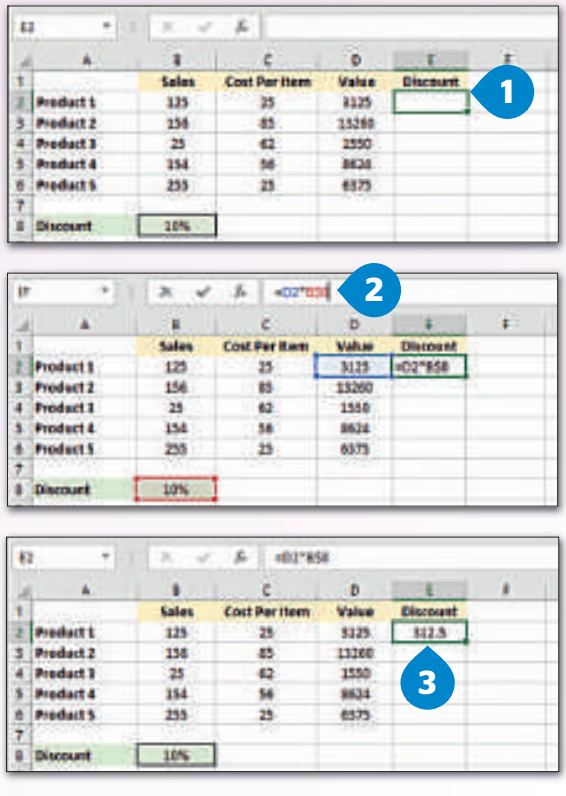
> Type this table and click **E2**. 1

> In the **Formula** bar, type **=D2*B$8**. 2

> Press **Enter** ↵ to calculate the formula. 3

> Click cell **E2** and **Autofill** cells **E3:E6**. 4

***You can click the cell you want to lock and press F4 to apply an absolute reference.***



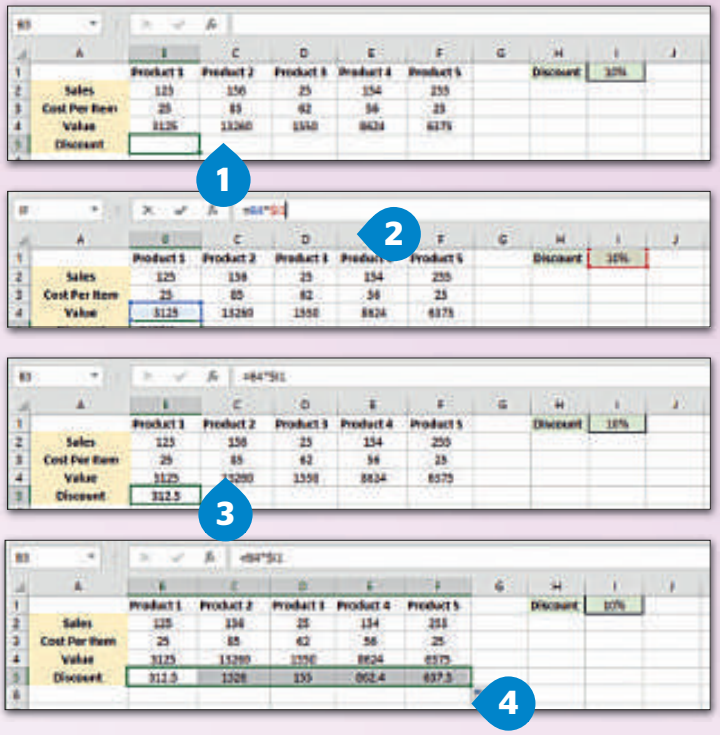
**To create and copy a formula using column absolute reference:**

> Type this table and click **B5**. 1

> In the **Formula** bar, type `=B4*$I1`. 2

> Press **Enter** ↵. 3

> Use the **Autofill** tool to complete the table. 4




## IF and references

It's time to do something a little more difficult. You are going to combine the **IF** function with an absolute reference. Before you start, let's find the **Total Value**, which is the **Value** minus the **Discount** and find the **Average Value** in cell **F8**.

**IF** the **Total Value** is more than the **Average Value**, then it is above average, if it is less (**ELSE**) then it is below average.

**To combine IF with references:**

> Click **G2**. 1

> On the **Formulas** tab, in the **Function Library** group, click **Insert Function**. 2

> In the **Insert Function** window, in the **Or select a category** list, click **All**. 3

> Click **IF**. 4

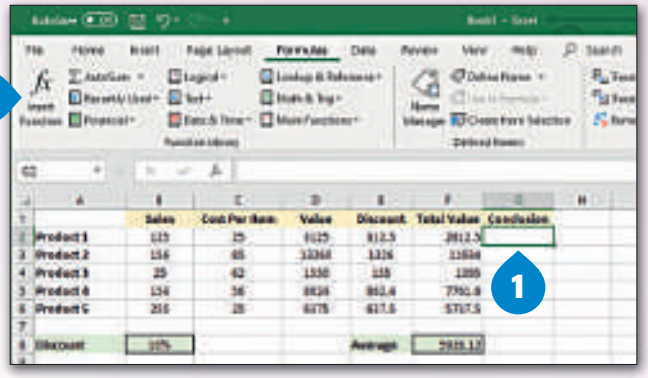
> In the **Function Arguments** window, type `F2>$F$8` in the **Logical_test** box. 5

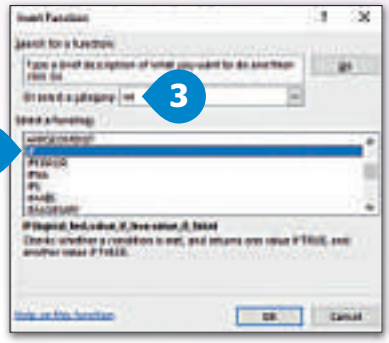
> In the **Value_if_true**, type `"Above Average"`. 6

> In the **Value_if_false** type `"Below Average"`. 7

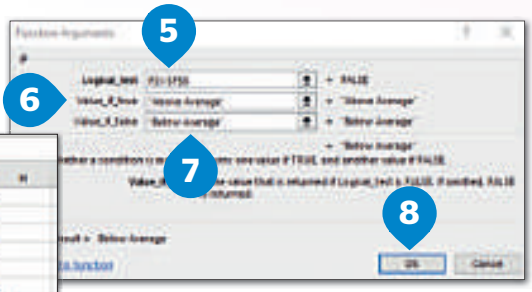
> Click **OK**. 8

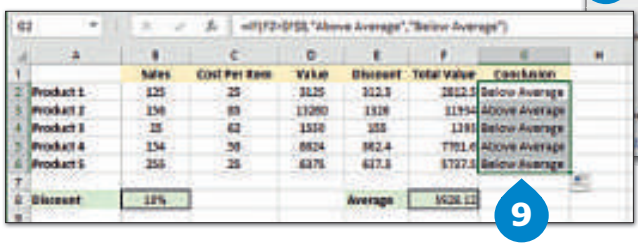
> Click cell **G2** and drag the fill handle to fill cells **G3:G6**. 9



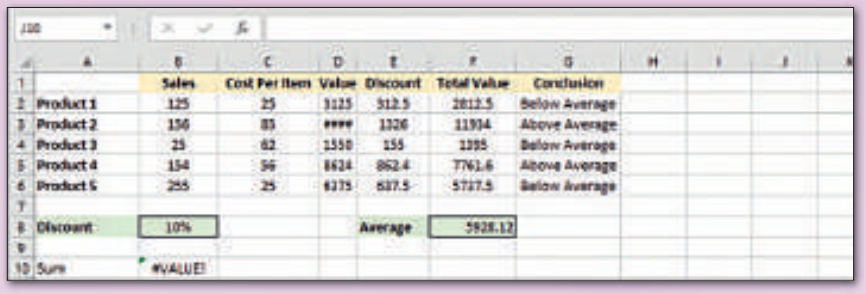

***The functions are displayed in alphabetical order.***



## Common error messages

Sometimes when you type a formula, you may make mistakes. Error messages appear on your worksheet.



| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | | Sales | Cost Per Item | Value | Discount | Total Value | Conclusion |
| 2 | Product 1 | 125 | 25 | 3125 | 312.5 | 2812.5 | Below Average |
| 3 | Product 2 | 156 | 85 | ##### | 1326 | 11934 | Above Average |
| 4 | Product 3 | 25 | 62 | 1550 | 155 | 1395 | Below Average |
| 5 | Product 4 | 154 | 56 | 8624 | 862.4 | 7761.6 | Above Average |
| 6 | Product 5 | 255 | 25 | 6375 | 637.5 | 5737.5 | Below Average |
| 7 | | | | | | | |
| 8 | Discount | 10% | | | Average | 5928.12 | |
| 9 | | | | | | | |
| 10 | Sum | #VALUE! | | | | | |

***The most common error messages are:***

| | |
|---|---|
| ###### | This "message" appears when a column with numerical contents is not wide enough to display all of its content. You can correct it by increasing the width of the column to fit everything correctly. |
| #DIV/0! | This error message appears when you divide something by 0. You can correct it by changing the divisor in the function or formula so it is not zero or blank. |
| #NAME? | This error message appears when you have typed a wrong formula and Microsoft Excel cannot recognize it. You can correct it by typing the formula's correct name. In the example above, cell B7 displays this error. |
| #VALUE! | This error appears when a mathematical formula includes cells that contain text as well as numbers. You can correct it by removing references to cells containing text. |

***You can correct the mistake by clicking the button that appears next to the cell that displays the message and choosing Edit in Formula bar.***

# hands on!

***Type the following table and fill in the cells with the appropriate function. In cells 14:10, remember to use a function with an absolute reference.***

| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | Ticket | $ 7.00 | | | |
| 2 | | | | | | City Cinema | | | | |
| 3 | Movies | January | February | March | April | May | Sum Viewers | Average Viewers | Income | |
| 4 | Adventures | 36524 | 15420 | 52000 | 82541 | 21115 | | | | |
| 5 | Comedies | 45858 | 36452 | 42000 | 45452 | 20365 | | | | |
| 6 | Action | 36458 | 52645 | 12520 | 15234 | 35122 | | | | |
| 7 | Romance | 31092 | 15345 | 42510 | 25100 | 15334 | | | | |
| 8 | Science Fictior | 26734 | 56353 | 15200 | 24542 | 15454 | | | | |
| 9 | Crime | 15856 | 41312 | 16000 | 35244 | 85600 | | | | |
| 10 | Drama | 15455 | 15205 | 15552 | 455 | 15485 | | | | |
| 11 | | | | | | | | | | |

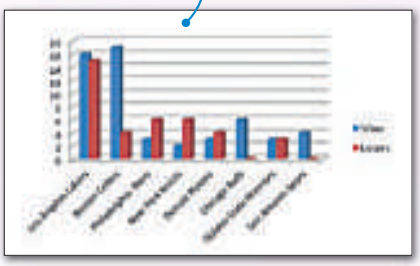
TASK 4

# Advanced charts

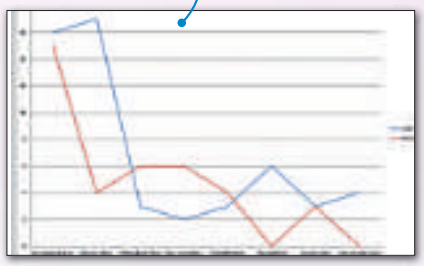
## Chart types

To make your data presentations more lively and interesting, you can use charts and graphs.

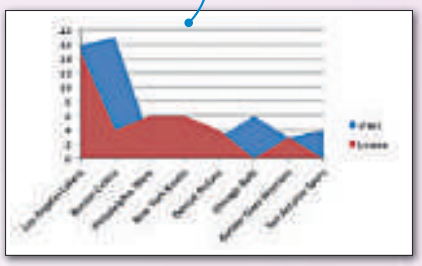
The **Column/Bar Chart** is used to illustrate comparisons between a series of data. In a column chart, categories appear horizontally (x-axis) and numeric values appear vertically (y-axis). The opposite happens in a bar chart which is one of the most commonly used chart types.



The **Line Chart** is used to display trends. It shows the changes in data over a period of time. Numeric values always appear vertically (y-axis) and time horizontally (x-axis). It is suitable for showing data for a large number of groups.

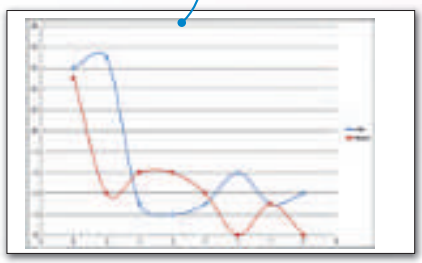


The **Area Chart** is like a Line Chart except that the area below the plotted line is filled in with color. It is used to display trends over time or some other category and it is suitable for showing data for a limited number of groups.

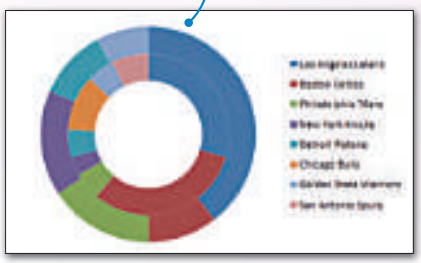


The **Pie Chart** is used to display only one series of data. It shows the relationship of the parts to the whole. You have to pay attention. It is suitable for showing data for one group.


The **Scatter Chart** is used to display the values of two series and to compare them over time. It is like a line graph, except that the plotted line shows data points. It is suitable for showing the relationship between two variables.



The **Doughnut Chart** is used to display data as doughnut slices and is similar to a Pie Chart.



**BE SAFE**

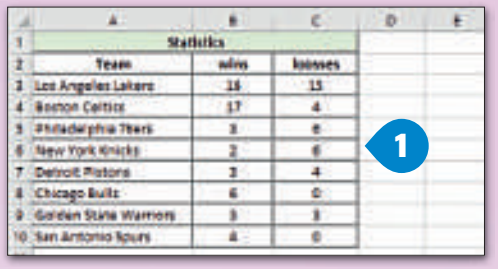
**Don't forget to save your work frequently and always backup your files to another place!**

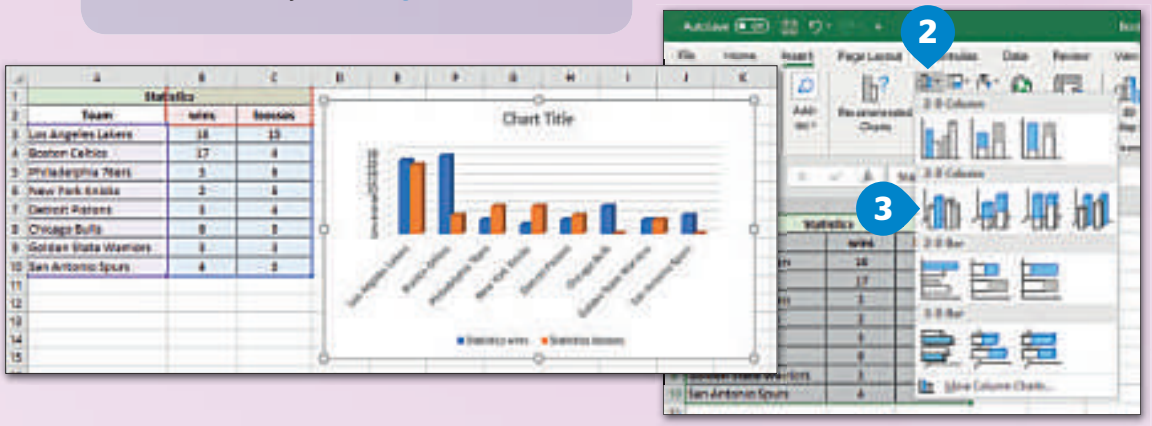
**To add a chart:**

> Type this 1 and select cells **A2:C10**.

> On the **Insert** tab, in the **Charts** group, click **Column**. 2

> In the list of column chart sub-types, click the one you like. 3




## Modify chart

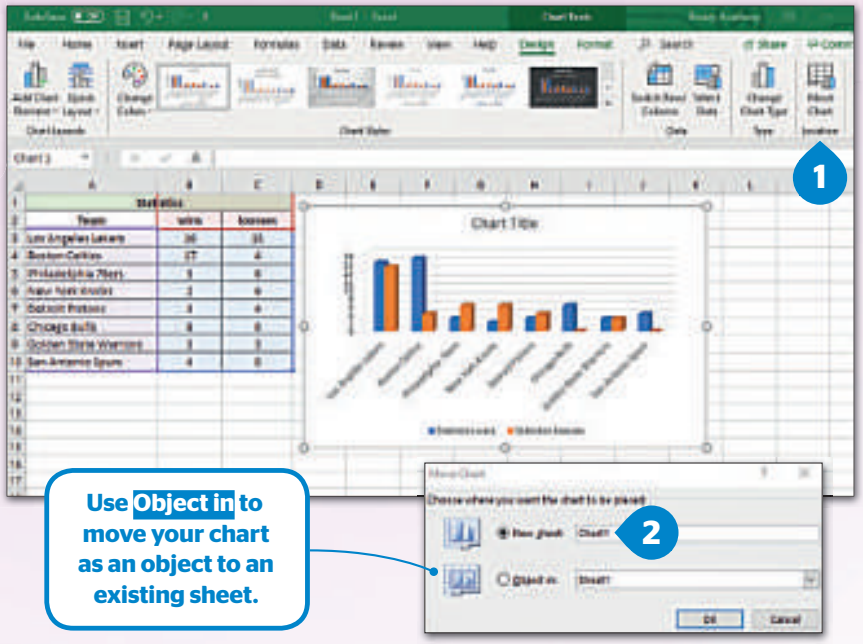
After you create a chart, you can modify it. For instance, you may want to change its titles or its type.

**To move the chart:**

> Click the **Chart**.

> On the **Design** tab in the **Location** group, click **Move Chart**. 1

> You can move your chart to a new sheet or wherever you want. 2

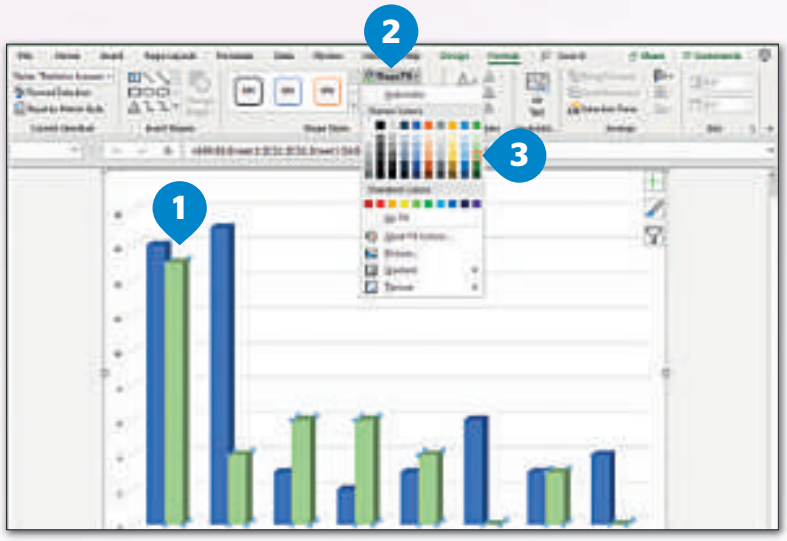



**To change the Shape Fill of the chart:**

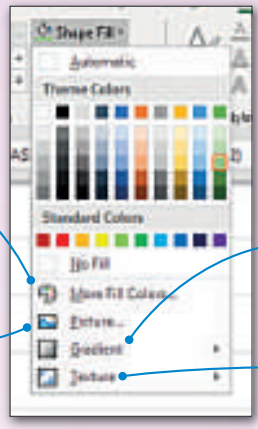
> Click the shape you want to make changes to. For example select "wins". 1

> On the **Format** tab, in the **Shape Styles** group, click **Shape Fill**. 2

> Click the color of your choice. 3



*You can choose to have your chart on a new sheet. In that case your chart will take up the whole spreadsheet.*




Use **More Fill Colors...** when you want to fill the shape with a color which is not available in the **Theme Colors** list.

Use **Picture** when you want to fill the shape with a picture.

Use **Gradient** when you want to fill the shape with a gradient color.

Use **Texture** when you want to use a texture fill.

## To change the titles:

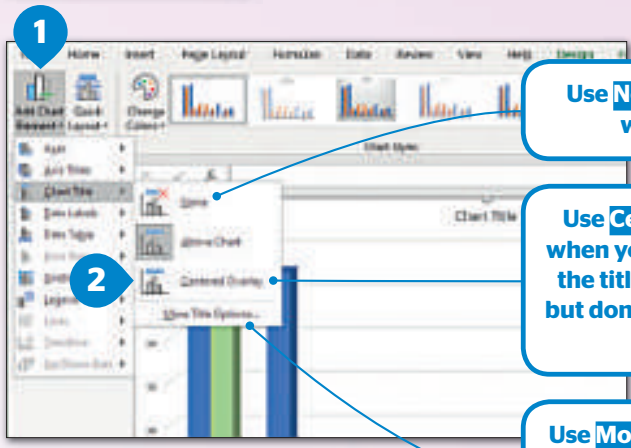
> Click the **Chart** to select it.

> On the **Design** tab, in the **Chart Layouts** group, click **Add Chart Element**. 1

> Click **Chart Title** and then select **Centered Overlay**. 2

> Double-click the **Chart Title**, delete the words and type `Statistics`. 3

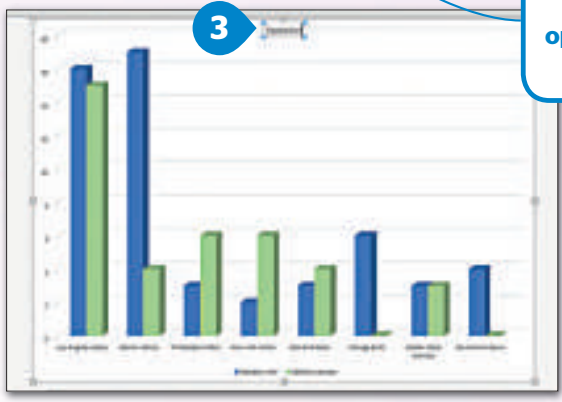
> Click anywhere outside the chart title.




Use **None** if you don't want a title.

Use **Centered Overlay** when you want to center the title over the chart, but don't want to change the size.

Use **More Title Options...** when you want more options about filling, line style, etc.



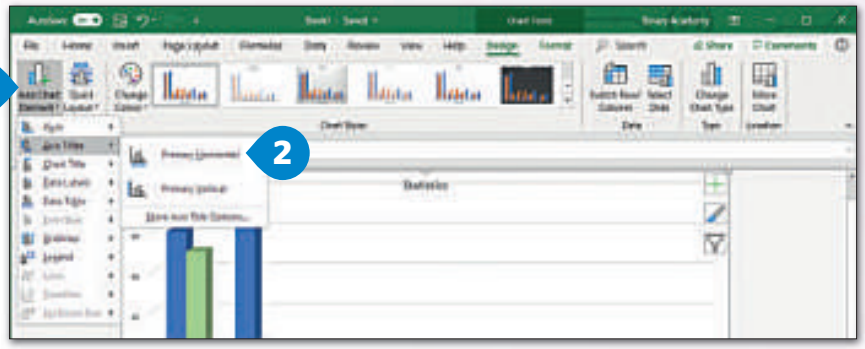

## To change the format of an axis:

> On the **Design** tab in the **Chart Layouts** group, click **Add Chart Element**. 1

> In the **Axis Title** pop-out menu, click **Primary Horizontal**. 2

> Double-click **Axis Title**, delete the words and type `Teams`. 3

> Click anywhere outside the axis title.




## Mini chart

Sometimes you just want a graphical representation of your data inside a chart. To do this, you can use mini charts.

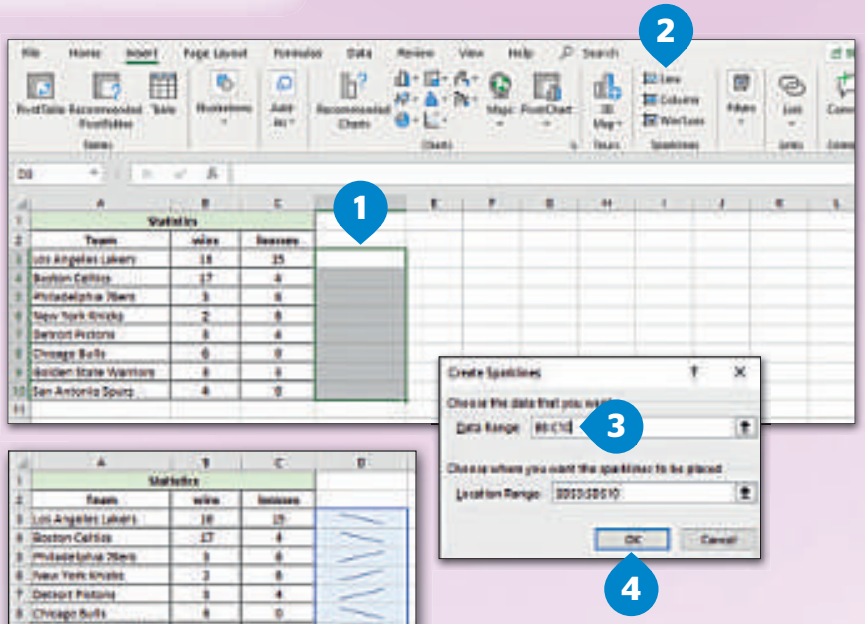
### To add a mini chart:

> Select the cells you want your mini chart to be displayed in. For example, select **D3:D10**. 1

> On the **Insert** tab, in the **Sparklines** group, click **Line**. 2

> In the **Create Sparklines** window, in the **Data Range** box, type `B3:C10`. 3 This contains the data you want to represent in a graph.

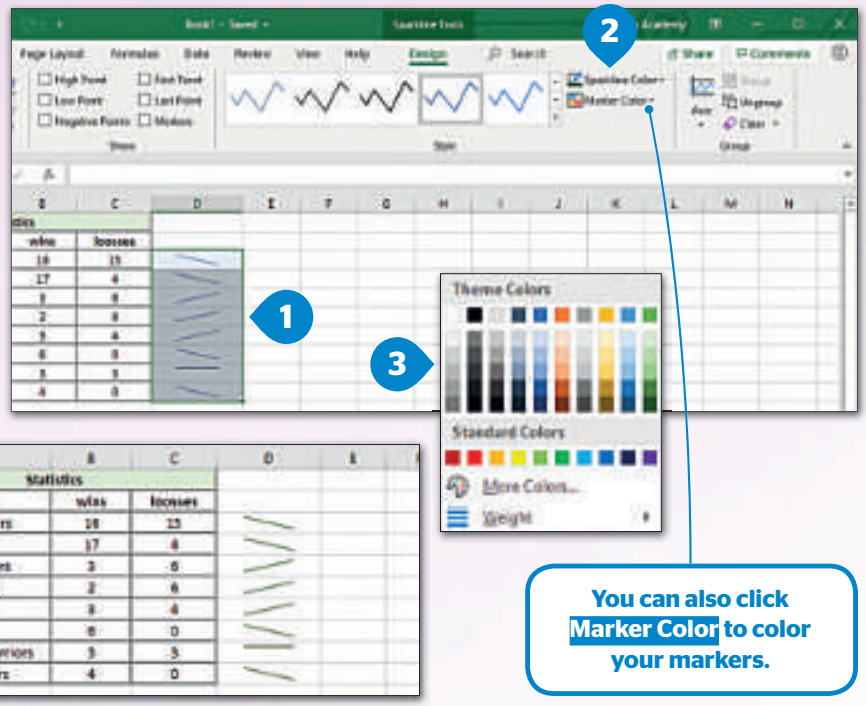
> Click **OK**. 4




### To modify a mini chart:

> Select the cells **D3:D10** where the mini chart is. 1

> On the **Design** tab, in the **Style** group, click **Sparkline Color** 2 and click the color you want. 3




You can also click **Marker Color** to color your markers.

**SMART TIP**

**Always double-check the formulas in your spreadsheet. A tiny mistake may cause a huge problem!**

## Conditional formatting

When you want to change the way your cells look based on what they contain, you can apply conditional formatting. First, you specify certain conditions, and your cell appearance will change to meet these conditions.

**To apply Conditional Formatting:**

> Select the cells which you want to apply conditional formatting to, for example **B3** to **C10**. 1

> On the **Home** tab, in the **Styles** group, click **Conditional Formatting**. 2

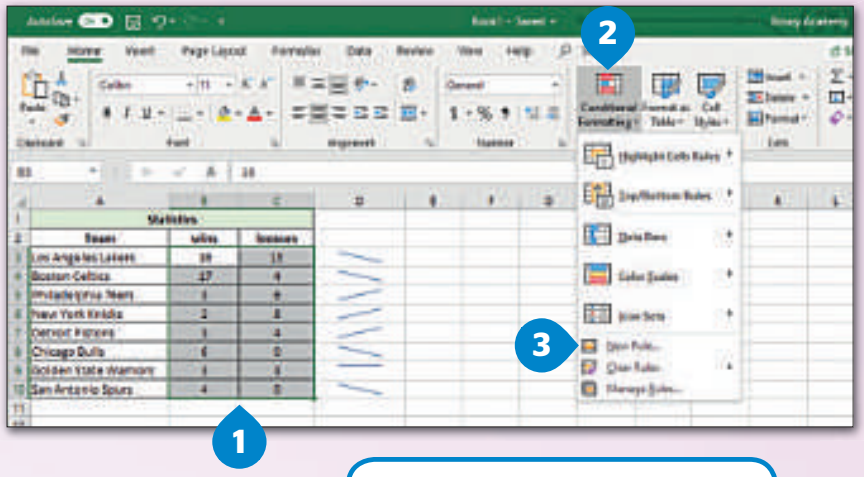
> Click **New Rule.** 3

> You can select the criteria you want to use, for example click **Format only cells that contain**. 4

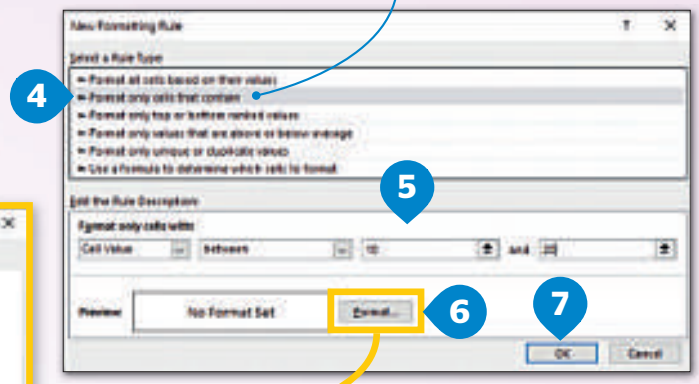
> Type ***10*** to ***20***. 5

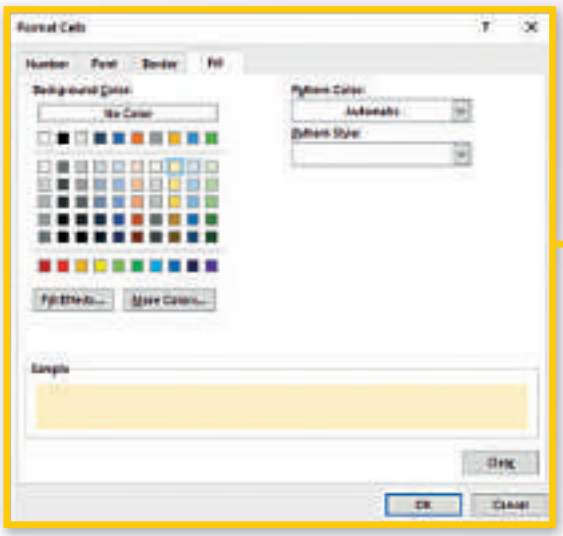
> Click **Format** and format the cells accordingly. 6

> Click **OK**. 7




Use **Format only cells that contain** to create rules and format your cells based on these.



| | A | B | C | D |
|---|---|---|---|---|
| 1 | Statistics | | | |
| 2 | Team | wins | loosses | |
| 3 | Los Angeles Lakers | 16 | 15 | |
| 4 | Boston Celtics | 17 | 4 | |
| 5 | Philadelphia 76ers | 3 | 6 | |
| 6 | New York Knicks | 2 | 6 | |
| 7 | Detroit Pistons | 3 | 4 | |
| 8 | Chicago Bulls | 6 | 0 | |
| 9 | Golden State Warriors | 3 | 3 | |
| 10 | San Antonio Spurs | 4 | 0 | |
| 11 | | | | |

## hands on!

***Type the following table; add a pie and a column chart. Change the fill colors and the axis names in the chart.***

| | A | B | C |
|---|---|---|---|
| 1 | Pollutant | Emissions in 2007 (Ktonnes) | Emissions ceiling target in 2010 (Ktonnes) |
| 2 | NOx | 1486 | 1167 |
| 3 | SO2 | 591 | 585 |
| 4 | NMVOCs | 942 | 12 |
| 5 | NH3 | 289 | 297 |
| 6 | | | |

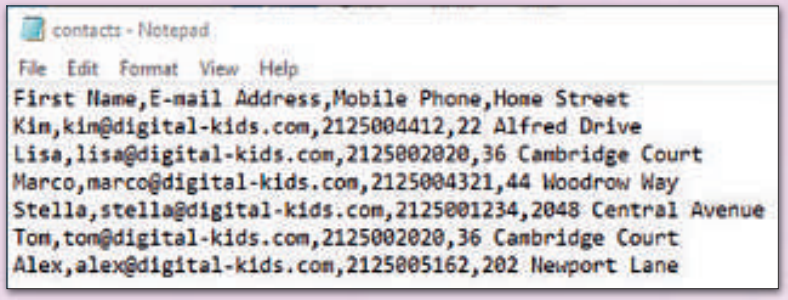
TASK 5

# Import and export data

A Comma-Separated Values (CSV) file is a simple file format that is widely used by scientists and businessmen. As its name suggests, the values in each row of data are separated by a comma or a tab. CSV files are used to transfer large amounts of data to and from different companies or applications.

Sometimes, you will need to import data from a CSV file to **Microsoft Excel**. Let's create a CSV file. Open your **Notepad** and type the following text.

Save the file under the name **contacts.csv**

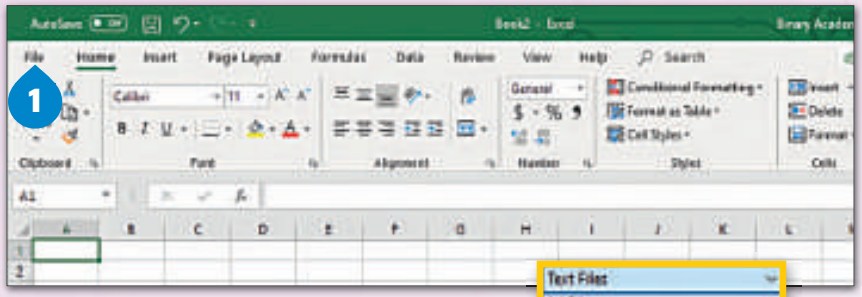


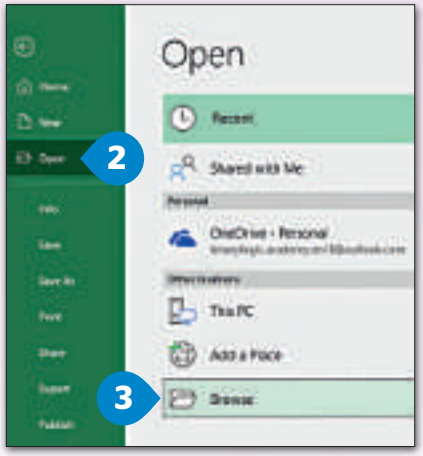

**To open a CSV file in Excel:**

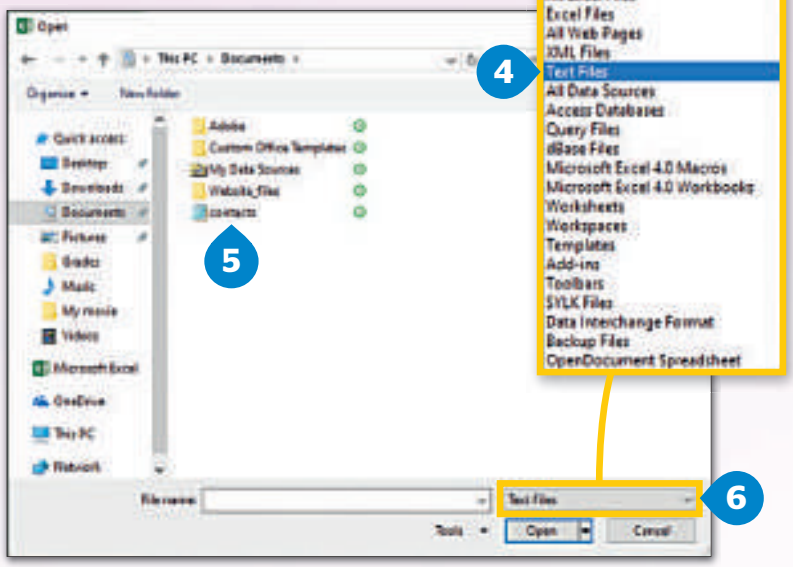
> Click the **File** tab 1 and then click **Open**. 2

> Click Browse 3 and from the **Open** window select **Text Files** from the drop-down list . 4

> Select the **CSV** file you want 5 and click **Open**. 6




| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | First Name | E-mail Address | Mobile Phone | Home Street | | |
| 2 | Kim | kim@digital-kids.com | 2125004412 | Alfred Drive | | |
| 3 | Lisa | lisa@digital-kids.com | 2125002020 | 36 Cambridge Court | | |
| 4 | Marco | marco@digital-kids.com | 2125004321 | 44 Woodrow Way | | |
| 5 | Stella | stella@digital-kids.com | 2125001234 | 2048 Central Avenue | | |
| 6 | Tom | tom@digital-kids.com | 2125002020 | 36 Cambridge Court | | |
| 7 | Alex | alex@digital-kids.com | 2125005162 | 202 Newport Lane | | |
| 8 | | | | | | |

***Using the Open command this way the CSV file does not change its format.***

If you want to store lots of information, you can convert your text to a table.

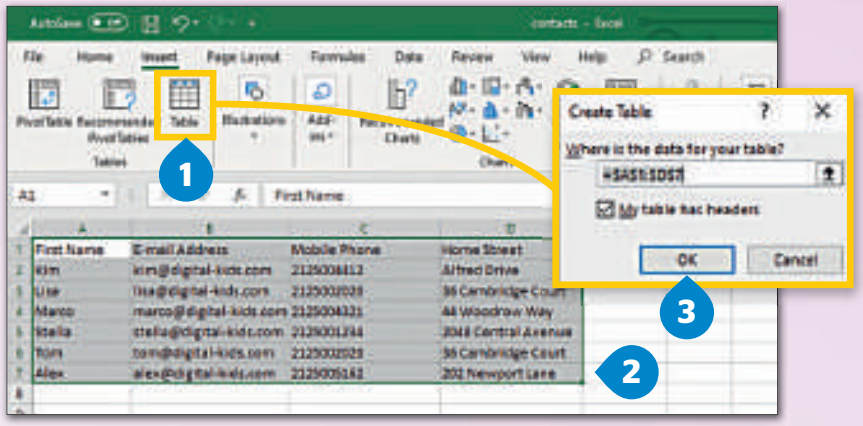
## To convert text to a table:

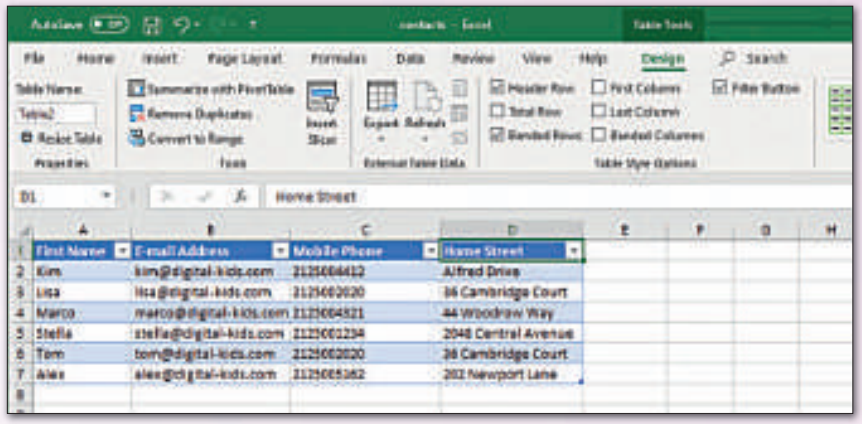
> Select the cells you want to convert to a table.

> On the **Insert** tab, in the **Tables** group, click **Table**. 1

> Select cells **A1** to **D7** (the text you have just imported). 2

> Click **OK**. 3



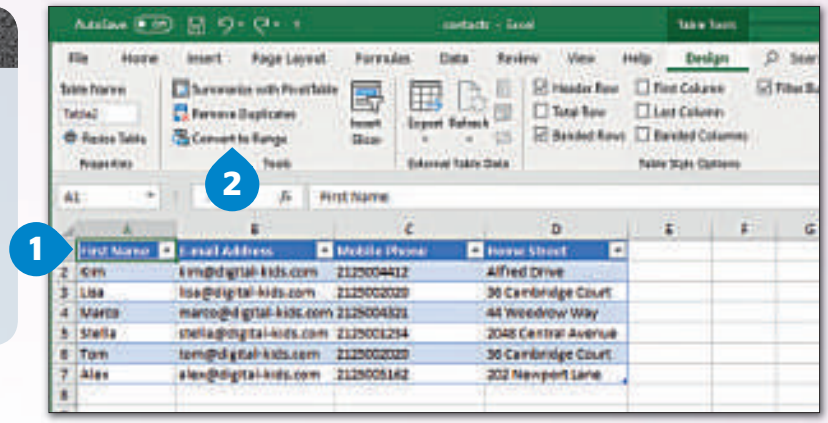



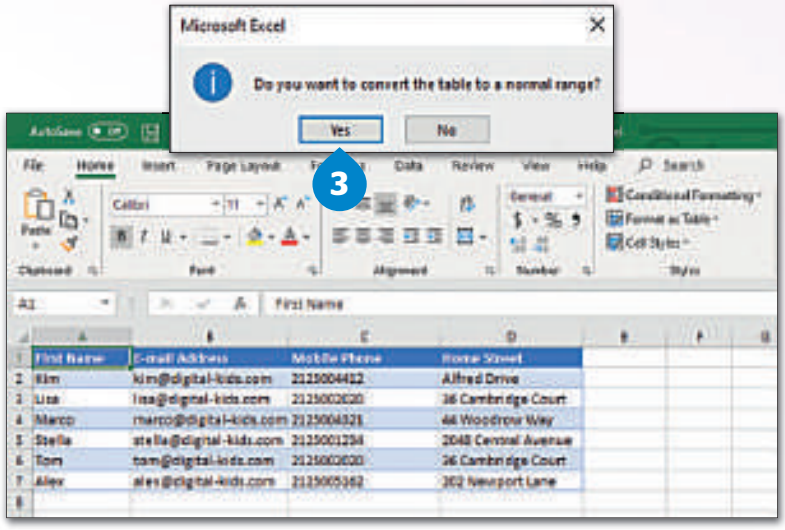
## To convert a table to text:

> Click the table. 1

> On the **Design** tab, in the **Tools** group, click **Convert to Range**. 2

> Click **Yes** to confirm the conversion. 3



You can also import data from a CSV file into the existing or a new Excel worksheet. Unlike the previous method, this is helpful because it does not simply open CSV in Excel but data can be formatted and analyzed more easily.

## Import data from a TXT or CSV file:

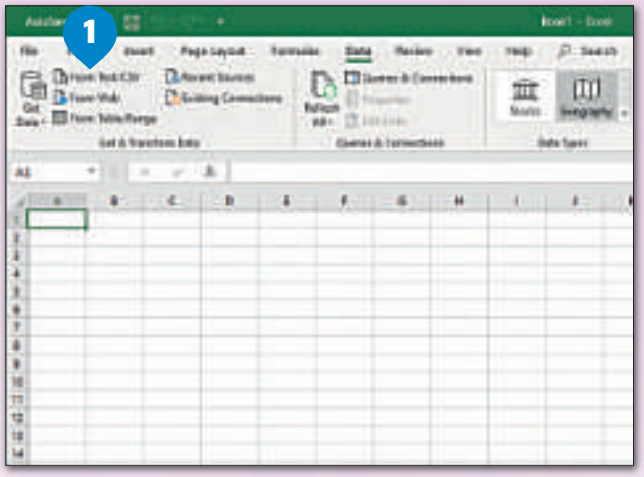
> On the **Data** tab, in the **Get & Transform Data** group, click **From Text/CSV**. 1

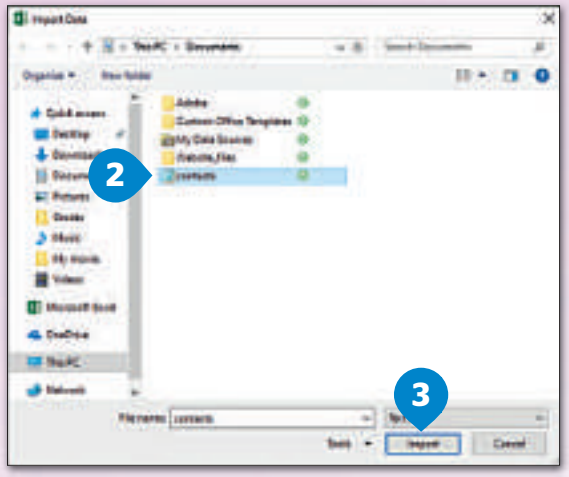
> Locate and click **contacts.csv**. 2

> Click **Import**. 3 The **contacts.csv** window will appear.

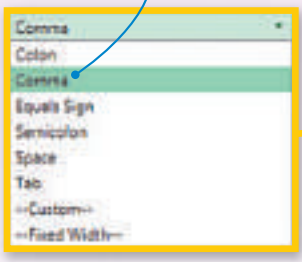
> Click **Load**. 4 to import a delimited file.

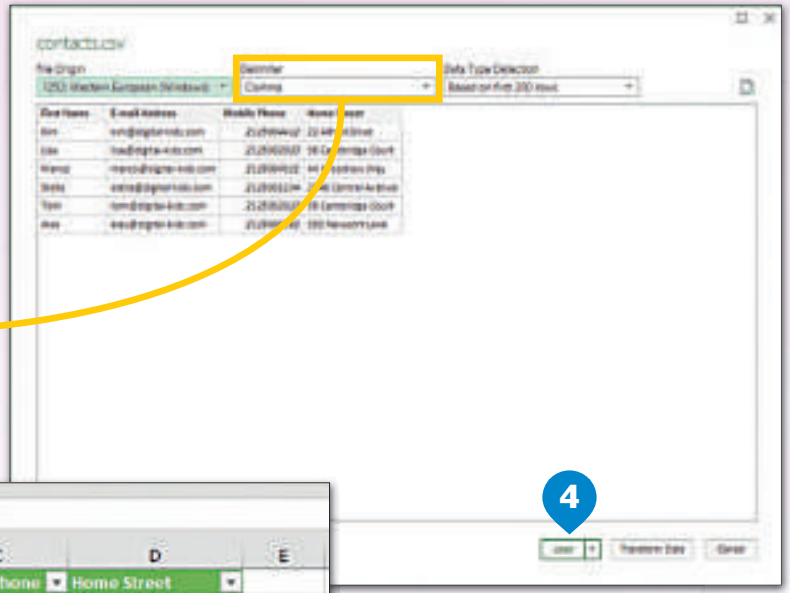
***Other than and commas, in a CSV file, columns may be separated by other characters such as ";"or "." or a space.***




**Delimiters defines the character that separates values in your text file.**




| First Name | E-mail Address | Mobile Phone | Home Street |
|---|---|---|---|
| Kim | kim@digital-kids.com | 2125004412 | Alfred Drive |
| Lisa | lisa@digital-kids.com | 2125002020 | 36 Cambridge Court |
| Marco | marco@digital-kids.com | 2125004321 | 44 Woodrow Way |
| Stella | stella@digital-kids.com | 2125001234 | 2048 Central Avenue |
| Tom | tom@digital-kids.com | 2125002020 | 36 Cambridge Court |
| Alex | alex@digital-kids.com | 2125005162 | 202 Newport Lane |

**When you import a csv file it is automatically coverted to a table.**

**SMART TIP**

**You can also convert to range by right-clicking the table, and clicking Table.**

## Export data

Sometimes you want to store the data that you have created with **Microsoft Excel** in a format that can be understood by other applications. To do this, you can export them to a CSV file.

For example you have the spreadsheet below:

**To export data from Microsoft Excel to a TXT or CSV file:**

> Click the **File** tab. 1

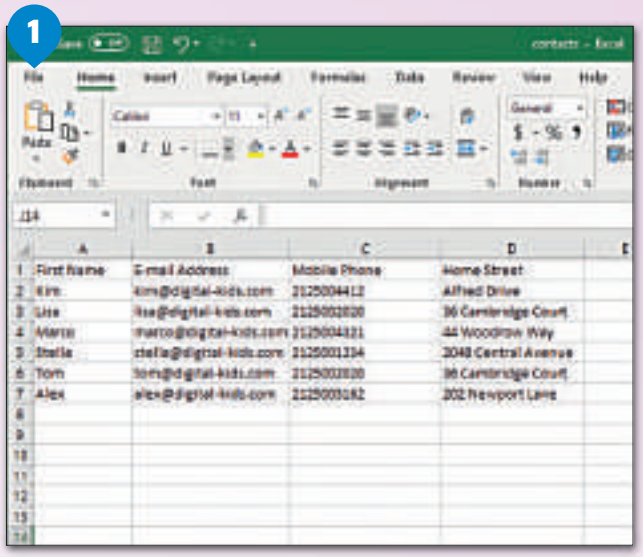
> Click **Save As** and then **Browse**. 2 The **Save As** window will appear.

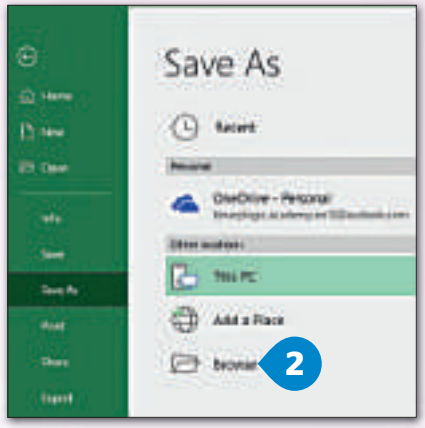
> Choose the folder where you want your document to be saved. 3

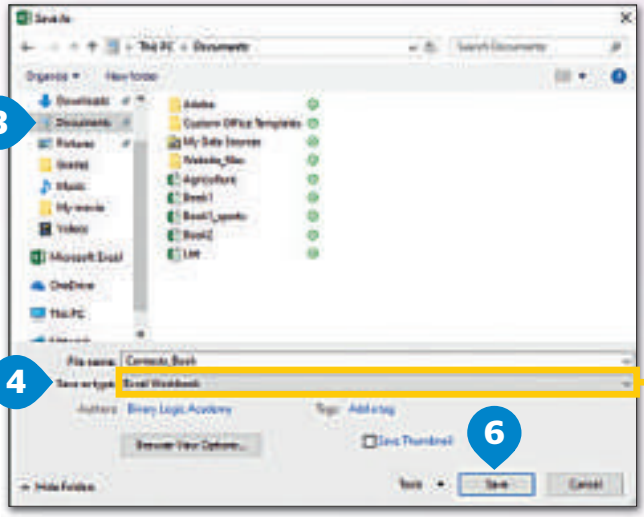
> Type a name for your file in the **File name** box. 4

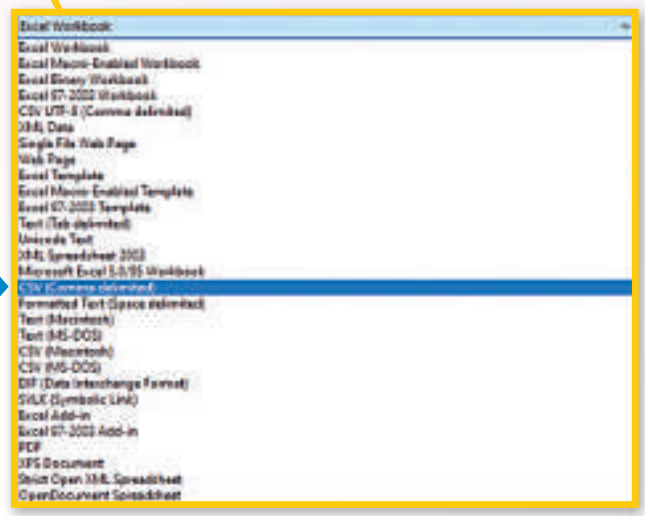
> In the **Save as type** list, click **CSV**. 5

> Click **Save**. 6




## CSV

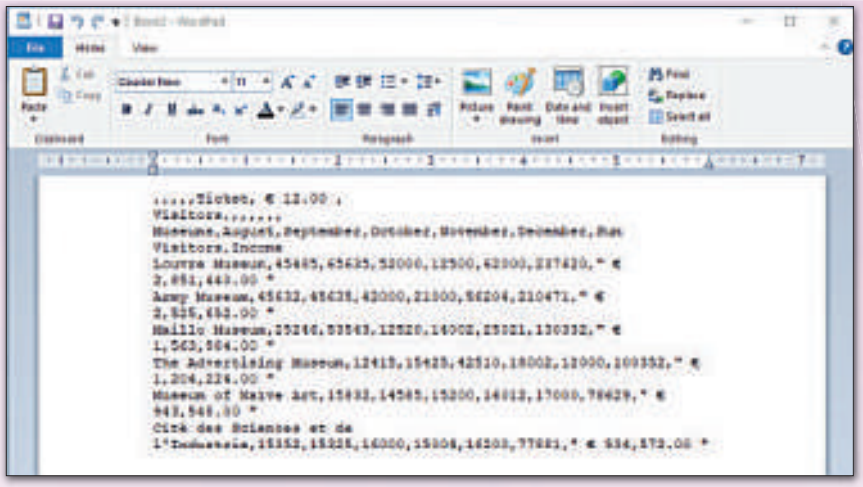
CSV files are simple but important. A CSV is a simple text file with no format. The data are stored as a sequence of characters. This way the file is relatively small in size, even though it can hold a large amount of data. The CSV format is widely supported by companies and consumers, because it helps them transfer large amounts of data from one program to another. Because it's small in size and can be highly compressed through zip programs, you can transfer the data more easily over the Internet.

Contacts_Book - Notepad

File Edit Format View Help

```
First Name,E-mail Address,Mobile Phone,Home Street
Kim,kim@digital-kids.com,2125004412,Alfred Drive
Lisa,lisa@digital-kids.com,2125002020,36 Cambridge Court
Marco,marco@digital-kids.com,2125004321,44 Woodrow Way
Stella,stella@digital-kids.com,2125001234,2048 Central Avenue
Tom,tom@digital-kids.com,2125002020,36 Cambridge Court
Alex,alex@digital-kids.com,2125005162,202 Newport Lane
```

*You are going to came across CSV files quite a lot from now on. Especially, if you want to transfer data from databases to spreadsheet and vice versa.*



*Agriculture - Notepad

File Edit Format View Help

```
January,February,March,April,May,June,July,August,September,October,November,December,Total,Average,Min,Max
Oragnes,10,12,5,10,6,17,20,15,0,14,18,5,132,11.00,0,20
Apples,8,13,25,9,12,14,14,19,10,0,17,5,146,12.17,0,25
Potatoes,15,14,19,4,18,12,9,8,15,5,0,5,124,10.33,0,19
Tomatoes ,20,17,14,5,17,6,7,20,12,3,10,5,136,11.33,3,20
Total,53,56,63,28,53,49,50,62,37,22,45,20,,,,
Average,13.25,14.00,15.75,7.00,13.25,12.25,12.50,15.50,9.25,5.50,11.25,5.00,,,,
Min,8,12,5,4,6,6,7,8,0,0,0,5,,,,
Max,20,17,25,10,18,17,20,20,15,14,18,5,,,,
```

## hands on!

*Open Notepad and type the following text. Save it as a CSV file and give it the name of your choice. Then import it into Microsoft Excel.*

*Rank, Country, Total medals*

*1, USA, 104*

*2, China, 88*

*3, Great Britain, 65*

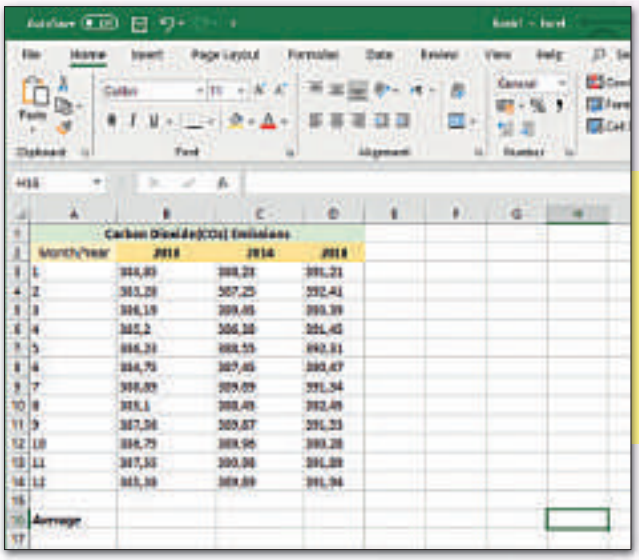
TASK 6

# Project

***If you*** *want to analyze some data, first of all you need to gather it. Brainstorm a list of the ideas that you want to include in your analysis. Write the ideas down on a notepad and don't forget to write down all the things that you want to display and compare.*

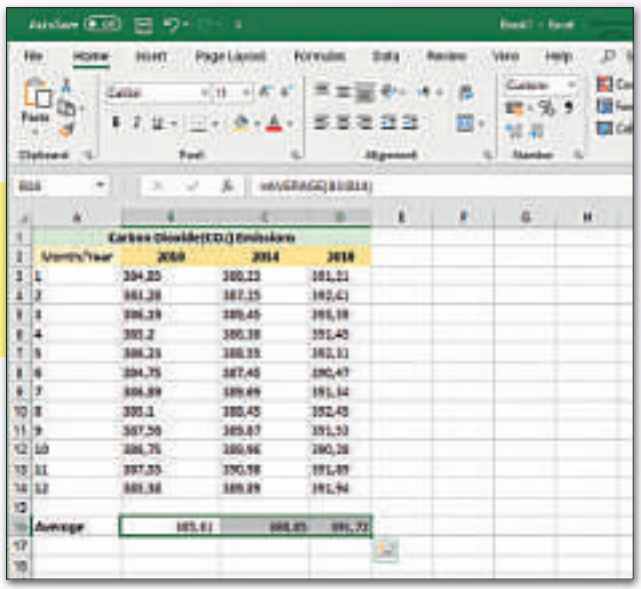
**1**

***Let's analyze*** *the carbon dioxide emissions in your country. Using the Internet try to cross-check all your information to make sure it is correct.*

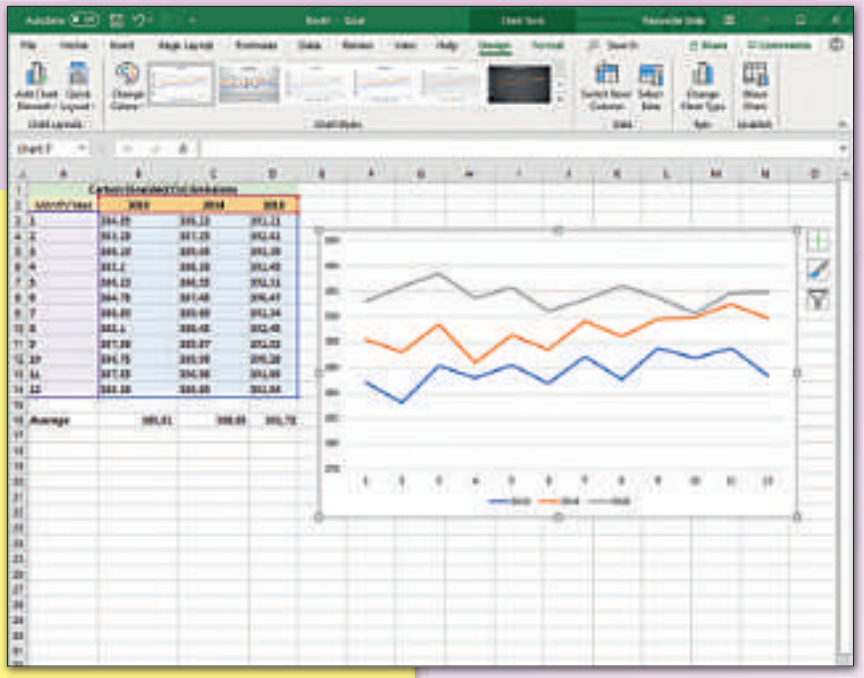



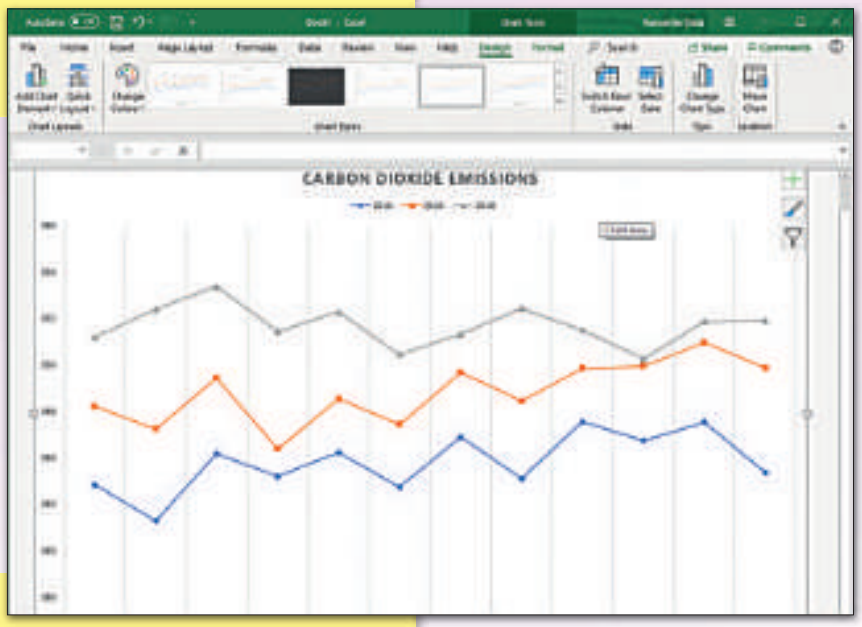
***When you*** *finish collecting your data, open* ***Microsoft Excel*** *and type it in an appropriate way. Keep in mind that you should add headings or titles to your columns and rows in order to define what is shown in each cell.*

***After inserting*** *your data, create the formulas that you need. Don't forget that empty cells are ignored!*



***Next, you*** *can illustrate your data with the help of graphs. Remember that you use graphs to make visual comparisons between one or more series of data points. In this way, you can present your data in a more informative way. You can add a chart title and axis title to make your graph more informative.*






***Finally, print*** *the graph and data table.*

**2**

***Form teams*** *and analyze relevant data about the top five countries with the most medals in the Olympic Games in the last twenty years. Find information on the Internet.*

***Don't forget*** *to illustrate the data with the help of a graph. Print the graph and the table and share them with your classmates.*

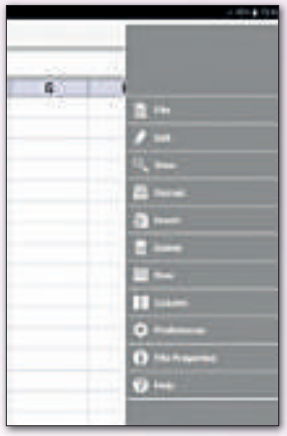
# Other platforms

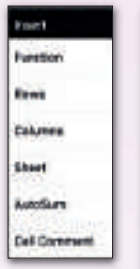
## Apple Numbers for iOS

Use **Apple Numbers** for advanced formatting. Use different chart types to illustrate your information. The chart types are similar in every spreadsheet program.

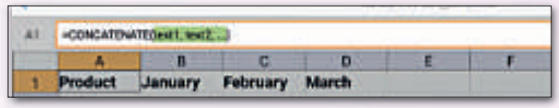

## Sheet To Go for Google Android

The functions that you've learned are similar in any spreadsheet program. Use **Sheet To Go** to edit text, calculate Average, even Sine and Cosine and other algebraic functions.



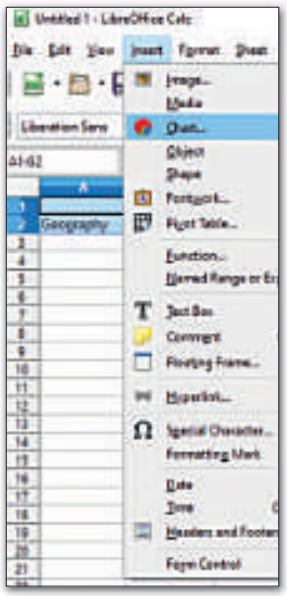


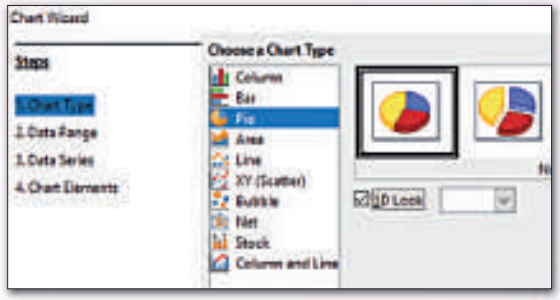


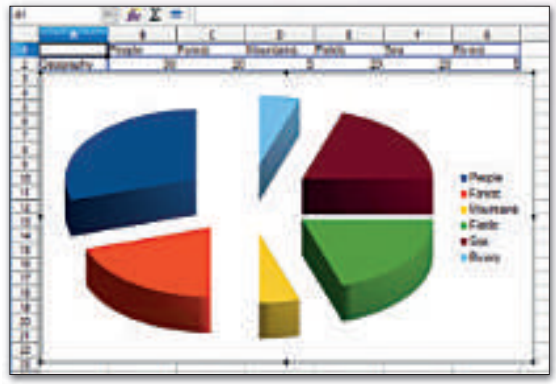



## LibreOffice Calc

**LibreOffice Calc** has all the tools that you need to make calculations and edit data. Because its environment is very similar to **Microsoft Excel**, it will be a piece of cake for you to use. Use all the familiar charts and functions.



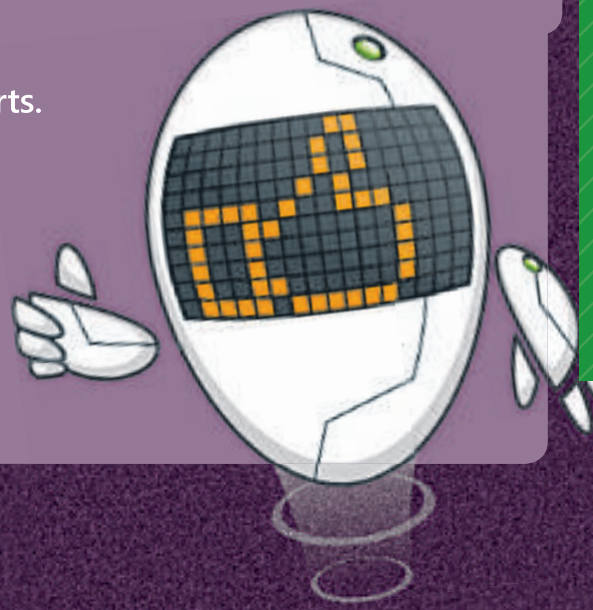



# wrap up

**Now you have learned how to:**

- > work with powers and percentages.
- > use advanced functions.
- > use a multiple IF.
- > use relative and absolute references.
- > understand and correct error messages.
- > format different types of charts.
- > create mini charts.
- > apply conditional formatting to cells.
- > import and export data as a CSV file.





## GLOSSARY

absolute reference
addition
AND
area chart
bar chart
column chart
CONCATENATE
conditional formatting
COUNT
COUNTIF
CSV
delimiter
division
doughnut chart
error message
export
formula
gradient
import
LEFT
line chart
MID
mini chart
multiple IF
multiplication
OR
percentage
pie chart
power
relative reference
RIGHT
scatter chart
sparkline
SUBSTITUTE
subtraction
TODAY
TXT

COURSES FOR 21st CENTURY LEARNERS

# Computing and ICT

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> Comprehensive coverage of international ICT curricula and exams.

> Fun, real-world scenarios and carefully graded activities to motivate students.

> Clear step-by-step walkthroughs of the operating system and software applications.

> Effective student and teacher support with digital resources on the series' website.







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