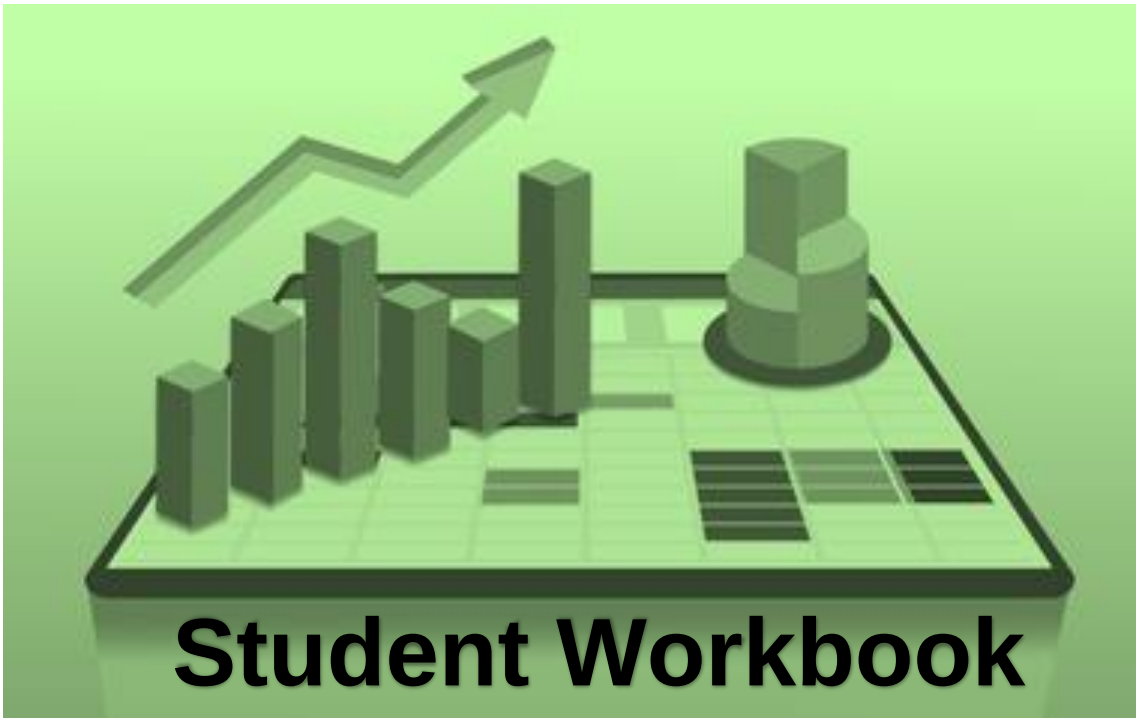
Preparing Data for Analysis with Microsoft Excel



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Chapter 1: Introduction to Microsoft Excel

Exercise 1: Adding data to a worksheet.

1. Use Files **Exercise 1A_Start.xlsx** and **Exchange Rate.pdf**
2. A preview of **Sheet1** is visible in the screenshot. You will complete this exercise by adding data to and formatting **Sheet1** in the workbook.

Step1: Verify and correct the existing information

1. The **State Abbreviation** column is unnecessary and can be deleted because the sheet contains international data.
2. Select column **B**, then right-click and select **Delete Columns** from the shortcut menu.
3. The entries in column **D** appear different than the other columns. This is because the column is too narrow. Position the mouse pointer on the vertical line between the **D** and **E** column identifiers, then double-click to resize the column automatically.
4. The figures in the spreadsheet will be a key focus of the meeting, so you need to confirm that there are no other issues in the number range. The number in cell **G18** is sitting over to the left of the cell, which indicates that Excel is treating the entry as text. The ~ character at the beginning of the entry is causing the problem, causing the entry to be auto-detected as text. Double-click on cell **G18** to enter **Edit mode**. Then move the cursor to the right of the character and press **backspace**. Press **Enter** to confirm the amendment and correctly realign the entry.
5. Add a column to hold country data to display the worksheet's international financial data. Add this new column to the right of the **State** column and fill in the country entries. Select the letter **C** that identifies the column to select it. Then right-click and choose **Insert Columns** from the shortcut menu. A new blank column appears to the left of the column titled **Office Type**.
6. Type the heading **Country** in **C1** and then **USA** in **C2**. Move the cursor back to **C2**, then hover the mouse pointer over the bottom right-hand corner until it becomes the narrow black cross. Hold down the mouse button and drag it down as far as row **21** to copy the entry quickly into the appropriate cells. Add **Japan** to **C22** and use a similar **Autofill** technique to complete the country entries in rows **23** and **24**. Add **Germany** to **C25** and use a similar **Autofill** technique to complete the country entries in rows **26** and **27**.
7. Renee would like the information relating to Japan and Germany to be easily identifiable. So, she has asked you to add these country names as headings above both sets of information to create a clearer distinction between the data for these countries and the USA. First, select row **22** on the left-hand side. Then right-click and choose **Insert Rows** from the shortcut menu. Select row **26** and repeat the insert rows operation. Then type **Japan** in cell **A22** and **Germany** in **A26**.

Step2: Format the data

1. First, you need to emphasize the titles in row 1. Select the range of cells **A1 to H1**, and on the **Home** tab, select the **Font** group. Then choose **font size 14** and a different background color. Without canceling the selection, center the headings. On the **Home** tab, select the **Alignment** group, then select the **Center** choice.
2. The heading **Revenue** in **E1** and the **Depreciation** heading in **H** are only partially visible, as the columns are not wide enough to accommodate the text. Double-click on the vertical separator between **E** and **F** to automatically resize column **E.** Then perform a similar adjustment on column **H.**

3. The titles in **F1** and **G1** are also exhibiting visibility issues. However, widening the columns would create too much visible white space. Instead, select **F1** and **G1.** On the **Home** tab, select the **Alignment group,** then choose **Wrap Text.**
4. Column **G** still needs to be a little wider. So, hover the mouse pointer over the dividing line between the column letters **G** and **H**, hold down the mouse button, and drag it slightly to the right.
5. The headings in the first row now stand out and are easier to read. You now need to emphasize the country headings in **A22** and **A26**. Move the cursor to **A1.** On the **Home** tab, in the **Clipboard** group, select the **Format Painter** button and then select **A22**. Repeat the process for **A26**. Next, select cells **B22** to **H22** and apply the same background color. Repeat this process for cells **B26** to **H26**.
6. Next, you need to add currency formats to distinguish between the three currencies in the sheet. Select cells **E2** to **H21.** On the **Home tab** in the **Number** group, select the **currency drop-down** and then choose the **dollar** symbol. However, this action generates extra characters and decimal places. So, column **F** needs to be resized a little.
7. Select cells **E27** to **H29** and choose the **Euro** currency format from the **Currency** drop-down.
8. Finally, select cells **E23** to **H25** and select the **Currency** drop-down again. There is no Japanese Yen choice offered in the immediate list. Select the **More Accounting Formats** choice at the bottom. Select the **Currency category** on the left of the number format dialog. Choose **¥ Japanese** (also known as Japanese Yen) from the **Symbol** drop-down on the right.

Step3: Add new information to the workbook

1. The information on exchange rates needs to be in the Excel file but held separately from the data you have just been working on. Create a new worksheet by selecting the **+** symbol in the worksheet **tab** area.
2. In cell **A1** of the new sheet, type the heading **USD Amount.** In cell **B1,** type the heading **Currency**. In cell **C1** type the heading **Rate**. In **A2**, type the number **1**, and in **B2** type **Yen**. In **A3**, type the number **1**, and in **B3** type **Euro**. Then, in **C2** and **C3**, add the appropriate exchange rate figures from the PDF.
3. To provide visual consistency between both sheets, format these headings to match the headings in **Sheet1**.

Step4: Manage the worksheets

1. The original worksheet that you edited is still called **Sheet1**. The sheet you added to hold the exchange rate information will also have a generic title of **Sheet** followed by a number. Both titles could be more descriptive. So, rename the first sheet **Sample Figures**, and the other sheet **Exchange Rates**. Right-click the relevant **sheet tab**, type the new names, and select **OK**.
2. To prepare for your presentation, it is best to position the **Exchange Rates** sheet to the right of the **Sample Figures** sheet. Point your cursor at the **Exchange Rates** tab, hold down the mouse button, and drag it to its new position.
3. You don't yet have all the required data for the **Contacts** sheet. In addition, this sheet is not directly relevant to your presentation. However, the information will be needed in the future. Rather than deleting it, you can hide it for the duration of the presentation. Select the **sheet**. On the **Home** tab in the **Cells** group, choose **Format** and then select **Hide & Unhide** to hide the sheet.

Exercise 1 Questions

Question 1

In **Sheet1**, Microsoft Excel automatically aligned a numerical entry to the left. In this case, such an action indicates an issue with the content. How can you correct an error like this?

A. Change the alignment.
B. Alter the **Number format**.
C. Edit the content.

Question 2

In step 3, you formatted cells **E23** to **H25**, which contained figures representing Japanese Yen amounts. What steps did you take to apply the Yen **Currency format** to this block of cells?

A. Select the **Currency** button in the **Number** section of the **Home** tab. Choose **Accounting Formats**. With **Custom** highlighted as a category, select the **Symbol** drop-down on the right. Select **Japanese** from the list currency symbols that appear.
B. Select the **Currency button** in the **Number** section of the **Home** tab. Choose **More Accounting Formats**. With **Currency** highlighted as a category, select the **Symbol** drop-down on the right. Select **Japanese** from the list of currencies that appear.
C. Select the **Currency** button in the **Number** section of the **Home** tab. Choose **Accounting Formats**. With **Special** highlighted as a category, select the **Symbol** drop-down on the right. Select **Japanese** from the list of currency symbols that appear.

Question 3

As one of the final steps in the exercise, you hid the **Contacts** worksheet using the **Hide & Unhide** command. Where on the **Home** tab is this command located?

A. On the **Format** choice in the **Editing** group.
B. On the **Format** choice in the **Styles** group.
C. On the **Format** choice in the **Cells** group.

Quiz 1

Question 1

You type some non-scientific numerical data directly into a Microsoft Excel worksheet. You then press **Enter** and **1.9E+09** appears in the cell. Why has this text appeared in the cell?

A. The column is too narrow.
B. The cell contains text and numbers.
C. The number format is incorrect.

Question 2

Which number format option is both a format and an action button in Excel?

A. The **Percentage format**
B. The **Currency format**
C. The **Comma format**

Question 3

You are editing a worksheet in which column **G** is hidden and is not visible between columns **F** and **H**. Which set of steps can you take to unhide column **G** and check its contents?

A. Select column **G** and click **Format** on the **Home** tab. Choose **Hide & Unhide** from the drop-down menu and then unhide columns from the sub-menu.
B. Highlight columns **F** and **H**. Select **Format** on the **Home** tab. Choose **Hide & Unhide** from the drop-down menu and then unhide columns from the sub-menu.

C. Select the column to the right of the hidden column. Select **Format** on the **Home** tab. Choose **Hide & Unhide** from the drop-down menu and then unhide columns from the sub-menu.

Question 4

You type the heading **Customer Name** into a cell. Part of the heading is hidden because of the column width and the fact that there is other content in the cell directly to the right. You would like the full heading to be visible and the word Name to appear under the word Customer. How can you do this?

A. Use the **Center align** command in the **Alignment** group on the **Home** tab.
B. Use the **Wrap Text** command in the **Alignment** group.
C. Type the word Name in the cell underneath the heading.

Question 5

You need to sort or reorder a large block of information in a worksheet. Which tab do you need to select to access the Sort feature?

A. The **View tab**
B. The **Data tab**
C. The Contextual **Sort** tab

Exercise 2A: Sorting data

1. Use file **Exercise 2A_Start.xlsx**

Step 1: Performing alpha-numeric sorts

1. View the data organized by **Product Name** in ascending order.

Tip: Don't forget to have the cursor in the correct column before selecting the **Sort** choice. Also, don't forget that **Undo** will reverse a sort if you've made an error. Monitor the position of the colored row to ensure that the sort is working as you expect.

1. Sort the data by **Product Name** in descending order.
2. Sort the data by **Date Entered** so that the oldest entry is at the top.

Tip: Excel stores dates as numbers, so this will be a numeric sort.

1. Sort the data by **Supplier** using the shortcut **Sort Ascending** button.
2. Apply a sort that sorts the data by **Supplier** in ascending order and then by **Units in Stock** in descending order.

Tip: Remember the **Sort** choice in the data ribbon.

1. Reverse this sort using the **Undo** feature.

Exercise 2A Questions

Question 1

In the exercise, you sorted the **Products** worksheet data by the **Product Name** information stored in **column C**. Which of the following steps did you perform first, so that data would be sorted when you selected the **Sort Ascending** choice?

A. Select column **C** by selecting the column initial.
B. Select **Product Name** from a drop-down list.
C. Select any cell in column **C**.

Question 2
You were asked to sort the data first by **Supplier** and then by **Units in Stock**. Which choice did you select on the **Data** ribbon to perform this?

A. Sort
B. Sort A to Z
C. Sort Z to A

Question 3
True or False: You used **Sort** to sort the data using two columns with a first-level sort by **Supplier** and a second-level sort data by **Units in stock**. This meant that when the sort was complete, the **Supplier** entries were no longer in alphabetical order.

A. True
B. False

Chapter 2: Working with Blocks of Data

Exercise 2B: Filtering data

1. Use File **Exercise 2B_Start.xlsx**
2. Your manager needs you to find the following numbers and submit them to her:
    a. The number of listings for gear components.
    b. The number of orders placed with Z123 in 2023.
    c. The number of orders placed with Z123 in 2022.
    d. The number of orders for mountain bike frames.
    e. The number of mountain bike orders with a stock level of over 500.
3. You will need to use the **Filter** feature to extract the information from the file required to answer these questions.

Step 1: Filtering the data

Tip: Remember to clear all **filters** in between steps. To confirm how many records are in the filter results, check the count on the left-hand side of the bottom row of the Excel screen.

1. Turn on **Filtering**.

Tip: The **Filter** button is in the **Data** tab.

1. Identify how many gear components are listed.

Tip: Ensure that only gear components are selected in the drop-down on **Category** before applying the filter.

1. **Filter** to establish how many orders were placed with **Z123** in **2023**.
2. Change the **Filter** to confirm how many orders were placed with **Z123** in **2022**.

Tip: Only adjust one of the filters.

1. **Filter** the data to identify how many orders of mountain bike frames are in the worksheet.

Tip: Be aware of the different versions of the mountain bike frame listed. Use the **Text Filter** additional filter choice on **Product Name**. Don't clear the **Filter** before completing the next task.

1. Use the **Filter** to determine how many of the mountain bike orders have a stock level of over 500.

Exercise 2B Questions

Question 1

You have five filters in place on the data in your worksheet. What is the quickest way to remove all filters and restore the full display of data?

A. Use the **Undo** button.
B. Use the **Clear** option on the **Data** ribbon.
C. Use the **Clear filter from** choice in each filter drop-down.

Question 2

You are working with a large block of data. You applied a **filter** but there are still a lot of rows visible. How can you determine how many results you have found?

A. Check the bottom-left of the Excel screen.
B. Check the bottom-right of the Excel Screen.
C. Check the middle of the **status bar.**

Question 3

In the exercise, you selected the **Product Name filter** to filter and find all the entries relating to mountain bikes. What were your next steps?

A. You selected **Text filter** and then **begins** on the sub-menu.
B. You selected **Text filter** and then **equals** on the sub-menu.
   You selected **Text filter** and then **contains** on the sub-menu.

Quiz 2

Question 1

You want to move quickly to cell **S1215** in your worksheet. To achieve this, you type the cell reference into a particular area of the screen and then press **enter**. What is the area of the screen called in which you type the cell reference?

A. The **Name Box**
B. The **Title Bar**
C. The **Formula Bar**

Question 2

You open an Excel worksheet that contains ten columns of data. The information is filtered, so some of the available data is not visible. How can you identify which heading the data is filtered by?

A. The **Filter arrow** drop-down symbol is in bold.
B. The **Filter arrow** contains an arrow symbol.
C. The **Filter arrow** contains a funnel symbol.

Question 3

Column **A** in your worksheet contains component names. All twenty-two names have been input as text except for one entry called 11ratchet, which begins with a number. If you were to sort this column in descending order, where would the entry 11ratchet appear?

A. At the bottom of the column.

B. In the middle of the column.
C. At the top of the column.

Question 4

Row one in your worksheet contains headings and it is currently visible at the top of the screen. The cursor is on cell **B3**. Which of the **Freeze Panes** options must you choose to ensure that the headings remain visible onscreen?

A. **Freeze First Column**
B. **Freeze Top Row**
C. **Freeze Panes**

Question 5

True or False: You need to edit only those rows in a spreadsheet that have been shaded yellow. You can use the **Filter by color** filter option to hide rows that haven't been formatted in this way.

A. True
B. False

Question 6

When **Autosave** is switched on, Microsoft Excel automatically assigns a generic name to a new workbook. This name is visible on the **Title bar** at the top of the Excel window. What can you change within this file name?

A. The file name and the save location.
B. Only the file name.
C. Only the save location of the file.

Question 7

You are working with a block of information, and you realize that you need to add a new column to the left of the column that your cursor is in. Which of the following series of steps can you perform to correctly insert the column? Select all that apply.

A. Select the **Home ribbon**, select **Insert**, and then select **Insert Sheet Columns**.
B. Click the right mouse button, select **Insert**, and then select **Entire column**.
C. Select the **Insert Ribbon**, select on **Insert**, and then select **Insert Sheet Columns**.

Question 8

You are entering repeat content in your worksheet. After entering the content several times Excel offers the content as an automatic suggestion. What is this feature called?

A. **Autocomplete**
B. **Autofill**
C. **Autofit**

Question 9

You need to present a worksheet to your colleague. However, columns **D** and **E** contain confidential data that they cannot be privy to. What option on the **Home ribbon** can you use to hide these columns during the presentation?

A. **Delete drop-down**.
B. **Format drop-down**.
C. **Insert drop-down**.

Question 10

You enter numbers into a column. Your entries are displaying a different number of decimal places from those you intended. Where can you locate the increase and decrease decimal buttons to control the number of decimal places displayed?

A. In the **Alignment** group on the **Home ribbon**.
B. In the **Editing group** on the **Home ribbon**.
C. In the **Number** group on the **Home ribbon**.

Chapter 3: Formula in Excel

Exercise 3: Calculating profit and margin

- Use file **Exercise 3_Start.xlsx**

Step 1: Create the calculations

1. Create a calculation in cell **G4** to calculate the Purchase Cost.

Tip: This would be the number of stock items purchased multiplied by the wholesale cost.

1. Create a calculation in cell **H4** that works out the total shipping costs for the number of items ordered. The shipping cost per item amount data is in cell **P1**.

Tip: Don't forget that you will be copying this formula down the column using Autofill. So, the **P1** reference needs to stay constant. (Make a note of how this formula is written.)

1. Create a calculation in **I4** that adds together the purchase and total shipping costs.
2. Create a calculation in **J4** that works out the retail price for the individual item in row **4**. The retail price must be set high enough to cover the following:
    a. The wholesale cost of each item.
    b. The shipping cost for the individual item.
    c. Plus a 50% markup.

Tip: Your formula needs to add the two costs together and then calculate a 50% increase. You'll need to use parentheses to ensure the calculation works correctly. Also, include dollar signs on the **P1** cell reference.

1. Create a calculation in **L4** that determines the amount of revenue the company earned by selling the number of items listed in **K4** by the retail price you have just worked out in **J4**.
2. Create a calculation in **M4** that subtracts the **Total Cost** figure from the **Revenue** figure to generate the **Profit** figure.
3. Use the Autofill shortcut on cell **G4** to copy the formula down through the column. Then use the double-click shortcut to repeat this action for the formulas in **H4**, **I4**, **J4**, **L4,** and **M4**.

Tip: When you double-click the shortcut for Autofill, Excel can use the blocks of completed cells to the left as a reference. As you are double-clicking to copy each formula, check which block of data Excel is using to decide where to stop the copy operation.

1. Cell **P3** must display the overall profit margin. A profit margin figure indicates what percentage of the sales turned into profit. The formula to calculate this is like the percentage difference formula already demonstrated. In other words, the formula was: **`=(New Value – Old Value)/New Value`** When working out the profit margin, the revenue figure is the new value, and the total costs figure is the old value. In cell **P3**, create this formula using the **Total Costs** total in cell **I201** and the **Revenue** total in cell **L201** to work out the profit margin.

Exercise 2-Questions

Question 1

When you created the calculation in cell **G4**, you were able to use the double-click shortcut to **Autofill** copies of the formula into the cells underneath. What data did Excel use as a visual reference to determine when to stop copying the formula?

A. The block of information in row **201**.
B. The block of information in column **F**.
C. The block of information in column **K**.

Question 2

In cell **H4** you created a formula that worked out the total shipping cost. Cell **P1** contained the $5 per item shipping charge. Column **F** contained multiple rows of entries. Which of the following was the correct syntax for the formula to ensure that it copied correctly when you used the **Autofill** shortcut?

A. `=F4*P1`
B. `=F4*$P$1`
C. `=$F$4*P1`

Question 3

In cell **J4,** you created a formula with parentheses to set a new retail price by adding numbers together and working out a percentage increase. What result did you get for the calculation?

A. $333.24
B. $222.16
C. $224.66

Quiz 3

Question 1

You are creating a formula in cell **C2** in your worksheet. The calculation only needs to appear in cell **C2**. You have typed the following formulas:

A3*D15/45*F17

However, there is an error in the syntax of this formula. What part of the formula is missing?

A. Dollar Signs
B. An Equals Sign
C. Parentheses

Question 2

Cell **D2** of your worksheet contains the weekly sales total. Cell **D7** contains the overall monthly sales. You need cell **E2** to show what percentage the week one total is of the overall monthly total. You've already applied the percentage format to **E2**. Which of the following options is the correct syntax for the formula?

A. ***=D7/D2***
B. ***=D2/D7***
C. ***=D2/D7*100***

Question 3
True or False: When Excel processes the following formula, it will first multiply cell **A1** by cell **C3** before it processes the addition.

```
=(B15+D45)-(A1*C3)
```

A. True
B. False

Question 4
You have created the following formula in your worksheet:

```
=D4+$C$6-E4+F6
```

You use the **Autofill** feature to copy the formula down the column. Which of the cell references will update with new row numbers?

A. **C6**, **E4**, **F6**
B. **D4**, **C6**, **E4**
C. **D4**, **E4**, **F6**

Question 5
What mathematical sign does Excel process last when calculating the results of the following formula?

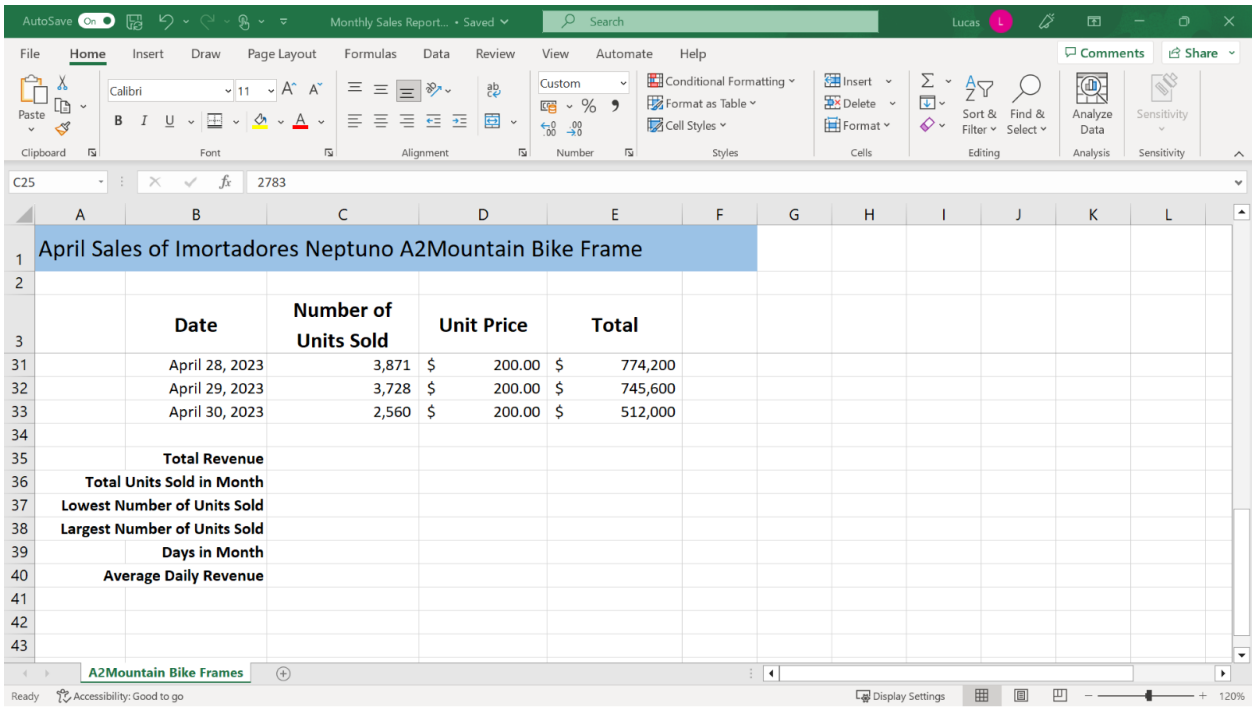
```
=D4+C3/N5*B3
```

A. The plus sign.
B. The Division sign.
C. The Multiplication sign.

Chapter 4: Functions in Excel

Exercise 4: Preparing a monthly sale report

- Use file **Exercise 4A_Start.xlsx.**
- The workbook contains only one worksheet called **A2Mountain Bike Frames**.
- The sheet outlines the sales data for A2Mountain bike frames during the month of April.
- This data includes the **number of units sold**, the **price** of each unit, and the **total** US dollar amount accrued in sales each **day**.
- You need to calculate further sales data by creating formulas in the cell range **C35 to C40.** The cell range **C35:C40** is set to the general number format. You can check this in the Number section of the **Home** ribbon.



Step 1: Create the Calculations.

1. Create a formula in cell **C35** that calculates the total revenue for April.

Tip: If you use the **Insert Function** wizard or the **AutoSum** list to create this formula, remember that you do not have to accept the range that Excel suggests. Instead, you can simply manually select the correct cell range**.**

1. Create a formula in cell **C36** that calculates how many A2Mountain Bike Frames were sold in April.

Tip: If you use the **AutoSum** shortcut to add this formula, Excel may not suggest the correct cell range. Again, you must manually select the correct cell range for the calculation.

1. Create a formula in cell **C37** that identifies the lowest number of units sold. Make a note of the date when this occurred. Type the date in cell **D37**.

Tip: Always check that Excel is suggesting the correct cell range.

1. Create a formula in cell **C38** that identifies the largest number of units sold. Make a note of the date when this occurred. Type the date in cell **D38**.
2. Create a formula in cell **C39** that shows how many days there were in the month.

Tip: It's important to remember that Excel considers dates as numbers. The dates in column **B** are formatted to display in the worksheet as a mixture of text and numbers. However, if you click on any of the dates shown and check the **Formula bar**, you'll discover that the dates are stored as numeric entries.

1. Create a formula in cell **C40** that calculates the average daily sales for this product.

Tip: The results that you have just produced in cells **C35** and **C40** are now formatted with the **Accounting format** and are shown as dollar amounts. Excel has automatically applied this format to the results because this is the format applied to the values in the cell range **E4** to **E33**.

Exercise 4 Questions

Question 1

Cell **C34** in your worksheet is blank and cell **C35** contains a formula. The cursor is on **C36**. If you use the AutoSum shortcut to add a **SUM** formula, which cell range does Excel automatically suggest as the argument for the function?

A. **C35**
B. **C34**
C. **C36**

Question 2

True or False: When you created the **Total Revenue** formula in **C35**, the results appeared as dollar amounts because the **Accounting format** had been applied to the cell in advance.

A. True
B. False

Question 3

When you created the formula in **C39** to count how many days there were in the month, what answer did the formula produce?

A. 0
B. 31
C. 30

Quiz 4

Question 1

Which of the following items are part of a function formula? Select all that apply:

A. Parentheses
B. An equals sign
C. The function name
D. Periods

Question 2

You need to know how many cells in a cell range contain entries. The cells with entries contain a mixture of text and numeric entries. Which function should you use in this situation?

A. **COUNT**
B. **COUNTBLANK**
C. **COUNTA**

Question 3

Three cells in your worksheet contain numbers. Cell **D7** holds the number 10, **D8** contains the number 20, and **D9** contains the number 30. What is the result of the following formula when added to cell **D10**?

```
=MAX(D7:D8)
```

A. 30
B. 20

C. 10

Question 4

Cells **B1** to **B3** in your worksheet contain numbers. Cell **B4** has a piece of text. You add an **AVERAGE** function formula to cell **B5**, which works out the average of cells **B1** to **B4**. How will Excel work out the average?

A. Total the numbers in **B1** to **B3** and divide by 5.
B. Total the numbers in **B1** to **B3** and divide by 3.
C. Total the numbers in **B1** to **B3** and divide by 4.

Question 5

Cell **E4** in your worksheet contains the value 300, cell **E5** the value 300, and cell **E6** the value 0. What is the correct answer to the following formula when added to your worksheet?

=AVERAGE(E4:E6)

A. 100
B. 200
C. 300

Chapter 5: Using functions to clean or standardize text

Exercise 5: Standardizing text-based data

- Use file **Exercise 5_Start.xlsx**
- You are asked you to update a spreadsheet that records details of resellers in the United States.
- This information in the spreadsheet was downloaded from another system.
- The download process created several inconsistencies or errors within the data.
- These errors include **unnecessary spaces**, the use of the **wrong case**, and entries that need to be **joined** together or **split** apart.
- You now need to add formulas to the worksheet to standardize the data so that it can be used for analysis.

Step 1: Create the Calculations.

1. The content in column **B** contains spaces before and after the entries. Create a **TRIM** function formula in **C2** that uses **B2** as an argument and removes unnecessary spaces.
2. Use the **PROPER** function to create a formula in **E2** to display the city name with an initial capital letter.
3. In cell **I2** create a formula that extracts the word **States** from the entry in **H2**.

Tip: The word States is to the left of the cell, so the **LEFT** function would be appropriate to use here.

1. In **J2,** create a formula to extract the words **New York** from the entry in **H2**.

Tip: The words New York are to the right of the cell, so the **RIGHT** function would be appropriate to use here.

1. In **K2,** add a formula using the **CONCAT** function that combines the entries in cell **G2** and cell **I2**.

Tip: You'll need to add a third argument that adds a space character to the result to ensure that the combined piece of text is spaced correctly.

1. In **L2,** create a formula to extract the three letters **uSA** from the middle of the entry using the **MID** function.
2. In **M2,** use a formula to display the three letters in **L2** in block capitals using the **UPPER** function.
3. Use **Autofill** to copy down the formulas you created as far as row **428**. Copy down from cells **C2**, **E2**, **I2**, **J2**, **K2**, **L2** and **M2**.

Tip: Remember the **Autofill** shortcut. If you work left to right, you won't need to click and drag to copy down. Remember, if Excel has a block of data to the left that it can use as a reference, then you can double-click to copy down.

1. Select all data. Choose **Copy** on the Home ribbon and then **Paste Values** from the **Copy and paste** drop-down list.

Tip: The keyboard shortcut Ctrl+A or clicking on the triangle at the junction of the row numbers and column initials are quick ways to select all the data.

1. Note the columns without headings, columns **B**, **D**, **G**, **H**, **I**, and **L**. Delete these columns. They are no longer needed.

Tip: Remember that the initials will change as you delete the columns.

Exercise 5 Questions

Question 1

In your worksheet, you created formulas in column **C** that included the **TRIM** function and cell references from column **B** as arguments. The entries in column **B** contained a lot of unnecessary spaces though the entries contain only a single space between each word. What did the formulas remove?

A. The spaces before and after the entries.
B. The spaces before the entries only.
C. The spaces before, after, and in the entries.

Question 2

True or False: You created formulas in cells **K2** to **K200** to combine the content from column **G** and column **l**. You were then able to delete columns **G** and **I** immediately, as they were no longer required.

A. True
B. False

Question 3

In the **CONCAT** formula in **K2**, you added a third argument to indicate that the two words needed space between them. What character did you input on either side of the space in the formula?

A. A parenthesis.
B. A double quote.
C. An exclamation mark.

Quiz 5

Question 1

True or False: An Excel spreadsheet contains country names split over multiple columns. Cell **A2** contains the word United. Cell **B2** contains the word States. When executed, the following formula generates the result United States:

```
=CONCAT(A2," ",B2)
```

A. True
B. False

Question 2

One of the employees at Adventure Works has made some typing errors in a spreadsheet. A text entry in cell contains the following text:

aDVENTURE wORKS rESELLERS

Which function should you use in a formula to copy this entry so that it is in lowercase with a capital letter at the beginning of each word?

A. **LOWER**
B. **PROPER**
C. **UPPER**

Question 3

In the *Adventure Works Reseller* spreadsheet, the reseller names are listed in column **D**. Cell **D2** contains the following text, which is left-aligned in the cell with no redundant spaces:

EastBike Shop

What is the result of this formula?

```
=MID(D2,5,4)
```

A. Bike
B. Shop
C. East

Question 4

Cell **A2** contains the following entry:

aceE6548.

What result would the following formula generate when applied to the above entry?

```
=UPPER(A2)
```

A. aCE6548
B. Ace6548.
C. ACEE6548

Question 5
Cell **E4** contains the city name North Miami Beach. What result would the following formula generate in your worksheet?

```
=RIGHT(E4,5)
```

A. North
B. Miami
C. Beach

Chapter 6: Date and Time Functions

Exercise 6: Calculating the number of working days remaining in the year

- Use file **Exercise 6_Start.xlsx.**
- Adventure Works is preparing a series of advertising campaigns to be rolled out in several different regions. A colleague, Lucas, has asked you to update a spreadsheet that focuses on the launch dates for the USA campaign. The spreadsheet is called *Advertising Campaign USA Dates.xlsx.*

For each project, Lucas needs to know the following information:

- The number of working days available between the start date and the deadline date.
- The month and year when each campaign will launch.
- The number of calendar days to the deadline date for each campaign.

Step 1: Create the Calculations.

1. In cell **B1** create a formula using the **TODAY** function, which will always display the current calendar date.
2. Delete the formula in **B1** and type the date **05/09/23** into the cell.

Note: You are being asked to remove the dynamic formula and add the date as a static entry at this point so that you can compare the results you achieve in this exercise with the results in the Exemplar.

1. In cell **E5**, create a formula that calculates the number of calendar days between the date in **B1** and the deadline date in **D5**. This must be a subtraction formula.

TIP: This formula will be copied down to row **9** at the end of the exercise, so you'll need to add dollar signs to the **B1** reference to ensure that it stays constant during the copy operation.

1. In cell **F5** create a formula using the **NETWORKDAYS** function to calculate the number of weekdays between the date in **B1** and the deadline in **D5**.

Add an argument to the formula so that the Federal holiday dates in the cell range **J5** to **J26** are excluded from the result of the **NETWORKDAYS** calculation. You will need to add dollar signs to three of the cell references in the formula so that it can be copied down to row **9**.

Tip: Remember that Excel ignores any dates in the **J5** to **J26** block that are already in the past when calculating the formula. This means that you can include the full cell range **J5** to **J26** as the third argument in the formula.

1. In cell **G5**, use the **MONTH** function to create a formula that extracts the month from the deadline date in **D5**.
2. In cell **H5**, create a formula using the **YEAR** function to extract the year from the deadline date in **D5**.
3. Copy the formulas you have created in row **5**, down as far as row **9**.

Exercise 6 Questions

Question 1

In the spreadsheet, you were asked to create a formula using the **MONTH** function. The formula was:

=MONTH(D5)

Cell **D5** contained the entry **07/02/23**. This date is in American format. What was the result of this calculation?

A. 2
B. 7
C. 2023

Question 2

True or False: The result of your **TODAY** function in cell **B1** changes each time the formulas in the worksheet recalculate.

A. True
B. False

Question 3

You created a formula using the **NETWORKDAYS** function. You added two arguments for the function, which were the start date, and the end date. What data did the formula automatically exclude from the result?

A. Any holiday date
B. Any weekend date
C. Any weekend and holiday date

Quiz 6

Question 1
You have created a formula in your spreadsheet using the **TODAY** function. What must you include after the word TODAY in your formula?

A. An opening and closing parenthesis and one space.
B. An opening and closing parenthesis and two spaces.
C. An opening and closing parenthesis only.

Question 2
You have created a formula in your spreadsheet using the **NOW** function. By default, what will the formula display in its result?

A. The date only.
B. The time only.
C. The date and time.

Question 3
You are working on a spreadsheet that contains three columns called Day, Month and Year. In another column, you would like to combine these entries so that it shows a complete date. Which function should you use to achieve this?

A. **DATE**
B. **DATEDIF**
C. **CONCAT**

Question 4
True or False: You can use the **NETWORKDAYS.INTL** function to calculate the number of working days between two dates while excluding national holidays and weekends because it has built-in knowledge of public holidays.

A. True
B. False

Question 5
You have entered the following three dates in your spreadsheet in the month, day and year format. Which of these dates has the largest serial number?

A. 04/15/2020
B. 09/10/2025
C. 01/30/2023

Chapter 7: Logical Functions

Exercise 7: Adding a data column using the IFS function

- Use file **Exercise 7_Start.xlsx**
- The worksheet needs the following additional information for Contoso Bikes:
    - Delivery charges
    - Discount rates
    - And regional totals

Step 1: Create the Calculations

1. Use an **IF** function to create a formula in cell **H7**. This formula must check the subtotal amount in column **G7**. If the amount is greater than $10,000 then the formula

should display the result 10%. If the amount is less than $10,000, then the formula should display the result 0.

TIP: You can type 10% as the “value if true” entry. It does not need double quotes because Excel recognizes it as a number.

1. Create a formula in cell **L7** using the **IFS** function to calculate the delivery charge applicable to each row. The formula needs to check the delivery region listed in **J7** and calculate the appropriate amount to charge.

The cost for delivery to each region is listed in the cell range **D2** to **D4**.If the delivery region is not A, B, or C, then the formula should return a value of 0. Include dollar signs to make the **D** references for the charges absolute.

TIP: Don’t forget that the **IFS** function needs to test for text characters, and those characters need to be in double quotes in the formula so that Excel recognizes that they are text.

1. Create a formula in cell **M7** that adds together the total (excluding the delivery amount) in **K7** and the delivery charge in **L7**.
2. Use **Autofill** to copy the formulas in **H7**, **L7** and **M7** down to row **16**.
3. Create a **SUMIF** formula in cell **H2** that calculates a sales total (excluding delivery) for **Region A**.

TIP: The **SUMIF** formula needs to check for criteria A in the cell range **J7** to **J16** and total the numbers in the cell range **K7** to **K16**.

1. Create a **SUMIF** formula in cell **H3** that provides a sales total (excluding delivery) for Region B.

TIP: The **SUMIF** formula needs to check for criteria B in the cell range **J7** to **J16** and total the numbers in the cell range **K7** to **K16**.

1. Create a **SUMIF** formula in cell **H4** that provides a sales total (excluding delivery) for Region C.

TIP: The **SUMIF** formula needs to check for criteria C in the cell range **J7** to **J16** and total the numbers in the cell range **K7** to **K16**.

Exercise 7 Questions

Question 1

You created an **IF** function formula in cell **H7** that was designed to display the correct percentage discount if the amount in **G7** was greater than $10,000. In what format did you enter the percentage in the **Value if true** section of the formula?

A. 10%
B. 10
C. "10%"

Question 2

True or False: When you created a formula in cell **L7** to check and display the delivery charge for the region, you used **IFS** rather than **IF** because you needed to run more than two tests.

A. True
B. False

Question 3

You created a formula in **H2** which used **SUMIF** to obtain a total for Region A entries only. What did you need to specify as the first argument in your formula?

A. The criteria entry
B. The criteria range
C. The **SUM** range

QUIZ 7

Question 1

Cell **A2** of your worksheet contains a value of 250. What is the result of the following formula when added to your worksheet?

```
=IF(A2>300,10%,IF(A2>200,5%,0%))
```

A. 5%
B. 10%
C. 0%

Question 2

You create a formula using the **IFS** function to test for a series of alphabet characters. When typing the criteria to test for, what symbols should you add around each text character?

A. Single quotation marks.
B. Double quotation marks.
C. Parentheses.

Question 3

In your worksheet, cell **A2** contains a value of 100. Cell **B2** contains a value of 200, and **C2** contains a value of 400. What is the result of the following formula when added to your worksheet?

```
=IF(OR(A2>=200,B2>=200),"Result 1",IF(C2>300,"Result 2","Result 3"))
```

A. Result 2
B. Result 3
C. Result 1

Question 4

You create the following formula using the **AVERAGEIF** function:

```
=AVERAGEIF(A2:A50,"Chicago”,C2:C50)
```

What does the first argument of this function represent?

A. The criteria.
B. The average range.
C. The criteria range.

Question 5

In your worksheet, cell **A2** contains the value 100. Cell **B2** contains a value of 200, and **C2** contains a value of 400. What is the result of the following formula when added to your worksheet?

```
=IFS(A2>200,"Rate 1",B2>200,"Rate 2",C2>200,"Rate 3",TRUE,0)
```

A. Rate 3

B. Rate 2
C. Rate 1

Chapter 8: Final Project

Creating an executive data summary

Case study

Jamie is attending a management meeting. She has been asked to prepare an Excel worksheet that presents sales figures for the first quarter of the year and compares these figures to the results for the same period in the previous year.

This worksheet is called **Summary** and is in the workbook *Quarter One Report.xlsx*. In this worksheet, you'll need to complete the following actions:

- Create formulas that show the total quarter-one sales for both 2022 and 2023.
- Create formulas that show the percentage increase in sales in 2023.
- And break down these totals by month with the use of further calculations.

Let's help Jamie to complete this worksheet.

Step1: Project file

- Use file **Final Project.xlsx.**
- The workbook contains only one worksheet called **Summary**.
- The sheet contains sales information for specific products spread over two years. It includes wholesale and retail prices as well as the quantity sold for each product. In the steps that follow, you need to reformat this information so that the worksheet shows only the required data and displays it effectively.

Step 2: Add and format headings.

1. Widen column **A** to accommodate the entries in cells **A12** to **A14**. Add a new blank column to the left of column **E**. Column **E** is titled **Product ID**.

Tip: You can drag the right vertical line between the letters **A** and **B** manually, or you can use the shortcut double-click method to resize the column quickly.

1. In cell **A4** type the heading **TOTAL Q1 SALES** and in **A10** type the heading **Q1 MONTHLY TOTALS**.
2. Adjust the format of the heading in **A4** as outlined below:
    - Increase the font size by one step.
    - Bold the text.
    - Add a background color.
    - Select the cells **A4** to **D4** and apply the **Merge & Center** option.
    - Next, use the **Format painter** option to apply the same formatting to cell **A10**.

Tip: Remember to position the cursor on the cell which already contains the formatting you want to copy before selecting **Format painter**.

1. Bold the headings in cells **B5**, **C5** and **D5** and turn on **Wrap text**. Use the **Format painter** to apply the same formatting to **B11**, **C11,** and **D11**.

Step 3: Customize and reorganize how the data is displayed.

1. In cell **H2**, create a formula using **PROPER** to copy the product names in column **G**. **Autofill** the formula. **Copy** the results and use the **Paste Values** choice to replace the formulas with the result. Once this is done, delete column **G**.

Tip: The **Paste values** choice is available on both the **Home ribbon** and the right-click shortcut menu.

1. Highlight the block of cells **F2** to **Y246** and sort the block by **Order Date**. The sort order should be **Oldest to Newest**.

Tip: The headings and entries in columns **A** to **E** should not be sorted. Remember, you are highlighting a block of data. So, use the **Sort** dialog rather than the quick shortcut buttons to sort the data.

1. Hide columns **F** and columns **S** to **Y**.
2. Position the cursor on **G2** and use the **Freeze** option on the **View** ribbon to freeze the columns to the left of the cursor and the row above the cursor.

Step 4: Use formulas to create new row information

1. Create a formula in **K2** using **MONTH** and a formula in **L2** using **YEAR** to extract the two component parts of the date in **J2.** Use **Autofill** to copy both formulas down to row **246**.

Tip: You can highlight cells **K2** and **L2** and then double-click to **Autofill** them both at the same time.

1. In **P2,** create a standard multiplication formula that multiplies the retail price by the order quantity. Copy the formula using **Autofill**.
2. In cell **Q2,** create a formula using an **IF** function that calculates if tax is due on the amount in **P2**.

The **IF** function must check if the amount in **P2** is over 2000. If it is, then the amount in **P2** must be multiplied by 5%. If it's not, then cell **Q2** should display a 0. Use **Autofill** to copy this formula down.

Tip: The "Value if true" or "Value if false" entries for an **IF** can both be formulas if required. Remember that these formulas do not need an equals sign at the beginning. The standard rules for creating and controlling formulas will apply.

Step 5: Create formulas to calculate and compare the profit margin across two years.

1. In cell **B6,** use **SUMIF** to sum the sales values for **2022**. The sales values are in the range **R2** to **R246**. The criteria range will be **L2** to **L246**. Create a similar formula in cell **C6** but change the criteria to **2023**.

Tip: Remember that in the **SUMIF** arguments, the criteria range comes first, then the criteria, and then the sum range.

1. In cell **B12** use **SUMIF** to sum the range **R2** to **R103** if there is the number **1** in the criteria range **K2** to **K103**. Add dollar signs to the **R** and **K** cell references so that the formula can be copied down with the cell references staying constant.

Tip: If you are using a standard keyboard, don't forget that you can quickly add the dollar signs to a cell reference by placing the cursor on it and then pressing the F4 key on the keyboard.

1. Copy the formula from **B12** into **B13** and **B14**. In the **B13** copy, change the criteria to **2.** In the **B14** copy, change the criteria to **3**.

Tip: When you change the criteria in **B13** to **2**, a green triangle appears temporarily. This triangle is there to notify you that the formula in this cell is temporarily inconsistent with the formulas above and below. You do not need to act on this notification. It will disappear when you change the criteria in **B14** to **3**.

1. In **C12** use **SUMIF** to sum the range **R104** to **R246** if it says **1** in the range **K104** to **K246**. Add dollar signs to the **R** and **K** cell references.
2. Copy the formula to **C13** and **C14**. In the **C13** formula, change the criteria to **2**, and in the **C14** formula, change the criteria to **3**.
3. Create a **Percentage difference** formula in **D6** which shows the percentage by which sales increased in 2023.

1. Create a similar formula in **D12**. Copy the calculation in **D12** down to **D14**.

Final Project Questions

Question 1

You had to freeze the screen so that the summary data in columns **A** to **F** and the headings in row **1** were always visible. On the **Freeze** drop-down options in the **View** ribbon, which choice did you make?

A. Freeze First Column
B. Freeze Top Row
C. Freeze Panes

Question 2

You created the following formula in cell **B12** to calculate the total sales for January 2022.

```
=SUMIF(K2:K103,1,R2:R103)
```

Before copying this formula down to cells **B13** and **B14,** which references did you need to add dollar signs to?

A. **R2:R103** only
B. **K2:K103** only
C. **K2:K103** and **R2:R103**

Question 3

In cell **D6,** you created a formula to work out the percentage difference between the 2022 quarter-one sales and the 2023 quarter-one sales. Which of the following describes the logic of how this calculation should be designed?

A. *(2023 total – 2022 total)/2023*
B. *(2022 total – 2023 total)/2022 total*
C. *(2023 total-2022 total)/2022 total*

Question 4

In cell **C12** you used **SUMIF** to calculate the total sales for January 2023 and then copied that formula down to cells **C13** and **C14**. When you completed the exercise, what result was generated in **C14**?

A. $164,740
B. $143,555
C. $145,535

Question 5

The headings you added in rows **4** and **10** had to be centered across the tables of information that they related to by using the **Merge & Center** choice on the **Home** ribbon. Before selecting the **Merge & Center** button you typed the heading and then highlighted the cell range that the heading had to be centered in. Where should you type the heading before selecting **Merge & center?**

A. In the middle of the cell range the heading is to be centered in.
B. On the left edge of the cell range the heading is to be centered in.
C. On the right edge of the cell range the heading is to be centered in.