6

DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for TLE-ICT

Quarter 1

Lesson

7

Lesson Exemplar for TLE 6
Quarter 1: Lesson 7 (Week 7)
SY 2025-2026

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TLE /QUARTER 1/ GRADE 6 (WEEK 7)

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<tr><td>C. Learning Competencies and Objectives</td><td>Learning Competency
1. Create spreadsheets with charts and data validation features.
Learning Objectives
At the end of this lesson, the students are expected to:
1. demonstrate the use of charts;
2. demonstrate the use of data validation features;
3. demonstrate the use of filtering;
4. demonstrate the use of grouping;
5. demonstrate the use of sorting.</td></tr>
<tr><td>D. Content</td><td>Spreadsheet Software using MS Excel
● Creating charts
● Data Validation features
● Filtering
● Grouping
● Sorting</td></tr>
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<tr><td>Cheusheva, S. (2023, April 5). Data validation in Excel: how to add, use and remove. ablebits.com. https://www.ablebits.com/office-addins-blog/data-validation-excel/
GCFGlobal.org. (n.d.). Excel: groups and subtotals. https://edu.gcfglobal.org/en/excel/groups-and-subtotals/1/</td></tr>
</table>

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Technology for Teachers and Students. (2017, October 2). Advanced Excel - data validation and Drop-Down lists [Video]. YouTube. https://www.youtube.com/watch?v=SlWIgMFpsPg
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III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**DAY 1** **1. Short Review** Let us test your prior knowledge in Spreadsheet using Microsoft Excel. Answer the pre-assessment below. a. What is spreadsheet software? _____ _____ b. What document/s have you created in Microsoft Excel? _____ _____ c. What are the advantages in using Microsoft Excel over Manual Columnar? _____ _____ d. Enumerate the tools that you have used in creating a document in Microsoft Excel? _____ _____ **2. Feedback (Optional)** Students will respond to the questions based on their knowledge from previous topics in Microsoft Excel.	The teacher should facilitate the class discussion.
B. Establishing Lesson Purpose	**1. Lesson Purpose** This lesson will level-up the skills of the students in using MS Excel by learning advanced tools and features of MS Excel.	The teacher will ask the student to read and explain the defined words that are commonly used in MS Excel;

|		
	2. Unlocking Content Area Vocabulary **Spreadsheet.** is a digital tool used to organize, analyze, and store data in a tabular format. It consists of a grid of cells arranged in rows and columns, where each cell can hold data such as text, numbers, or formulas. **Worksheet.** a single sheet within an Excel file that contains cells organized in rows and columns. **Cell.** is the basic unit of a spreadsheet application, where data is entered. Each cell is identified by a unique address, combining the column letter and row number. **Chart.** is a visual representation of data that is typically used to illustrate trends or patterns over time. **Sorting**. is the process of arranging data in MS Excel in a specific order, either in ascending or descending sequence, based on the values in one or more columns. **Data Validation.** A feature of MS Excel that restricts (validates) user input to a worksheet.	● Spreadsheet ● Worksheet ● Cell ● Data Validation ● Chart ● Sorting
C. Developing and Deepening Understanding	**SUB-TOPIC 1: CHART** 1. **Explicitation** **CHART** A chart is a visual representation of data that is typically used to illustrate trends or patterns over time. Charts can be created using a variety of different tools, including software programs, online platforms, or even hand-drawn on paper. They can be simple or complex, depending on the amount of data being presented and the intended audience. Charts are often used in business and finance to display financial data, such as stock prices or sales figures. They can also be used in scientific research to show the results of experiments or studies.	

Some common types of charts include:
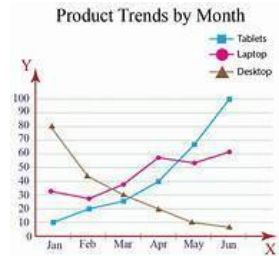
Line charts A line chart graphically displays data that changes continuously over time. Each line graph consists of points that connect data to show a trend (continuous change). Line graphs have an x-axis and a y-axis. In the most cases, time is distributed on the horizontal axis.
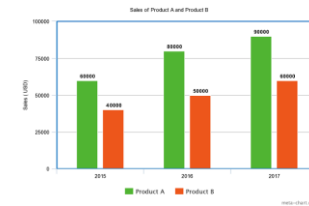
Bar charts - Bar charts represent categorical data with rectangular bars (to understand what is categorical data see categorical data examples). Bar graphs are among the most popular types of graphs and charts in economics, statistics, marketing, and visualization in digital customer experience. They are commonly used to compare several categories of data.
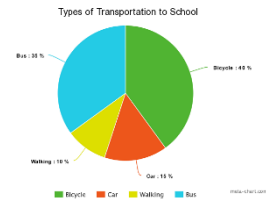
Pie charts - When it comes to statistical types of graphs and charts, the pie chart (or the circle chart) has a crucial place and meaning. It displays data and statistics in an easy-to-understand 'pie-slice' format and illustrates numerical proportion.

Each pie slice is relative to the size of a particular category in a given group as a whole. To say it in another way, the pie chart breaks down a group into smaller pieces. It shows part-whole relationships.
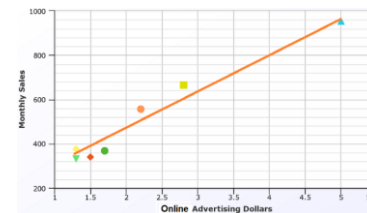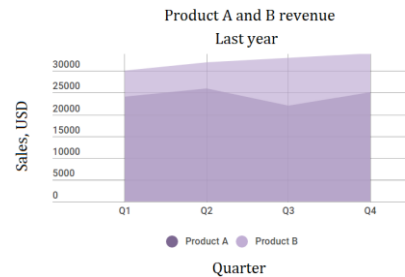
Scatter plots - is an X-Y diagram that shows a relationship between two variables. It is used to plot data points on a vertical and a horizontal axis. The purpose is to show how much one variable affects another.
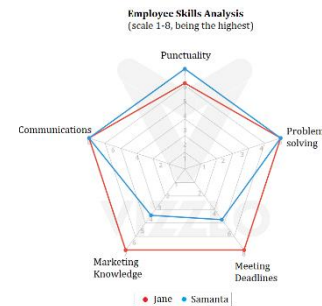
Usually, when there is a relationship between 2 variables, the first one is called independent. The second variable is called dependent because its values depend on the first variable.

Scatter plots also help you predict the behavior of one variable (dependent) based on

| To make a pie chart, you need a list of categorical variables and numerical variables.	the measure of the other variable (independent).
	Employee Skills Analysis (scale 1-8, being the highest)
Area charts show the change in one or several quantities over time. They are very similar to the line chart. However, the area between axis and line are usually filled with colors. Despite line and area charts support the same type of analysis, they cannot be always used interchangeably. Line charts are often used to represent multiple data sets. Area charts cannot show multiple data sets clearly because area charts show a filled area below the line.	**A radar chart** is one of the most modern types of graphs and charts – ideal for multiple comparisons. Radar charts use a circular display with several different quantitative axes looking like spokes on a wheel. Each axis shows a quantity for a different categorical value. Radar charts are also known as spider charts, web charts, star plots, irregular polygons, polar charts, cobweb charts or Kiviat diagrams. Radar Chart has many applications nowadays in statistics, mathematics, business, sports analysis, data intelligence, and etc.

How to Create a Chart

1. Before you can generate a Chart, you need datasets from the spreadsheet. Use the sample Table below for your data. You may change the content based on the no. of students in your class and their favorite sports respectively.

|	A	B
1	**Favorite Sports of Students**	
2		
3	**Sports**	**No. of Students**
4	Basketball	8
5	Volleyball	6
6	Sepak takraw	5
7	Athletics	4
8	Badminton	5
9	Table Tennis	5
10	Others	7
11	TOTAL	40

2. Select data for the chart. Start from Sports to the number 7.
3. Select Insert > Recommended Charts.
4. Select a chart on the Recommended Charts tab, to preview the chart.

Note: You can select the data you want in the chart and press ALT + F1 to create a chart immediately, but it might not be the best chart for the data. If you don't see a chart you like, select the All-Charts tab to see all chart types.

1. Select a chart. (Bar Graph)

2. Select OK.
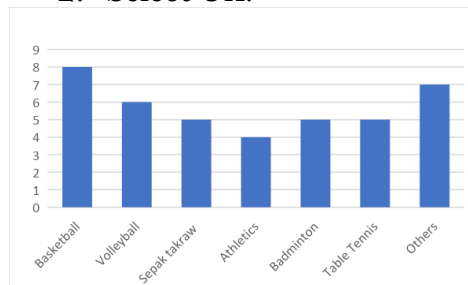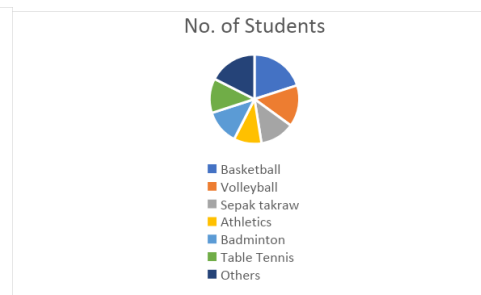
Bar Graph   Pie Graph

2. **Worked Example**
Modify the Chart by changing some elements under Chart Design. You can play around by selecting other options like Chart Type, Add Chart Elements, Quick Layout and Change Colors.

3. **Lesson Activity**
Activity 1: Using Charts

DAY 2
SUB-TOPIC 2: DATA VALIDATION FEATURES
  1. **Explicitation**

For activity 1, see worksheet for the learning activity that the students will accomplish.

Teacher may use other example relevant to the class like Family allowance, Budget of Students per week, Sales inventory at the Canteen. Etc.

Excel Data Validation is a feature that restricts (validates) user input to a worksheet. Technically, you create a validation rule that controls what kind of data can be entered into a certain cell.

Here are just a few examples of what Excel's data validation can do:
- Allow only numeric or text values in a cell.
- Allow only numbers within a specified range.
- Allow data entries of a specific length.
- Restrict dates and times outside a given range.
- Restrict entries to a selection from a drop-down list.
- Validate an entry based on another cell.
- Show an input message when the user selects a cell.
- Show a warning message when incorrect data has been entered.
- Find incorrect entries in validated cells.

To use **Data Validation**, prepare a database that needs to be validated. Example below is a Learners Records in ICT with the following Column Headers: LRN, Learners' Name, and Grades from Quarter 1 to Quarter 4.

	A	B	C	D	E	F
	LRN.	**Learners' Name**	**Q1**	**Q2**	**Q3**	**Q4**
	10001450		96	94	92	94
	10014598		89	88	87	90
	10014700		90	92	93	92
	10013458		91	90	92	92
	20003456		92	90	91	93
	30018933		87	88	89	90

1. Select the cell(s) you want to create a rule. Ex. LRN of Learners.
2. Select **Data** > **Data Validation.**
3. On the **Settings** tab, under **Allow**, select an option:
   - **Whole Number** - to restrict the cell to accept only whole numbers.
   - **Decimal** - to restrict the cell to accept only decimal numbers.
   - **List** - to pick data from the drop-down list.
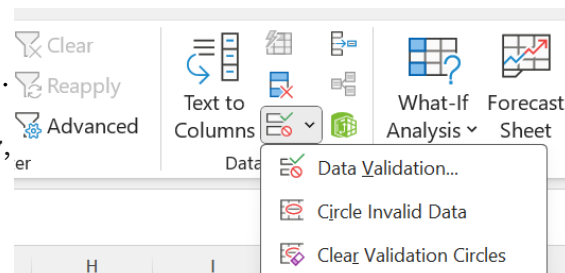
- o **Date** - to restrict the cell to accept only date.
- o **Time** - to restrict the cell to accept only time.
- o **Text Length** - to restrict the length of the text.
- o **Custom** – for custom formula.

4. Under **Data**, select a condition (between).

Set Minimum value to 100000000000. Set Maximum value to 999999999999.

5. Set the other required values based on what you chose for **Allow** and **Data**.
6. Select the **Input Message** tab and customize a message users will see when entering data.
7. Select the **Show input message when cell is selected** checkbox to display the message when the user selects or hovers over the selected cell(s).
8. Select the **Error Alert** tab to customize the error message and to choose a **Style**.

   Stop   Warning   Information

9. Select **OK**.
   Sample output of Error Message below.

Now, if the user tries to enter a value that is not valid, an **Error Alert** appears with your customized message.

For Complete Tutorial on Data Validation, visit this website:
https://www.ablebits.com/office-addins-blog/data-validation-excel/

2. Worked Example

Practice the use of Data Validation by applying it to the Quarter Grades from 1 to 4. Example, Set the Valid Grade between 60 to 100 only. Apply to all Grades.

3. Lesson Activity
Activity No. 2: Validate me
Create a new set of databases that needs data validation. Apply the different options in Data Validation Techniques.

DAY 3
SUB-TOPIC 3: FILTERING
1. Explicitation
Filtering Data is a useful tool to narrow down the data in your worksheet if you are working in a worksheet with a lot of content. This will allow you to view only the information you need.

How to filter data
You need to prepare your worksheet. Use the example data on Activity Sheet.

Computer Laboratory Inventory

No.	Category	Item Description	Quantity	Unit Price	Total Amount
1001	Equipment	Desktop Computer	5	35000	175,000.00
1002	Equipment	Projector	1	28000	28,000.00
1003	Equipment	Speaker	1	8500	8,500.00
1004	Tools	Screw driver	5	85	425.00
1005	Tools	Long nose plier	3	150	450.00
1006	Tools	Anti-static gloves	5	75	375.00
1007	Furniture	Chair	10	350	3,500.00
1008	Furniture	Computer Table	6	1500	9,000.00
1009	Furniture	Cabinet	2	3000	6,000.00
				GRAND TOTAL	231,250.00

In our example, we will apply the filter in Computer Laboratory Inventory by showing only the **Equipment** that are available.

Step 1. For filtering to work correctly, your worksheet should include a header row, which is used to identify the name of each column. In our example, select the header cells in row 1: **No., Category, Item Description, Quantity, Unit Price,** and **Total Amount**.

No.	Category	Item Description	Quantity	Unit Price	Total Amount
1001	Equipment	Desktop Computer	5	35000	175,000.00
1002	Equipment	Projector	1	28000	28,000.00
1003	Equipment	Speaker	1	8500	8,500.00
1004	Tools	Screw driver	5	85	425.00

Step 2. Select the **Data** tab, then click the Filter command.

las   **Data**   Review   View   Automate
tions   Sort   Filter   Clear   Reapply   Advanced
Sort & Filter

For activity 2, see worksheet for the learning activity that the students will accomplish. This activity can be adapted and extended based on the time available and the specific needs of the students. You can create more complex data validation rules or introduce different types of data validation as students become familiar with the basics.
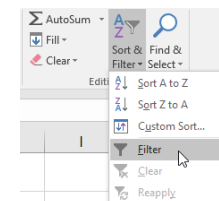
Step 3. A **drop-down arrow** will appear in the header cell for each column.

Step 4. Click the **drop-down arrow** for the column you want to filter. In our example, we will filter column **B** to view only certain types of Categories.

Step 5. The **Filter menu** will appear.

Step 6. **Uncheck** the box next to **Select All** to quickly deselect all data.

Step 7. **Check** the boxes next to the data you want to filter, then click OK. In this example, we will check **Equipment** to view only in this category.

Step 8. The data will be **filtered**, temporarily hiding any content that doesn't match the criteria. In our example, only equipment is visible.

Note: Filtering options can also be accessed from the Sort & Filter command on the Home tab.

How to apply advanced number filters:
Filters are cumulative, which means you can apply **multiple filters** to help narrow down your results. In this example, we've already filtered our worksheet to show equipment, and we'd like to narrow it down further to only show equipment that were more than 20,000-unit price.

Step 1. Click the **drop-down arrow** for the column you want to filter. In this example, we will add a filter to column **E** to view information by price.

Step 2. The **Filter menu** will appear. Hover the mouse over **Number Filters**, then select the desired number filter from the drop-down menu. In our example, we'll choose **Greater Than or Equal To.**

Step 3. The **Custom AutoFilter** dialog box will appear. Enter the desired number(s) to the right of each filter, then click OK. In our example, we want to filter for Unit Price greater than or equal to 20000 but less than or equal to 100000, which will display ID numbers in the 20000-100000 range.

Step 4. The new filter will be applied. In our example, the worksheet is now filtered to show only Equipment with Unit Price that ranging from 20,000 to 100,000 only.

How to Clear the Filter?
After applying a filter, you may want to remove or clear it from your worksheet so you'll be able to filter content in different ways.

Step 1. Click the **drop-down arrow** for the filter you want to clear. In our example, we'll clear the filter in column **E**.

Step 2. The **Filter menu** will appear.

Step 3. Choose Clear Filter From [COLUMN NAME] from the Filter menu. In our example, we'll select Clear Filter From "Unit Price".
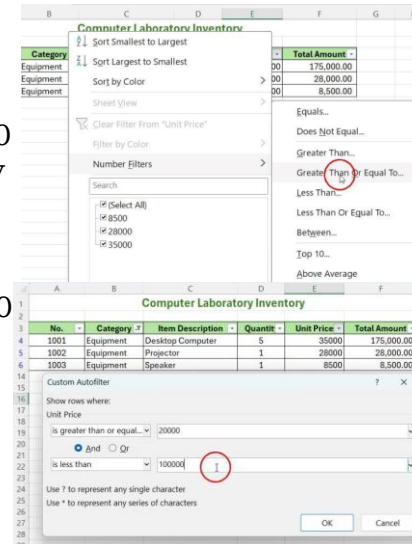
Step 4. The filter will be cleared from the column. The previously hidden data will be displayed.

Note: To remove all filters from your worksheet, click the **Filter** command on the **Data** tab.

For more advanced Filtering Data techniques, you may visit this website:
https://edu.gcfglobal.org/en/excel/filtering-data/1/

2. Worked Example

Practice the use of Filtering Data by applying it to the other Columns. You may add more inventory items to complete the list in the Computer Room such as Supplies, Decorations, etc.

3. Lesson Activity
Activity 3: Filtering Fun – Movie Mania!
Create a new set of Databases that needs Filtering Data. Apply the different options in Filtering Techniques.

DAY 4
SUB-TOPIC 4: SORTING

Sorting data is crucial for effective data analysis. Whether you're organizing a list of names alphabetically, arranging product inventory levels from highest to lowest, or categorizing data by colors or icons, sorting helps you visualize and understand your data better. By sorting, you can quickly find the information you need, making it easier to make informed decisions.

Data can be sorted by text (A to Z or Z to A), numbers (smallest to largest or largest to smallest), and dates and times (oldest to newest or newest to oldest) in one or more columns. You can also create custom lists (such as Large, Medium, and Small) for sorting, or sort by format, including cell color, font color, or icon set.

Sort sheet organizes all of the data in your worksheet by one column. Related information across each row is kept together when the sort is applied. In the example below, the Contact Name column (column A) has been sorted to display the names in alphabetical order.
To Sort Sheet.

In our example, we'll sort a Item Description form alphabetically (column C).


For activity 3, see worksheet for the learning activity that the students will accomplish.

Step 1. Select a cell in the column you want to sort. In our example, we'll select cell **C4.**

Step 2. Select the **Data** tab on the **Ribbon**, then click the **A-Z command** to sort A to Z, or the **Z-A command** to sort Z to A. In our example, we'll sort A to Z.

Step 3. The worksheet will be sorted by the selected column. In our example, the worksheet is now sorted by Item Description in Alphabetical order.
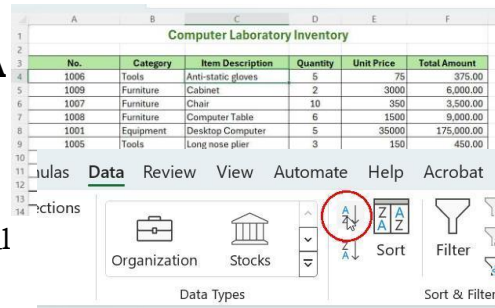
Sort range sorts the data in a range of cells, which can be helpful when working with a sheet that contains several tables. Sorting a range will not affect other content in the worksheet.

To Sort a Range.
In our example, we'll select a separate table in our T-shirt order form to sort the number of shirts that were ordered in each grade.

Step 1. Select the cell range you want to sort. In our example, we'll select cell range G2:H6.

Step 2. Select the Data tab on the Ribbon, then click the Sort command on the Data tab.

Step 3. The Sort dialog box will appear.
Choose the column you want to sort. In our example, we want to sort the data by the number of T-shirt orders, so we'll select Orders.

Step 4. Decide the sorting order (either ascending or descending). In our example, we'll use Largest to Smallest.

Step 5. Once you're satisfied with your selection, click OK.

Step 6. The cell range will be sorted by the selected column. In our example, the Orders column will be sorted from highest to lowest. Notice that the other content in the worksheet was not affected by the sort.

Note: *If your data isn't sorting properly, double-check your cell values to make sure they are entered into the worksheet correctly. Even a small typo could cause*

problems when sorting a large worksheet. In the example below, we forgot to include a hyphen in cell A18, causing the result of sorting to be slightly inaccurate.

SUB-TOPIC 5: GROUPS AND SUBTOTALS

1. Explicitation

GROUPS
Worksheets with a lot of content can sometimes feel overwhelming and can even become difficult to read. Fortunately, Excel can organize data into groups, allowing you to easily show and hide different sections of your worksheet. You can also summarize different groups using the Subtotal command and create an outline for your worksheet.

Using the same database from previous activity, we will apply the group rows and columns:

Step 1. Select the **rows** or **columns** you want to group. In this example, we'll select columns **C, D** and **E**.

Step 2. Select the **Data** tab on the **Ribbon** then click the **Outline** then, **Group** command and another **Group**.

Step 3. Another **Group** dialog box will appear. Then Select **Column** and click **Ok.**

Step 4. The selected rows or columns will be grouped. In our Example, columns C, D. and E are grouped. A horizontal line will appear at the top minus button indicating that the columns were grouped together.

Step 5. Once the minus button is clicked, it will hide the grouped columns. It will look like the example below.

Step 6. From here, you can easily navigate your data and focus on specific entries you wanted to locate.

Note: To ungroup data, select the grouped rows or columns, then click the **Outline** > **Ungroup** > **Ungroup**.

Computer Laboratory Inventory

No.	Category	Total Amount
1001	Equipment	175,000.00
1002	Equipment	28,000.00
1003	Equipment	8,500.00
1004	Tools	425.00
1005	Tools	450.00
1006	Tools	375.00
1007	Furniture	3,500.00
1008	Furniture	9,000.00
1009	Furniture	6,000.00
	GRAND TOTAL	231,250.00

SUBTOTAL
Using **Subtotal** in our Record will allow us to summarize the numbers we need per category. It will create an outline for our worksheet with a **Group** for each **Category** and then count the total amount of equipment in each group.

Step 1. First, sort your worksheet by the data you want to subtotal. In our example, we'll create a subtotal for each category, so our worksheet has been sorted by Category from A – Z (ascending order).
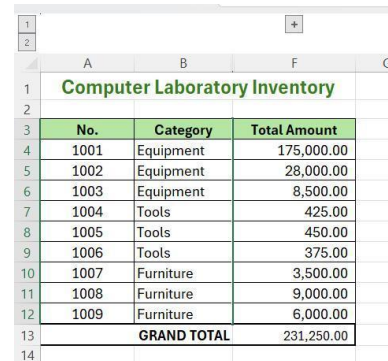**Step 2.** Select the **Data** tab, then click the **Outlined** > **Subtotal** command.
Step 3. The Subtotal dialog box will appear. Click the drop-down arrow for the **at each change in:** field to select the column you want to subtotal. In our example, we'll select **Category**.
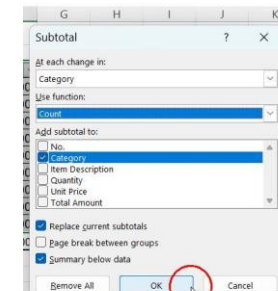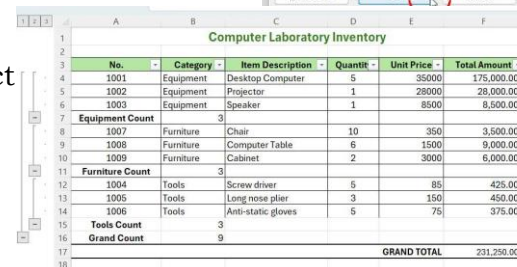**Step 4.** Click the drop-down arrow for the **Use function**: field to select the function you want to use. In our example, we'll select **COUNT** to count the number of shirts ordered in each size.
Step 5. In the **Add subtotal to**: field, select the column where you want the calculated subtotal to appear. In our example, we'll select **Category**. When you're satisfied with your selections, click **OK.**
Step 6. The worksheet will be **outlined** into **groups**, and the **subtotal** will be listed below each group. In our example, the data is now grouped by **Category**, and the number of categories ordered in that size appears below each group.

TO VIEW GROUPS BY LEVEL:

When you create subtotals, your worksheet is divided into different levels. You can switch among these levels to quickly control how much information is displayed in the worksheet by clicking the Level buttons to the left of the worksheet. In our example, we'll switch among all three levels in our outline. While this example contains only three levels, Excel can accommodate up to eight.

Step 1. Click the lowest level to display the least detail. In our example, we'll select level 1, which contains only the Grand Count, or total number of T-shirts ordered.
Step 2. Click the next level to expand the detail. In our example, we'll select level 2, which contains each subtotal row but hides all other data from the worksheet.
Step 3. Click the highest level to view and expand all of your worksheet data. In our example, we'll select level 3.

Note: You can also use the **Show Detail** and **Hide Detail** buttons to show and hide the groups within the outline.

To Remote Subtotals:
Sometimes you may not want to keep subtotals in your worksheet, especially if you want to reorganize data in different ways. If you no longer want to use subtotaling, you'll need remove it from your worksheet.

Step 1. Select the Data tab, then click the Subtotal command.
Step 2. The Subtotal dialog box will appear. Click Remove All.
Step 3. All worksheet data will be ungrouped, and the subtotals will be removed.

2. Worked Example
Open the Computer Laboratory Inventory. Practice the Sorting Command by arranging the items alphabetically. Use other options to arrange the Table

3. Lesson Activity.
Activity 4: Grouping and Sorting - A Classroom Pet Parade!

		For activity 4, see worksheet for the learning activity that the students will accomplish.
D. Making Generalizations	**1. Learners' Takeaways** ● What are the advanced tools you have learned in MS Excel? ● What is the importance of using charts? ● What will be the implication if we don't use Data Validation in our Database? ● What is the advantage of using Groups and Sort? **2. Reflection on Learning** Complete the sentence below to reflect on the Lessons discussed. ● When working with Worksheet in MS Excel, it is important to… ● A helpful tip for sorting Data in Excel is to… ● To effectively use Data Validation in Excel, remember to…	

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION			NOTES TO TEACHERS
A. Evaluating Learning	**1. Formative Assessment** **Activity 5: Assessment** **2. Homework (Optional)** Review the other Lessons in MS Excel through this Link: https://edu.gcfglobal.org/en/excel/		For activity 5, see worksheet for the learning activity that the students will accomplish.
B. Teacher's Remarks	*Note observations on any of the following areas:*	**Effective Practices**	**Problems Encountered**	The teacher may take note of some observations related to the effective practices and

				problems encountered after utilizing the different strategies, materials used, learner engagement and other related stuff.
	strategies explored			
	materials used			Teachers may also suggest ways to improve the different activities explored/ lesson exemplar.
	learner engagement/ interaction			
	others			
C. Teacher's Reflection	*Reflection guide or prompt can be on:* ▪ <u>principles behind the teaching</u> *What principles and beliefs informed my lesson?* *Why did I teach the lesson the way I did?* ▪ <u>students</u> *What roles did my students play in my lesson?* *What did my students learn? How did they learn?* ▪ <u>ways forward</u> *What could I have done differently?* *What can I explore in the next lesson?*			Teacher's reflection in every lesson conducted/ facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.