DATA AND
ARTIFICIAL INTELLIGENCE

Business Analytics with Excel

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DATA AND
ARTIFICIAL INTELLIGENCE

Analyzing Data with Pivot Tables

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Learning Objectives

By the end of this lesson, you will be able to:

◉ Explain the use of pivot tables and how to create them in Excel

◉ Formulate grouping of two different data types in a pivot table

◉ Create and evaluate the summarized values in a pivot table

◉ Illustrate the use of a calculated field and calculated item

◉ Design an interactive pivot table using a slicer

A Day in the Life of a Business Analyst

As a business analyst of an organization:

You are required to summarise, sort, reorganize, group, count, total or average data stored in a table. Also you are required to do grouping by any field (column), and using advanced calculations on dataset of company.

To achieve these tasks, you will be learning a few concepts, such as grouping in pivot table, custom calculation, calculated field, calculated item and slicer that will help find a solution for the given scenario.

Introduction to Pivot Table

Pivot Table: Introduction

Pivot tables are extremely useful and powerful Excel features.

Summarize		Analyze
Pivot Table		
Explore		Present

Tabular Form
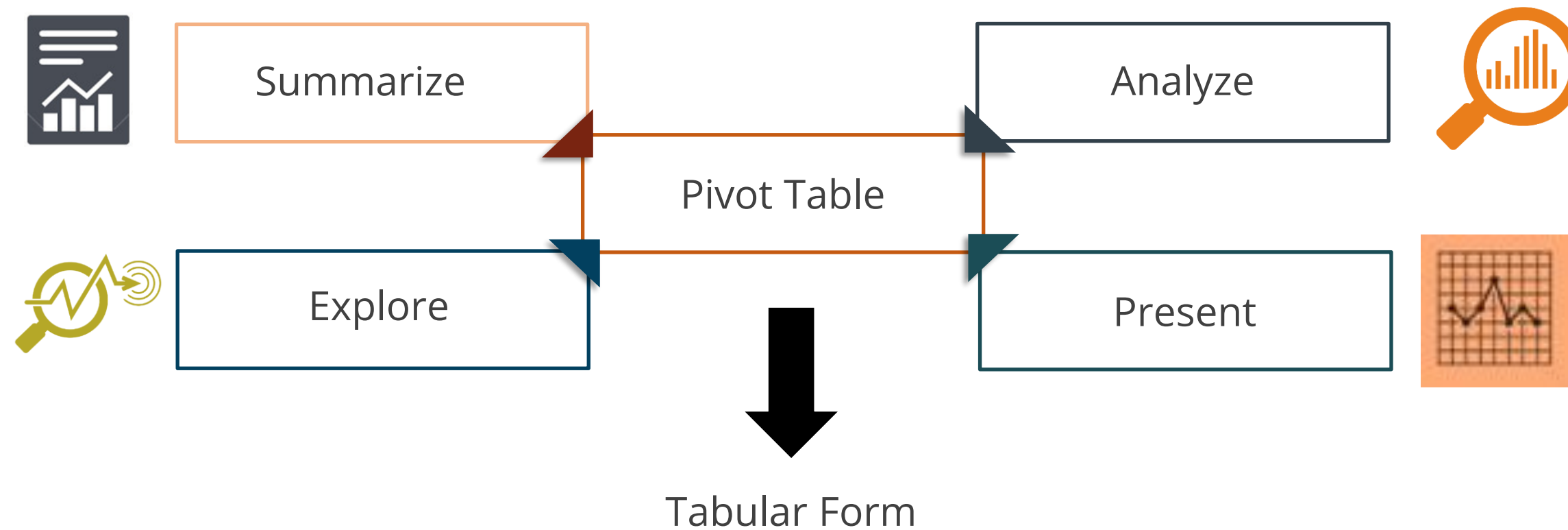
Why Pivot Table?

Determine the net sales made by salesmen in each region.

	A	B	C	D	E	F	G	H
1	Dates	Order ID	Product	Salesman	Region	No. Customers	Net Sales	Profit / Loss
2	1-Jan-12	1111	Product1	Adam	North	8	7,164.0	844.2
3	2-Jan-12	1112	Product2	Adam	North	8	6,528.0	3,376.6
4	3-Jan-12	1113	Product3	Adam	West	8	2,520.0	2,280.0
5	5-Jan-12	1115	Product2	Adam	West	10	9,660.0	1,737.4
6	6-Jan-12	1116	Product3	Adam	Middle	10	11,550.0	854.7
7	7-Jan-12	1117	Product1	Adam	Middle	7	7,896.0	2,565.4
8	8-Jan-12	1118	Product2	Adam	Middle	7	8,095.5	1,063.2
9	9-Jan-12	1119	Product3	Adam	North	8	12,180.0	1,864.0
10	10-Jan-12	1120	Product1	Adam	North	6	4,900.5	2,653.6
11	11-Jan-12	1121	Product2	Adam	North	9	2,277.0	1,931.4
12	12-Jan-12	1122	Product3	Adam	West	6	8,032.5	994.4
13	13-Jan-12	1123	Product1	Adam	West	9	8,046.0	4,092.7
14	14-Jan-12	1124	Product2	Adam	West	6	11,250.0	1,900.8
15	15-Jan-12	1125	Product3	Adam	Middle	7	6,189.8	2,722.9
16	16-Jan-12	1126	Product1	Adam	Middle	7	2,908.5	1,140.7
17	17-Jan-12	1127	Product2	Adam	Middle	6	2,214.0	2,828.6
18	18-Jan-12	1128	Product3	Adam	North	9	8,829.0	4,189.4
19	19-Jan-12	1129	Product1	Adam	North	10	9,120.0	3,569.3
20	20-Jan-12	1130	Product2	Adam	North	6	2,173.5	3,709.1
21	21-Jan-12	1131	Product3	Adam	West	10	5,600.0	4,516.4
22	22-Jan-12	1132	Product1	Adam	West	6	4,608.0	2,575.4
23	23-Jan-12	1133	Product2	Adam	West	8	5,508.0	1,965.3

Pivot Table: Features

This data can be analyzed easily by creating a pivot table.
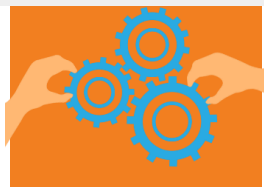
Calculate and summarize the data instantly, which is both easy to read and manipulate.

Pivot or reorganize data to answer different questions quickly.

	A	B	C
1			
2			
3	Row Labels ▼	Count of Net Sales	
4	1300-2300	185	
5	2300-3300	117	
6	3300-4300	98	
7	4300-5300	144	
8	5300-6300	131	
9	6300-7300	119	
10	7300-8300	117	
11	8300-9300	113	
12	9300-10300	77	
13	10300-11300	86	
14	11300-12300	46	
15	12300-13300	43	
16	13300-14300	28	
17	14300-15300	21	
18	Grand Total	1325	
19			
20			
21			
22			

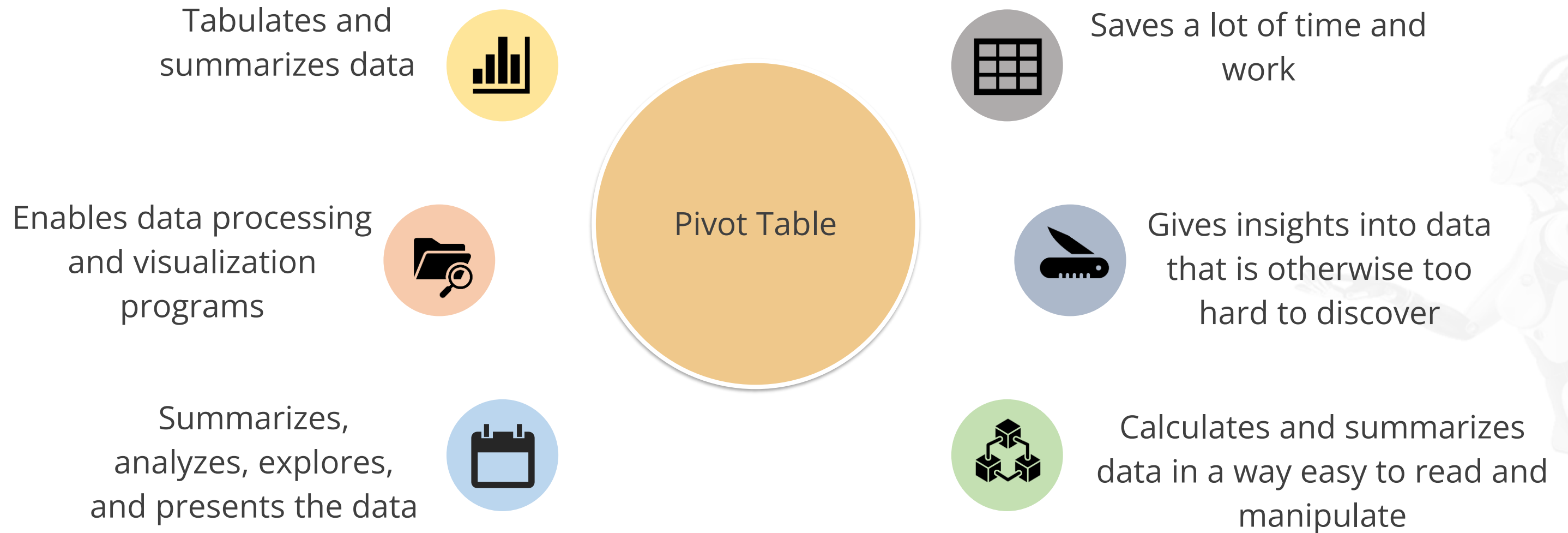**Pivot Table**

Need for Pivot Table

Need for Pivot Table

A proper analysis of the available data helps companies to make critical business decisions.

Pivot Table: Capabilities
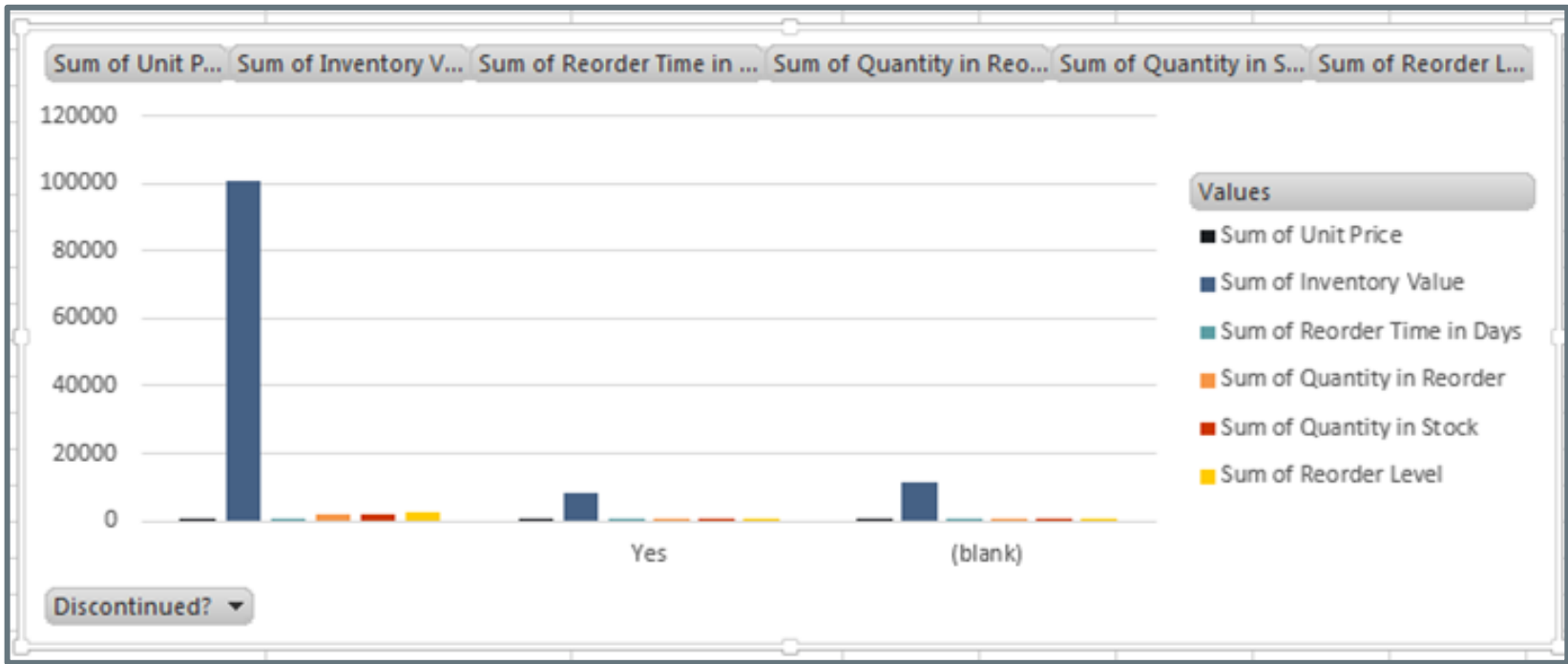
A pivot table has the following capabilities:

Tabulates and summarizes data

Saves a lot of time and work

Enables data processing and visualization programs

Pivot Table

Gives insights into data that is otherwise too hard to discover

Summarizes, analyzes, explores, and presents the data

Calculates and summarizes data in a way easy to read and manipulate

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How Does It Work?

3	Row Labels	▼
4		
5	Yes	
6	(blank)	
7	**Grand Total**	

Sum of Inventory Value	
	100718
	8603
	11726
	121047

Sum of Unit Price	
	936
	126
	82
	1144

Sum of Unit Price	
	936
	126
	82
	1144

Sum of Unit Price	
	936
	126
	82
	1144

Sum of Unit Price	
	936
	126
	82
	1144

Pivots or reorganizes data quickly

Discovers new trends and patterns

Pivot Table: Slicers

Slicers make filtering data in pivot tables easier.
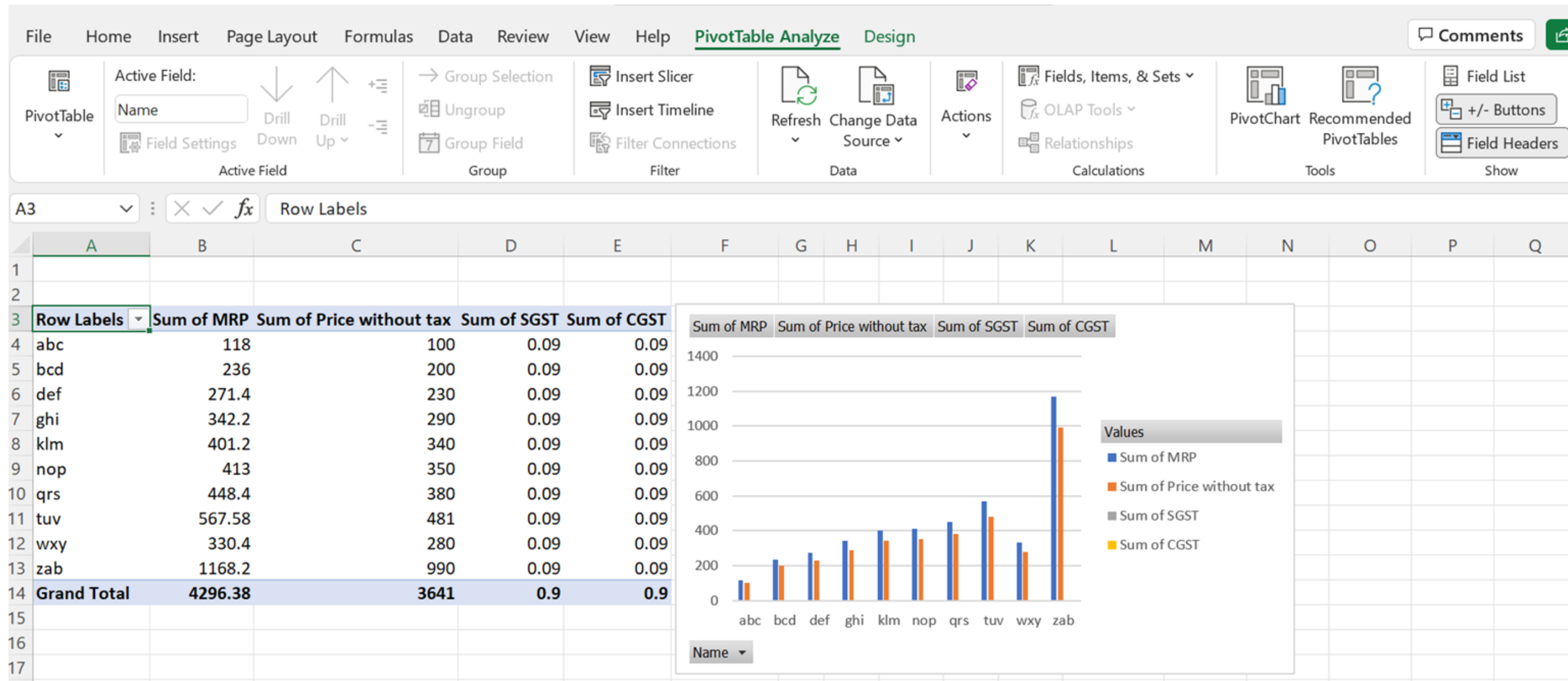
Problem statement:

Demonstrate how to create a Pivot Table and customize it.

Assisted Practice Guidelines

Steps to follow:

Step 1: Open the Excel file

Step 2: Create a Pivot Table

Grouping in Pivot Table

Grouping in Pivot Table

Group the fields in a pivot table by the header values.

A pivot table groups data for any field added as a row or as a column.

Excel does this automatically for numeric values, including dates and times.

Problem statement:

Demonstrate how to perform grouping in a Pivot Table.

Assisted Practice Guidelines

Steps to follow:

Step 1: Open the Excel file

Step 2: Create a Pivot Table

Custom Calculation

Custom Calculation: Introduction

The way values are shown in the pivot table has to be changed.

The value can be displayed in terms of a percentage instead of a total or an average value.

Problem statement:

Demonstrate how to perform custom calculations in a Pivot Table.

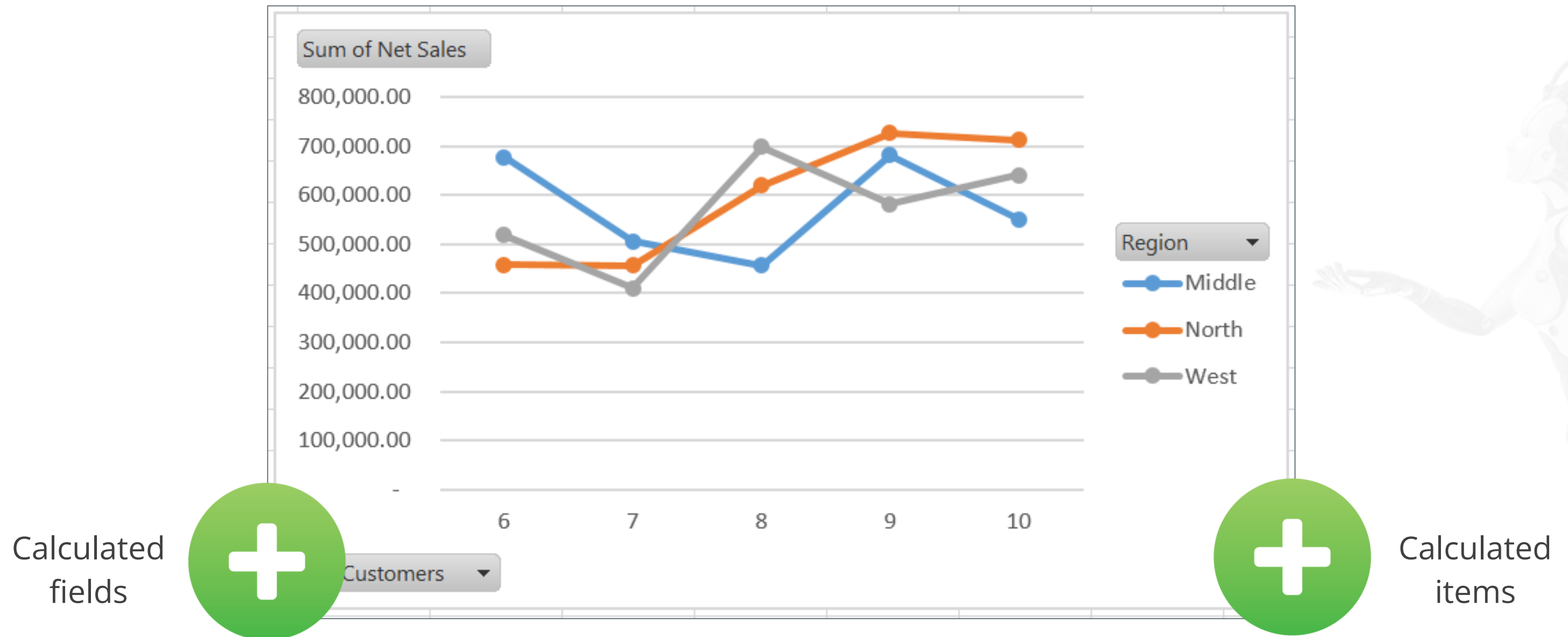# Assisted Practice Guidelines

Steps to follow:

Step 1: Open the Excel file

Step 2: Create a Pivot Table

Calculated Field and Calculated Item: Introduction

Calculated Field and Calculated Item

Once we have created a pivot table, we can add calculated fields and calculated items to it.

Calculated fields

Calculated items

Calculated Field: Definition

Calculated fields help enhance the results by allowing formulas to be written.

This functionality helps to create a new field that performs the calculations based on other pivot fields.

Problem statement:

Demonstrate how to add calculated field in an existing Pivot Table.
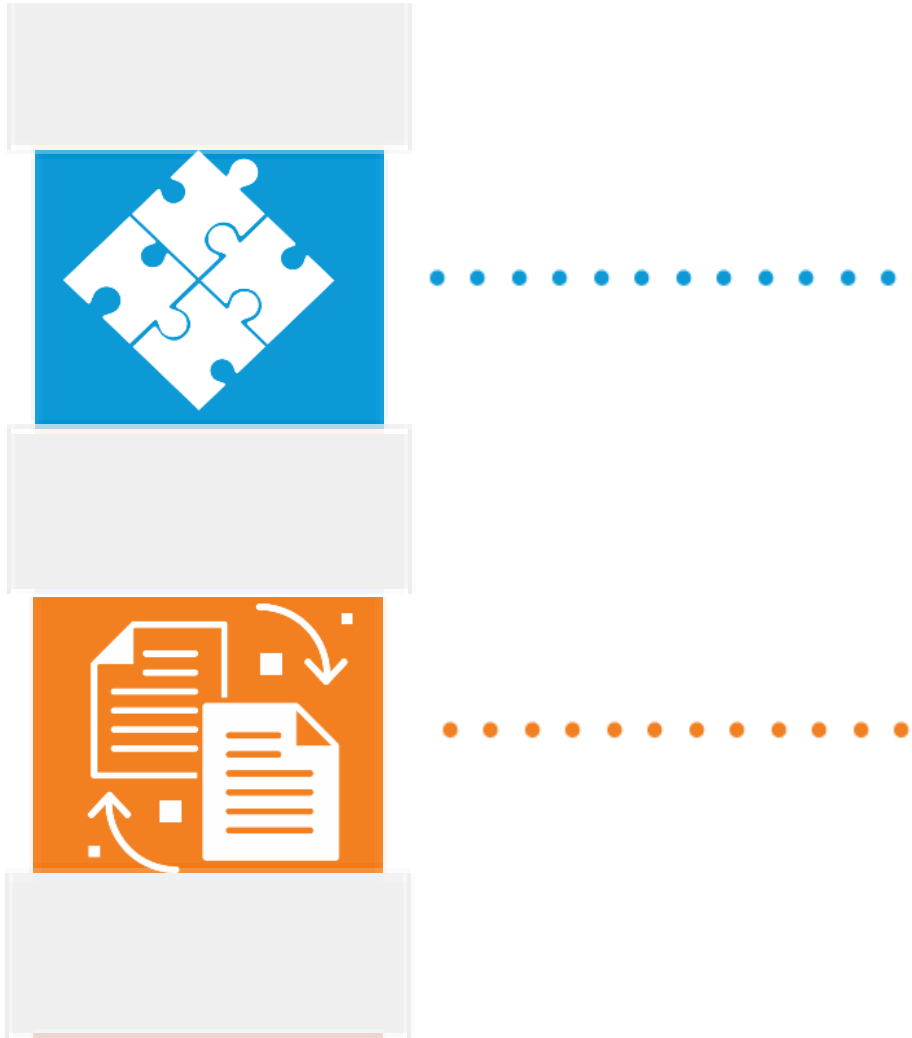
ASSISTED PRACTICE

Assisted Practice Guidelines

Steps to follow:

Step 1: Open the Excel file

Step 2: Create a Pivot Table

Calculated Item: Definition

Many calculated items can be added in a pivot table field apart from the existing items.

Calculated items are used to perform calculations between items within the fields.

Problem statement:

Demonstrate how to add a calculated item in an existing Pivot Table.

Assisted Practice Guidelines

Steps to follow:

Step 1: Open the Excel file

Step 2: Create a Pivot Table

Slicer

Filter: Introduction

It is necessary to concentrate on a certain part of the data based on demand and goal of data analysis.

The filters in Excel make it easier to filter data in the pivot table and extract the necessary information.

Slicer: Introduction

Slicer is a filtering component that allows narrowing down the data and extracting necessary information in the pivot table.

100000   759379747

280000

7865957858587

4837957509

Slicer: Features

- Slicers contain a set of buttons that make filtering data in pivot tables quicker and easier.

- The items can be filtered without opening the drop-down lists.

- Slicers can be created for any field and can filter the pivot table data according to the requirement.

Problem statement:

Demonstrate how to create a Slicer in a Pivot Table and filter data.

Assisted Practice Guidelines

Steps to follow:

Step 1: Open the Excel file

Step 2: Create a Pivot Table

Key Takeaways

- Pivot tables are used to summarize, analyze, explore, and present the data in the form of a table.

- Grouping data in a pivot table can help show a subset of data to be analyzed.

- In a pivot table, summary functions in value fields can be used to combine values from the underlying source data.

- Formulas can be created in the calculated fields and calculated items.

- Slicers are easy-to-use filtering components that contain a set of buttons used to quickly filter the data in a pivot table.

Knowledge Check

Knowledge Check

1

Which of the following is part of the Pivot Table field list box?

a.   A field section and an area section

b.   A calculated field and an area section

c.   A calculated field and a calculated item

d.   A field section and a calculated item

Knowledge Check

1

Which of the following is part of the Pivot Table field list box?

a.   A field section and an area section

b.   A calculated field and an area section

c.   A calculated field and a calculated item

d.   A field section and a calculated item

The correct answer is   **a**

The Pivot Table field list box contains a field section and an area section.

Knowledge Check

2

Which of the following options available in a Pivot Table allows us to change the sum function to the count function?

a.   Value Field Setting

b.   Grouping

c.   Slicer

d.   Calculated Field

Which of the following options available in a Pivot Table allows us to change the sum function to the count function?

a.   Value Field Setting

b.   Grouping

c.   Slicer

d.   Calculated Field

The correct answer is   **a**

The Value Field Setting option allows us to change the sum function to the count function in a Pivot Table.

Knowledge Check

3

The Grouping feature of a Pivot Table allows us to create class intervals.

a.   True

b.   False

The Grouping feature of a Pivot Table allows us to create class intervals.

a.   True

b.   False

The correct answer is   **a**

True. The Grouping feature helps us create a table with class intervals and add values for each class interval.

Knowledge Check

4

A Pivot Table can be defined as _____.

a. A column chart representing the frequency distribution

b. A data summarization tool to analyze data in the form of a table

c. A function that performs mathematical calculations

d. A tool to filter data

Knowledge Check

4

A Pivot Table can be defined as _____.

a.   A column chart representing the frequency distribution

b.   A data summarization tool to analyze data in the form of a table

c.   A function that performs mathematical calculations

d.   A tool to filter data

The correct answer is   **b**

A Pivot Table can be defined as a data summarization tool to analyze data in the form of a table.

The Calculated Fields perform calculations based on _____.

a. Grouping

b. Report Filter Area

c. Slicer

d. Pivot Table Data Fields

The Calculated Fields perform calculations based on _____.

a.   Grouping

b.   Report Filter Area

c.   Slicer

d.   Pivot Table Data Fields

The correct answer is **d**

The Calculated Fields perform the calculation based on Pivot Table Data Fields.