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DA-100

Analyzing Data with Microsoft Power BI (beta)



## Testlet 1

### Case Study

This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all question included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other question on this case study.

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#### To start the case study

To display the first question on this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. If the case study has an **All Information tab**, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the **Question** button to return to the question. **Overview**

Litware, Inc. is an online retailer that uses Microsoft Power BI dashboards and reports.

The company plans to leverage data from Microsoft SQL Server databases, Microsoft Excel files, text files, and several other data sources.

Litware uses Azure Active Directory (Azure AD) to authenticate users.

#### Existing Environment

#### Sales Data

Litware has online sales data that has the SQL schema shown in the following table.



Table name	Column name	Data type
Sales_Region	region_id	Integer
	name	Varchar
Region_Manager	region_id	Integer
	manager_id	Integer
Sales_Manager	sales_manager_id	Integer
	name	Varchar
	username	Varchar
Sales	sales_id	Integer
	sales_date_id	Integer
	sales_amount	Floating
	customer_id	Integer
	sales_ship_date_id	Integer
	region_id	Varchar
Customer_Date	customer_id	Integer
	first_name	Varchar
	last_name	Varchar
Date	date_id	Integer
	date	Date
	month	Integer
	week	Integer
	year	Integer
Weekly_Returns	week_id	Integer
	total_returns	Floating
	sales_region_id	Varchar
Targets	target_id	Integer
	sales_target	Decimal
	date_id	Integer
	region_id	Integer



In the Date table, the date\_id column has a format of yyyyymmdd and the month column has a format of yyyyymm.

The week column in the Date table and the week\_id column in the Weekly\_Returns table have a format of yyyyww.

The region\_id column can be managed by only one sales manager.

### Sales Data

Litware, Inc. is an online retailer that uses Microsoft Power BI dashboards and reports.

The company plans to leverage data from Microsoft SQL Server databases, Microsoft Excel files, text files, and several other data sources.

Litware uses Azure Active Directory (Azure AD) to authenticate users.

### Data Concerns

You are concerned with the quality and completeness of the sales data. You plan to verify the sales data for negative sales amounts. **Reporting**

### Requirements

Litware identifies the following technical requirements:

- Executives require a visual that shows sales by region.
- Region managers require a visual to analyze weekly sales and returns.
- Sales managers must be able to see the sales data of their respective region only.

- The sales managers require a visual to analyze sales performance versus sales targets. ▪
- The sale department requires reports that contain the number of sales transactions.
- Users must be able to see the month in reports as shown in the following example: Feb 2020.
- The customer service department requires a visual that can be filtered by both sales month and ship month independently.

**QUESTION 1** You need to create a calculated column to display the month based on the reporting requirements.

Which DAX expression should you use?

- A. `FORMAT('Date'[date], "MMM YYYY")`
- B. `FORMAT('Date'[date], "M YY")`
- C. `FORMAT('Date'[date_id], "MMM") & " " & FORMAT('Date'[year], "#")`
- D. `FORMAT('Date'[date_id], "MMM YYYY")`

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Scenario: In the Date table, the date\_id column has a format of yyyyymmdd. Users must be able to see the month in reports as shown in the following example: Feb 2020.

## Testlet 2

### Case Study

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### Overview

#### Existing Environment

Contoso, Ltd. is a manufacturing company that produces outdoor equipment. Contoso has quarterly board meetings for which financial analysts manually prepare Microsoft Excel reports, including profit and loss statements for each of the company's four business units, a company balance sheet, and net income projections for the next quarter.

#### Data and Sources

Data for the reports comes from three sources. Detailed revenue, cost, and expense data comes from an Azure SQL database. Summary balance sheet data comes from Microsoft Dynamics 365 Business Central. The balance sheet data is not related to the profit and loss results, other than they both relate dates.

Monthly revenue and expense projections for the next quarter come from a Microsoft SharePoint Online list. Quarterly projections relate to the profit and loss results by using the following shared dimensions: date, business unit, department, and product category.

#### Net Income Projection Data

Net income projection data is stored in a SharePoint Online list named Projections in the format shown in the following table.

MonthStartDate	Projection type	ProductCategory	Department	Projection
1-Apr-20	Revenue	Bikes	N/A	200,000
1-Apr-20	Revenue	Components	N/A	250,000
1-Apr-20	Revenue	Clothing	N/A	300,000
1-Apr-20	Revenue	Accessories	N/A	150,000
1-May-20	Revenue	Bikes	N/A	200,000
1-May-20	Revenue	Components	N/A	250,000
1-Apr-20	Expense	Bikes	Bike Manufacture	50,000
1-Apr-20	Expense	Bikes	Bike Sales	3,333

Revenue projections are set at the monthly level and summed to show projections for the quarter.

#### Balance Sheet Data

The balance sheet data is imported with final balances for each account per month in the format shown in the following table.

AccountCategory	Account	Month	Year	BalanceAmount
Current assets	Cash and cash equivalents	3	2020	20,289
Current assets	Inventories	3	2020	4,855
Long-term liabilities	Long-term debt	3	2020	50,207
Current assets	Cash and cash equivalents	2	2020	28,209
Current assets	Inventories	2	2020	5,845
Long-term liabilities	Long-term debt	2	2020	49,887
Current assets	Cash and cash equivalents	1	2020	25,567
Current assets	Inventories	1	2020	65,998
Long-term liabilities	Long-term debt	1	2020	46,124

There is always a row for each account for each month in the balance sheet data.

### Dynamics 365 Business Central Data

Business Central contains a product catalog that shows how products roll up to product categories, which roll up to business units.

Revenue data is provided at the date and product level. Expense data is provided at the date and department level.

### Business Issues

Historically, it has taken two analysts a week to prepare the reports for the quarterly board meetings. Also, there is usually at least one issue each quarter where a value in a report is wrong because of a bad cell reference in an Excel formula. On occasion, there are conflicting results in the reports because the products and departments that roll up to each business unit are not defined consistently. **Requirements**

### Planned Changes

Contoso plans to automate and standardize the quarterly reporting process by using Microsoft Power BI. The company wants to how long it takes to populate reports to less than two days. The company wants to create common logic for business units, products, and departments to be used across all reports, including, but not limited, to the quarterly reporting for the board.

### Technical Requirements

Contoso wants the reports and datasets refreshed with minimal manual effort.

The company wants to provide a single package of reports to the board that contains custom navigation and links to supplementary information.

Maintenance, including manually updating data and access, must be minimized as much as possible.

### Security Requirements

The reports must be made available to the board from powerbi.com. A mail-enabled security group will be used to share information with the board.

The analysts responsible for each business unit must see all the data the board sees, except the profit and loss data, which must be restricted to only their business unit's data. The analysts must be able to build new reports from the dataset that contains the profit and loss data, but any reports that the analysts build must not be included in the quarterly reports for the board. The analysts must not be able to share the quarterly reports with anyone.

### Report Requirements

You plan to relate the balance sheet to a standard date table in Power BI in a many-to-one relationship based on the last day of the month. At least one of the balance sheet reports in the quarterly reporting package must show the ending balances for the quarter, as well as for the previous quarter.

Projections must contain a column named RevenueProjection that contains the revenue projection amounts. A relationship must be created from Projections to a table named Date that contains the columns shown in the following table.



Name	Data type	Example
Date	Date	4-Apr-2020
Month	Integer	20,2004
Month Name	Text	February
Quarter	Integer	20,202
Year	Integer	2,020

The relationships between products and departments to business units must be consistent across all reports.

The board must be able to get the following information from the quarterly reports:

- Revenue trends over time
- Ending balances for each account
- A comparison of expenses versus projections by quarter
- Changes in long-term liabilities from the previous quarter
- A comparison of quarterly revenue versus the same quarter during the prior year

**QUESTION 1** What is the minimum number of datasets and storage modes required to support the reports?

- A. two imported datasets
- B. a single DirectQuery dataset
- C. two DirectQuery datasets
- D. a single imported dataset

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Scenario: Data and Sources

Data for the reports comes from three sources. Detailed revenue, cost, and expense data comes from an Azure SQL database. Summary balance sheet data comes from Microsoft Dynamics 365 Business Central. The balance sheet data is not related to the profit and loss results, other than they both relate dates.

Monthly revenue and expense projections for the next quarter come from a Microsoft SharePoint Online list. Quarterly projections relate to the profit and loss results by using the following shared dimensions: date, business unit, department, and product category.

Reference:

<https://docs.microsoft.com/en-us/power-bi/connect-data/service-datasets-understand>

**Question Set 3**

**QUESTION 1**

You have a large dataset that contains more than 1 million rows. The table has a datetime column named Date.

You need to reduce the size of the data model.

What should you do?

- A. Round the hour of the Date column to startOfHour.
- B. Change the data type of the Date column to **Text**.
- C. Trim the Date column.
- D. Split the Date column into two columns, one that contains only the time and another that contains only the date.

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation: We have to separate date & time tables. Also, we don't need to put the time into the date table, because the time is repeated every day.

Split your DateTime column into a separate date & time columns in fact table, so that you can join the date to the date table & the time to the time table. The time need to be converted to the nearest round minute or second so that every time in your data corresponds to a row in your time table.

Reference: <https://intellipaat.com/community/6461/how-to-include-time-in-date-hierarchy-in-power-bi>

## QUESTION 2

You have a custom connector that returns ID, From, To, Subject, Body, and Has Attachments for every email sent during the past year. More than 10 million records are returned.

You build a report analyzing the internal networks of employees based on whom they send emails to.

You need to prevent report recipients from reading the analyzed emails. The solution must minimize the model size.

What should you do?

- A. Implement row-level security (RLS) so that the report recipients can only see results based on the emails they sent.
- B. Remove the Subject and Body columns during the import.
- C. From Model view, set the Subject and Body columns to **Hidden**.

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Incorrect Answers:

A, C: Does not reduce the size of the model.



## QUESTION 3

You have the tables shown in the following table.

Table name	Column name
Campaigns	Campaign_ID
	Name
Ads	Ad_id
	Name
	Campaign_id
Impressions	Impression_id
	Ad_id
	Site_name
	Impression_time
	Impression_date

The Impressions table contains approximately 30 million records per month.

You need to create an ad analytics system to meet the following requirements:

- Present ad impression counts for the day, campaign, and Site\_name. The analytics for the last year are required. ▪
- Minimize the data model size.

Which two actions should you perform? Each correct answer presents part of the solution.

**NOTE:** Each correct selection is worth one point.



- A. Group the impressions by Ad\_id, Site\_name, and Impression\_date. Aggregate by using the CountRows function.
- B. Create one-to-many relationships between the tables.
- C. Create a calculated measure that aggregates by using the COUNTROWS function.
- D. Create a calculated table that contains Ad\_id, Site\_name, and Impression\_date.

**Correct Answer:** AB

**Section:** [none]

**Explanation**

**Explanation/Reference:**

**QUESTION 4** Your company has training videos that are published to Microsoft Stream.

You need to surface the videos directly in a Microsoft Power BI dashboard.

Which type of tile should you add?

- A. video
- B. custom streaming data
- C. text box
- D. web content

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

The only way to visualize a streaming dataset is to add a tile and use the streaming dataset as a custom streaming data source.

Reference:

<https://docs.microsoft.com/en-us/power-bi/connect-data/service-real-time-streaming>

**QUESTION 5** You open a query in Power Query Editor.

You need to identify the percentage of empty values in each column as quickly as possible.

Which Data Preview option should you select?

- A. **Show whitespace**
- B. **Column profile**
- C. **Column distribution**
- D. **Column quality**

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Column quality: In this section, we can easily see valid, Error and Empty percentage of data values associated with the Selected table.

Note: In Power Query Editor, Under View tab in Data Preview Section we can see the following data profiling functionalities:

- Column quality

- Column distribution ▪
- Column profile

Reference: <https://community.powerbi.com/t5/Community-Blog/Data-Profiling-in-Power-BI-Power-BI-Update-April-2019/ba-p/674555>

**QUESTION 6** You have a prospective customer list that contains 1,500 rows of data. The list contains the following fields:

- First name
- Last name
- Email address
- State/Region
- Phone number

You import the list into Power Query Editor.

You need to ensure that the list contains records for each State/Region to which you want to target a marketing campaign.

Which two actions should you perform? Each correct answer presents part of the solution.

**NOTE:** Each correct selection is worth one point.

- A. Open the **Advanced Editor**.
- B. Select **Column quality**.
- C. Enable **Column profiling based on entire dataset**.
- D. Select **Column distribution**.
- E. Select **Column profile**.

**Correct Answer:** DE

**Section:** [none]

**Explanation**

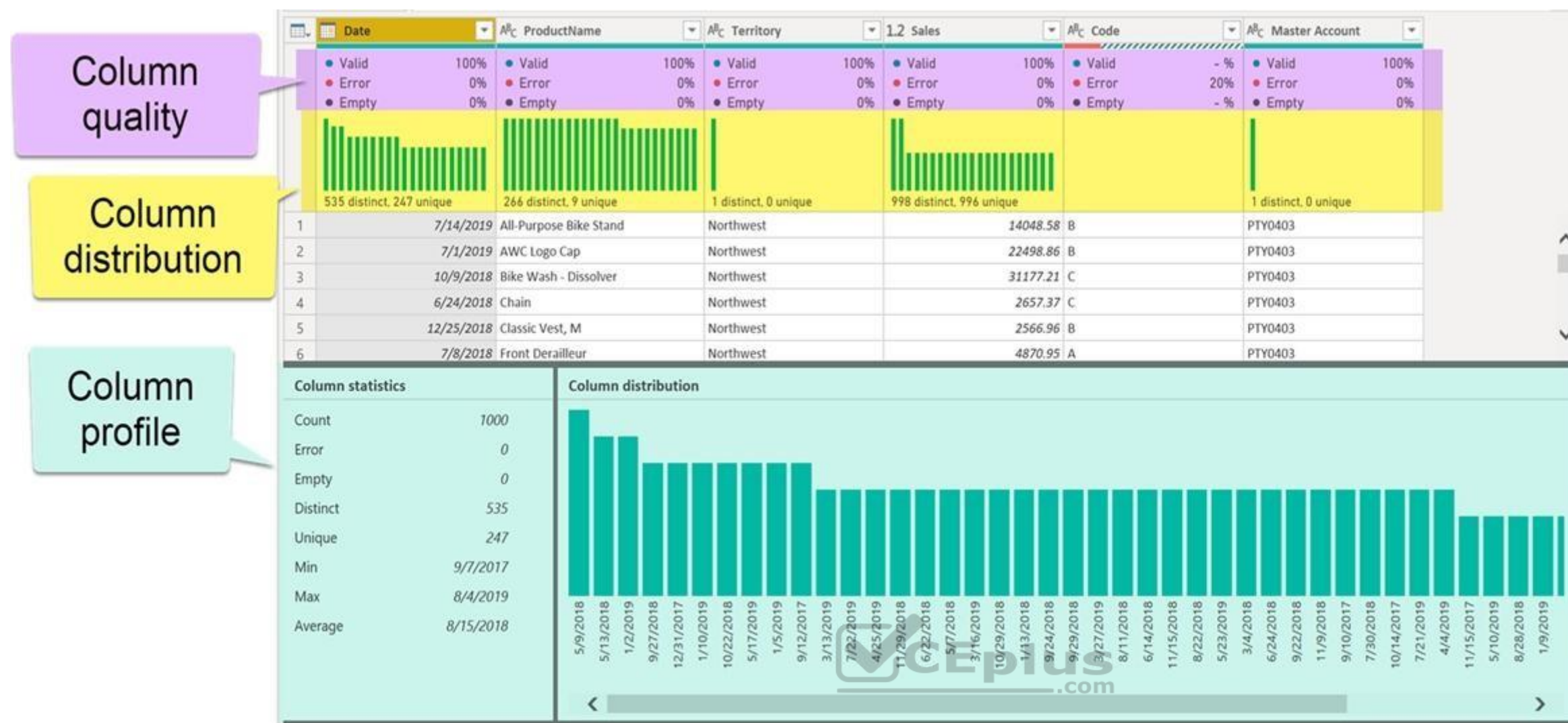
**Explanation/Reference:**

Explanation:

Data Profiling, Quality & Distribution in Power BI / Power Query features

To enable these features, you need to go to the View tab à Data Preview Group à Check the following:

- Column quality
- Column profile
- Column distribution



- Column profile
- Turn on the Column Profiling feature.



## Options

### GLOBAL

- Data Load
- Power Query Editor
- DirectQuery
- R scripting
- Security
- Privacy
- Updates
- Usage Data
- Diagnostics
- Preview features**
- Auto recovery

### CURRENT FILE

- Data Load
- Regional Settings
- Privacy
- Auto recovery
- Query reduction
- Report settings

### Preview features

The following features are available for you to try in this release. Preview features might change or be removed in future releases.

- ☒ Shape map visual [Learn more](#)
- ☐ M Intellisense [Learn more](#)
- ☒ Spanish language support for Q&A [Learn more](#)
- ☐ Get data from PDF files [Learn more](#)
- ☒ Enable column profiling [Learn more](#)
- ☐ Show dates as a hierarchy in the fields list [Learn more](#)
- ☐ Python support [Learn more](#)
- ☒ Incremental Refresh Policies [Learn more](#)
- ☒ Composite Models [Learn more](#)
- ☐ Manage Aggregations [Learn more](#)
- ☐ Enable fuzzy merge [Learn more](#)



OK

Cancel

#### Column distribution

Can use it to visually realize that your query is missing some data because of distinct and uniqueness counts.



Reference:

<https://www.poweredsolutions.co/2019/08/13/data-profiling-quality-distribution-in-power-bi-power-query/> <https://www.altentertraining.com/microsoft/power-bi/column-profiling-is-good/>

**QUESTION 7****HOTSPOT**

You have an API that returns more than 100 columns. The following is a sample of column names.

```
▪ client_notified_timestamp ▪  
client_notified_source ▪  
client_notified_sourceid ▪  
client_notified_value ▪  
client_responded_timestamp ▪  
client_responded_source ▪  
client_responded_sourceid ▪  
client_responded_value
```

You plan to include only a subset of the returned columns.

You need to remove any columns that have a suffix of `sourceid`.

How should you complete the Power Query M code? To answer, select the appropriate options in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Correct Answer:**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: Table.RemoveColumns

When you do "Remove Columns" Power Query uses the Table.RemoveColumns function

Box 2: List.Select

Get a list of columns.

Box 3: Text.Contains

Example code to remove columns with a slash (/):

let

```
Source = Excel.Workbook(File.Contents("C: Source"), null, true),  
#"1_Sheet" = Source[[Item="1",Kind="Sheet"]][Data],  
#"Promoted Headers" = Table.PromoteHeaders("#1_Sheet", [PromoteAllScalars=true]),
```

// get columns which contains any slash among values

ColumnsToRemove =

List.Select(

// get a list of all columns

Table.ColumnNames("#Promoted Headers"),

(columnName) =>

let

// get all values of a columns

ColumnValues = Table.Column("#Promoted Headers", columnName),

// go through values and stop when you find the first occurrence of a text containing a slash

// if there is a value with a slash, return true else false

ContainsSlash = List.AnyTrue(List.Transform(ColumnValues, each Text.Contains(\_, "/")))

in

ContainsSlash



```
),  
  
// remove columns  
Result = Table.RemoveColumns(#"Promoted Headers", ColumnsToRemove) in  
Result
```

Reference: <https://community.powerbi.com/t5/Power-Query/Remove-columns-containing-a-certain-value/td-p/759657>

#### QUESTION 8

##### DRAG DROP

You are building a dataset from a JSON file that contains an array of documents.

You need to import attributes as columns from all the documents in the JSON file. The solution must ensure that date attributes can be used as date hierarchies in Microsoft Power BI reports.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

**Select and Place:**

**Correct Answer:**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Step 1: Expand the records.

First Open Power BI desktop and navigate to Power Query, import the JSON file, then load the data, click on the record to expand it and to see the record and list.

Step 2: Add columns that use data type conversions.

Step 3: Convert the list to a table



#### QUESTION 9

You import two Microsoft Excel tables named Customer and Address into Power Query. Customer contains the following columns:

- Customer ID
- Customer Name
- Phone
- Email Address ▪
- Address ID

Address contains the following columns:

- Address ID
- Address Line 1
- Address Line 2
- City
- State/Region
- Country
- Postal Code

The Customer ID and Address ID columns represent unique rows.

You need to create a query that has one row per customer. Each row must contain City, State/Region, and Country for each customer.

What should you do?

- A. Merge the Customer and Address tables.
- B. Transpose the Customer and Address tables.



C. Group the Customer and Address tables by the Address ID column.

D. Append the Customer and Address tables.

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

There are two primary ways of combining queries: merging and appending.

- When you have one or more columns that you'd like to add to another query, you merge the queries.
- When you have additional rows of data that you'd like to add to an existing query, you append the query.

Reference: <https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-shape-and-combine-data>

**QUESTION 10** You have the following three versions of an Azure SQL database:

- Test
- Production
- Development

You have a dataset that uses the development database as a data source.

You need to configure the dataset so that you can easily change the data source between the development, test, and production database servers from powerbi.com.

Which should you do?

- A. Create a JSON file that contains the database server names. Import the JSON file to the dataset.
- B. Create a parameter and update the queries to use the parameter.
- C. Create a query for each database server and hide the development tables.
- D. Set the data source privacy level to **Organizational** and use the `ReplaceValue` Power Query M function.



**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

With privacy level settings, you can specify an isolation level that defines the degree that one data source must be isolated from other data sources.

An Organizational data source limits the visibility of a data source to a trusted group of people. An Organizational data source is isolated from all Public data sources, but is visible to other Organizational data sources.

Reference:

<https://docs.microsoft.com/en-us/power-bi/admin/desktop-privacy-levels>

**QUESTION 11**

You have a CSV file that contains user complaints. The file contains a column named Logged. Logged contains the date and time each complaint occurred. The data in Logged is in the following format: 2018-12-31 at 08:59.

You need to be able to analyze the complaints by the logged date and use a built-in date hierarchy.

What should you do?

- A. Change the data type of the Logged column to **Date**.
- B. Apply a transform to extract the last 11 characters of the Logged column and set the data type of the new column to **Date**.
- C. Create a column by example that starts with 2018-12-31 and set the data type of the new column to **Date**.
- D. Apply a transform to extract the first 11 characters of the Logged column.

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

With Power Query you can Split Date and Time into Separate Columns by using a transform.

Reference:

<https://www.exceljetconsult.com.ng/home/blog/power-query-split-date-and-time-into-separate-columns/>

**QUESTION 12**

You have an Azure SQL database that contains sales transactions. The database is updated frequently.

You need to generate reports from the data to detect fraudulent transactions. The data must be visible within five minutes of an update.

How should you configure the data connection?

- A. Add a SQL statement.
- B. Set Data Connectivity mode to **DirectQuery**.
- C. Set the Command timeout in minutes setting.
- D. Set Data Connectivity mode to **Import**.

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

With Power BI Desktop, when you connect to your data source, it's always possible to import a copy of the data into the Power BI Desktop. For some data sources, an alternative approach is available: connect directly to the data source using DirectQuery.

DirectQuery: No data is imported or copied into Power BI Desktop. For relational sources, the selected tables and columns appear in the Fields list. For multi-dimensional sources like SAP Business Warehouse, the dimensions and measures of the selected cube appear in the Fields list. As you create or interact with a visualization, Power BI Desktop queries the underlying data source, so you're always viewing current data.

Incorrect Answers:

D: Import: The selected tables and columns are imported into Power BI Desktop. As you create or interact with a visualization, Power BI Desktop uses the imported data. To see underlying data changes since the initial import or the most recent refresh, you must refresh the data, which imports the full dataset again.

Reference:

<https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-use-directquery>

**QUESTION 13**

You have a data model that contains many complex DAX expressions. The expressions contain frequent references to the `RELATED` and `RELATEDTABLE` functions.

You need to recommend a solution to minimize the use of the `RELATED` and `RELATEDTABLE` functions.

What should you recommend?

- A. Split the model into multiple models.
- B. Hide unused columns in the model.
- C. Merge tables by using Power Query.
- D. Transpose.

**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Combining data means connecting to two or more data sources, shaping them as needed, then consolidating them into a useful query. When you have one or more columns that you'd like to add to another query, you merge the queries.

Note: The `RELATEDTABLE` function is a shortcut for `CALCULATETABLE` function with no logical expression. `CALCULATETABLE` evaluates a table expression in a modified filter context and returns A table of values.

Reference: <https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-shape-and-combine-data>



## Testlet 1

### Case Study

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The company plans to leverage data from Microsoft SQL Server databases, Microsoft Excel files, text files, and several other data sources.

Litware uses Azure Active Directory (Azure AD) to authenticate users.

#### Existing Environment

#### Sales Data

Litware has online sales data that has the SQL schema shown in the following table.



Table name	Column name	Data type
Sales_Region	region_id	Integer
	name	Varchar
Region_Manager	region_id	Integer
	manager_id	Integer
Sales_Manager	sales_manager_id	Integer
	name	Varchar
	username	Varchar
Sales	sales_id	Integer
	sales_date_id	Integer
	sales_amount	Floating
	customer_id	Integer
	sales_ship_date_id	Integer
	region_id	Varchar
Customer_Date	customer_id	Integer
	first_name	Varchar
	last_name	Varchar
Date	date_id	Integer
	date	Date
	month	Integer
	week	Integer
	year	Integer
Weekly_Returns	week_id	Integer
	total_returns	Floating
	sales_region_id	Varchar
Targets	target_id	Integer
	sales_target	Decimal
	date_id	Integer
	region_id	Integer



In the Date table, the date\_id column has a format of yyyyymmdd and the month column has a format of yyyyymm.

The week column in the Date table and the week\_id column in the Weekly\_Returns table have a format of yyyyww.

The region\_id column can be managed by only one sales manager.

### Sales Data

Litware, Inc. is an online retailer that uses Microsoft Power BI dashboards and reports.

The company plans to leverage data from Microsoft SQL Server databases, Microsoft Excel files, text files, and several other data sources.

Litware uses Azure Active Directory (Azure AD) to authenticate users.

### Data Concerns

You are concerned with the quality and completeness of the sales data. You plan to verify the sales data for negative sales amounts. **Reporting**

### Requirements

Litware identifies the following technical requirements:

- Executives require a visual that shows sales by region.
- Region managers require a visual to analyze weekly sales and returns.
- Sales managers must be able to see the sales data of their respective region only.

- The sales managers require a visual to analyze sales performance versus sales targets. ▪
- The sales department requires reports that contain the number of sales transactions.
- Users must be able to see the month in reports as shown in the following example: Feb 2020.
  - The customer service department requires a visual that can be filtered by both sales month and ship month independently.

**QUESTION 1** You need to provide a solution to provide the sales managers with the required access.

What should you include in the solution?

- A. Create a security role that has a table filter on the Sales\_Manager table where `username = UserName()`
- B. Create a security role that has a table filter on the Region\_Manager table where `sales_manager_id = UserPrincipalName()`.
- C. Create a security role that has a table filter on the Sales\_Manager table where `name = UserName()`.
- D. Create a security role that has a table filter on the Sales\_Manager table where `username = sales_manager_id`.

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Scenario: The region\_id column can be managed by only one sales manager.

You can use Username() or userprincipalname() in DAX with Row-Level Security.

Within Power BI Desktop, username() will return a user in the format of DOMAIN\User and userprincipalname() will return a user in the format of user@contoso.com.

Reference: <https://docs.microsoft.com/en-us/power-bi/admin/service-admin-rls>

**QUESTION 2**

You need to create a relationship between the Weekly\_Returns table and the Date table to meet the reporting requirements of the regional managers.

What should you do?

- A. Add the Weekly\_Returns data to the Sales table by using RELATED DAX functions.
- B. In the Weekly\_Returns table, create a new calculated column named date\_id in a format of yyyyMMdd and use the calculated column to create a relationship to the Date table.
- C. Create a new table based on the Date table where date\_id is unique, and then create a many-to-many relationship to Weekly\_Return.

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Scenario: Region managers require a visual to analyze weekly sales and returns.

To relate the two tables we need a common column.

**QUESTION 3** You need to create relationships to meet the reporting requirements of the customer service department.

What should you create?



- A. an additional date table named ShipDate, a one-to-many relationship from Sales[sales\_date\_id] to Date[date\_id], and a one-to-many relationship from Sales[sales\_ship\_date\_id] to ShipDate[date\_id]
- B. an additional date table named ShipDate, a many-to-many relationship from Sales[sales\_date\_id] to Date[date\_id], and a many-to-many relationship from Sales[sales\_ship\_date\_id] to ShipDate[date\_id]
- C. a one-to-many relationship from Date[date\_id] to Sales[sales\_date\_id] and another one-to-many relationship from Date[date\_id] to Weekly\_Returns[week\_id]
- D. a one-to-many relationship from Sales[sales\_date\_id] to Date[date\_id] and a one-to-many relationship from Sales[sales\_ship\_date\_id] to Date[date\_id]
- E. a one-to-many relationship from Date[date\_id] to Sales[sales\_date\_id] and another one-to-many relationship from Date[date\_id] to Sales[sales\_ship\_date\_id]

**Correct Answer:** E

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Scenario: The customer service department requires a visual that can be filtered by both sales month and ship month independently.

Incorrect Answers:

A, B: Just need two one-to-many relationships, no many-to-many relationships (with additional table) as a specific Sale occurs on a specific date.

C: Cannot make a relation between a date\_id and a week\_id.

D: The one-to-many relationships between the Sales and the Date tables goes in the other direction: for each date there can be many sales or shipments.

Reference: <https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-relationships-understand>

## Testlet 2

### Case Study

This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

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#### To start the case study

To display the first question on this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. If the case study has an **All Information tab**, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the **Question** button to return to the question.

### Overview

#### Existing Environment

Contoso, Ltd. is a manufacturing company that produces outdoor equipment. Contoso has quarterly board meetings for which financial analysts manually prepare Microsoft Excel reports, including profit and loss statements for each of the company's four business units, a company balance sheet, and net income projections for the next quarter.

#### Data and Sources

Data for the reports comes from three sources. Detailed revenue, cost, and expense data comes from an Azure SQL database. Summary balance sheet data comes from Microsoft Dynamics 365 Business Central. The balance sheet data is not related to the profit and loss results, other than they both relate dates.

Monthly revenue and expense projections for the next quarter come from a Microsoft SharePoint Online list. Quarterly projections relate to the profit and loss results by using the following shared dimensions: date, business unit, department, and product category.

#### Net Income Projection Data

Net income projection data is stored in a SharePoint Online list named Projections in the format shown in the following table.

MonthStartDate	Projection type	ProductCategory	Department	Projection
1-Apr-20	Revenue	Bikes	N/A	200,000
1-Apr-20	Revenue	Components	N/A	250,000
1-Apr-20	Revenue	Clothing	N/A	300,000
1-Apr-20	Revenue	Accessories	N/A	150,000
1-May-20	Revenue	Bikes	N/A	200,000
1-May-20	Revenue	Components	N/A	250,000
1-Apr-20	Expense	Bikes	Bike Manufacture	50,000
1-Apr-20	Expense	Bikes	Bike Sales	3,333

Revenue projections are set at the monthly level and summed to show projections for the quarter.

#### Balance Sheet Data

The balance sheet data is imported with final balances for each account per month in the format shown in the following table.

AccountCategory	Account	Month	Year	BalanceAmount
Current assets	Cash and cash equivalents	3	2020	20,289
Current assets	Inventories	3	2020	4,855
Long-term liabilities	Long-term debt	3	2020	50,207
Current assets	Cash and cash equivalents	2	2020	28,209
Current assets	Inventories	2	2020	5,845
Long-term liabilities	Long-term debt	2	2020	49,887
Current assets	Cash and cash equivalents	1	2020	25,567
Current assets	Inventories	1	2020	65,998
Long-term liabilities	Long-term debt	1	2020	46,124

There is always a row for each account for each month in the balance sheet data.

### Dynamics 365 Business Central Data

Business Central contains a product catalog that shows how products roll up to product categories, which roll up to business units.

Revenue data is provided at the date and product level. Expense data is provided at the date and department level.

### Business Issues

Historically, it has taken two analysts a week to prepare the reports for the quarterly board meetings. Also, there is usually at least one issue each quarter where a value in a report is wrong because of a bad cell reference in an Excel formula. On occasion, there are conflicting results in the reports because the products and departments that roll up to each business unit are not defined consistently. **Requirements**

### Planned Changes

Contoso plans to automate and standardize the quarterly reporting process by using Microsoft Power BI. The company wants to how long it takes to populate reports to less than two days. The company wants to create common logic for business units, products, and departments to be used across all reports, including, but not limited, to the quarterly reporting for the board.

### Technical Requirements

Contoso wants the reports and datasets refreshed with minimal manual effort.

The company wants to provide a single package of reports to the board that contains custom navigation and links to supplementary information.

Maintenance, including manually updating data and access, must be minimized as much as possible.

### Security Requirements

The reports must be made available to the board from powerbi.com. A mail-enabled security group will be used to share information with the board.

The analysts responsible for each business unit must see all the data the board sees, except the profit and loss data, which must be restricted to only their business unit's data. The analysts must be able to build new reports from the dataset that contains the profit and loss data, but any reports that the analysts build must not be included in the quarterly reports for the board. The analysts must not be able to share the quarterly reports with anyone.

### Report Requirements

You plan to relate the balance sheet to a standard date table in Power BI in a many-to-one relationship based on the last day of the month. At least one of the balance sheet reports in the quarterly reporting package must show the ending balances for the quarter, as well as for the previous quarter.

Projections must contain a column named RevenueProjection that contains the revenue projection amounts. A relationship must be created from Projections to a table named Date that contains the columns shown in the following table.

Name	Data type	Example
Date	Date	4-Apr-2020
Month	Integer	20,2004
Month Name	Text	February
Quarter	Integer	20,202
Year	Integer	2,020

The relationships between products and departments to business units must be consistent across all reports.

The board must be able to get the following information from the quarterly reports:

- Revenue trends over time
- Ending balances for each account
- A comparison of expenses versus projections by quarter
- Changes in long-term liabilities from the previous quarter
- A comparison of quarterly revenue versus the same quarter during the prior year

**QUESTION 1** Which DAX expression should you use to get the ending balances in the balance sheet reports?

- A. `CALCULATE (`  
`SUM( BalanceSheet [BalanceAmount] ),`  
`DATESQTD( 'Date'[Date] )`  
`)`
- B. `CALCULATE (`  
`SUM( BalanceSheet [BalanceAmount] ),`  
`LASTDATE( 'Date'[Date] )`  
`)`
- C. `FIRSTNONBLANK ( 'Date' [Date]`  
`SUM( BalanceSheet[BalanceAmount] )`  
`)`
- D. `CALCULATE (`  
`MAX( BalanceSheet[BalanceAmount] ),`  
`LASTDATE( 'Date' [Date] )`  
`)`



**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Scenario: At least one of the balance sheet reports in the quarterly reporting package must show the ending balances for the quarter, as well as for the previous quarter.

DATESQTD returns a table that contains a column of the dates for the quarter to date, in the current context.

Reference: <https://docs.microsoft.com/en-us/dax/datesqtd-function-dax>

**QUESTION 2**

HOTSPOT

You need to calculate the last day of the month in the balance sheet data to ensure that you can relate the balance sheet data to the Date table.

Which type of calculation and which formula should you use? To answer, select the appropriate options in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Correct Answer:**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: A DAX Calculated measure

Box 2: Date.EndofQuarter(#date([Year],[Mont],1))

ENDOFQUARTER returns the last date of the quarter in the current context for the specified column of dates.

The following sample formula creates a measure that returns the end of the quarter, for the current context. =  
ENDOFQUARTER(DateTime[DateKey])

Reference: <https://docs.microsoft.com/en-us/dax/endofquarter-function-dax>

### Question Set 3

#### QUESTION 1

You have a Microsoft Power BI data model that contains three tables named Orders, Date, and City. There is a one-to-many relationship between Date and Orders and between City and Orders.

The model contains two row-level security (RLS) roles named Role1 and Role2. Role1 contains the following filter.

```
City[State Province] = "Kentucky"
```

Role2 contains the following filter.

```
Date[Calendar Year] = 2020
```

If a user is a member of both Role1 and Role2, what data will they see in a report that uses the model?

- A. The user will see data for which the State Province value is Kentucky and the Calendar Year is 2020.
- B. The user will see data for which the State Province value is Kentucky or the Calendar Year is 2020.
- C. The user will see only data for which the State Province value is Kentucky.
- D. The user will receive an error and will not be able to see the data in the report.

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

When a report user is assigned to multiple roles, RLS filters become additive. It means report users can see table rows that represent the union of those filters.

Reference: <https://docs.microsoft.com/en-us/power-bi/guidance/rls-guidance>



#### QUESTION 2

##### HOTSPOT

Your company has affiliates who help the company acquire customers.

You build a report for the affiliate managers at the company to assist them in understanding affiliate performance.

The managers request a visual showing the total sales value of the latest 50 transactions for each affiliate. You have a data model that contains the following tables.

Table name	Column name
Transactions	TransactionDate
	ItemsOrdered
	Amount
	TransactionID
Affiliate	AffiliateID
	Name

You need to develop a measure to support the visual.

How should you complete the DAX expression? To answer, select the appropriate options in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Correct Answer:**

**Section:** [none]

**Explanation**



**Explanation/Reference:**

Explanation:

Box 1: CALCULATE

Start with CALCULATE and use a SUMX.

CALCULATE evaluates an expression in a modified filter context.

Box 2: SUMX

SUMX returns the sum of an expression evaluated for each row in a table.

The following sample creates a measure with the sales of the top 10 sold products.

```
= SUMX(TOPN(10, SUMMARIZE(Product, [ProductKey], "TotalSales", SUMX(RELATED(InternetSales_USD[SalesAmount_USD]), InternetSales_USD[SalesAmount_USD]) + SUMX(RELATED(ResellerSales_USD[SalesAmount_USD]), ResellerSales_USD[SalesAmount_USD])))
```

Box 3: TOPN

TOPN returns the top N rows of the specified table.

Box 4: [TransactionDate]

TOPN Syntax: TOPN(<n\_value>, <table>, <orderBy\_expression>, [<order>[, <orderBy\_expression>, [<order>]]...])

The orderBy\_expression: Any DAX expression where the result value is used to sort the table and it is evaluated for each row of table.

Reference: <https://docs.microsoft.com/en-us/dax/topn-function-dax>

**QUESTION 3**

You are configuring a Microsoft Power BI data model to enable users to ask natural language questions by using Q&A.

You have a table named Customer that has the following measure.

```
Customer Count = DISTINCTCOUNT(Customer[CustomerID])
```

Users frequently refer to customers as subscribers.

You need to ensure that the users can get a useful result for "subscriber count" by using Q&A. The solution must minimize the size of the model.

What should you do?

- A. Set Summarize By to **None** for the CustomerID column.
- B. Add a synonym of "subscriber" to the Customer table.
- C. Add a synonym of "subscriberID" to the CustomerID column.
- D. Add a description of "subscriber count" to the Customer Count measure.

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

You can add synonyms to tables and columns.

Note: This step applies specifically to Q&A (and not to Power BI reports in general). Users often have a variety of terms they use to refer to the same thing, such as total sales, net sales, total net sales. You can add these synonyms to tables and columns in the Power BI model.

This step applies specifically to Q&A (and not to Power BI reports in general). Users often have a variety of terms they use to refer to the same thing, such as total sales, net sales, total net sales. You can add these synonyms to tables and columns in the Power BI model.

Reference: <https://docs.microsoft.com/en-us/power-bi/natural-language/q-and-a-best-practices> **QUESTION 4 HOTSPOT**

You are creating a Microsoft Power BI data model that has the tables shown in the following table.

Table name	Column name
Sales	SalesID
	ProductID
	DateKey
	SalesAmount
Products	ProductID
	ProductName
	ProductCategoryID
ProductCategory	ProductCategoryID
	CategoryName

The Products table is related to the ProductCategory table through the ProductCategoryID column.

You need to ensure that you can analyze sales by product category.

How should you configure the relationships from Products to ProductCategory? To answer, select the appropriate options in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Correct Answer:**

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: One-to-many

Box 2: Both

For One-to-many relationships, the cross filter direction is always from the "one" side, and optionally from the "many" side (bi-directional).

Note:

Cardinality type	Cross filter options
One-to-many (or Many-to-one)	Single Both
One-to-one	Both
Many-to-many	Single (Table1 to Table2) Single (Table2 to Table1) Both

Reference: <https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-relationships-understand>

**QUESTION 5**

HOTSPOT

You are creating a quick measure as shown in the following exhibit.

## Quick measures

### Calculation

Rolling average ▾

Calculate the average of base value over a certain number of periods before and/or after each date.

[Learn more](#)

Base value ⓘ

Add data fields here

Date ⓘ

Add data fields here

Period ⓘ

Days ▾

Periods before ⓘ












1

Periods after ⓘ

0

### Fields

Search

- ∨  Customer
- ∨  Product
- ∧  Sales
  -  Date
  -  Gross Margin
    - Month
    - Σ MonthNumberOfYear
    - Σ Quarter
    - Σ Sales\_SRC
      -  Time Intelligence
  -  Total Cost
  -  Total Order Qty
  -  Total Sales
  -  Total Sales rolling average
  -  Unit Price
  - Σ Year

You need to create a monthly rolling average measure for Sales over time.

How should you configure the quick measure calculation? To answer, select the appropriate options in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Correct Answer:**

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: Total Sales

We select the field Total Sales

Box 2: Date

Select a date field.

Box 3: Month

Monthly periods.

Reference: <https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-quick-measures>

**QUESTION 6** You have four sales regions. Each region has multiple sales managers.

You implement row-level security (RLS) in a data model. You assign the relevant distribution lists to each role.

You have sales reports that enable analysis by region. The sales managers can view the sales records of their region. The sales managers are prevented from viewing records from other regions.

A sales manager changes to a different region.

You need to ensure that the sales manager can see the correct sales data.

What should you do?

- A. Change the Microsoft Power BI license type of the sales manager.
- B. From Microsoft Power BI Desktop, edit the Row-Level Security setting for the reports.
- C. Request that the sales manager be added to the correct Azure Active Directory group.
- D. Manage the permissions of the underlying dataset.

**Correct Answer: C**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Using AD Security Groups, you no longer need to maintain a long list of users.

All that you will need to do is to put in the AD Security group with the required permissions and Power BI will do the REST! This means a small and simple security file with the permissions and AD Security group.

Note: Configure role mappings

Once published to Power BI, you must map members to dataset roles.

Members can be user accounts or security groups. Whenever possible, we recommend you map security groups to dataset roles. It involves managing security group memberships in Azure Active Directory. Possibly, it delegates the task to your network administrators.

Reference:

<https://www.fourmoo.com/2018/02/20/dynamic-row-level-security-is-easy-with-active-directory-security-groups/> <https://docs.microsoft.com/en-us/power-bi/guidance/rls-guidance>

**QUESTION 7**

DRAG DROP

You have a Microsoft Power BI data model that contains three tables named Sales, Product, and Date.

The Sales table has an existing measure named `[Total Sales]` that sums the total sales from the Sales table.

You need to write a calculation that returns the percentage of total sales that a selected ProductCategoryName value represents. The calculation must respect any slicers on ProductCategoryName and must show the percentage of visible total sales. For example, if there are four ProductCategoryName values, and a user filters one out, a table showing ProductCategoryName and the calculation must sum up to 100 percent.

How should you complete the calculation? To answer, drag the appropriate values to the correct targets. Each value may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

**NOTE:** Each correct selection is worth one point.

**Select and Place:**

**Correct Answer:**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: CALCULATE

CALCULATE rvaluates an expression in a modified filter context.

Box 2: DIVIDE

As a data modeler, when you write a DAX expression to divide a numerator by a denominator, you can choose to use the DIVIDE function or the divide operator (/ - forward slash).

When using the DIVIDE function, you must pass in numerator and denominator expressions.

Box 3: ALLSELECTED

ALLSELECTED removes context filters from columns and rows in the current query, while retaining all other context filters or explicit filters.

The ALLSELECTED function gets the context that represents all rows and columns in the query, while keeping explicit filters and contexts other than row and column filters. This function can be used to obtain visual totals in queries.

Example: measure 'Reseller Sales'[Reseller Visual Total]=calculate(sum('Reseller Sales'[Sales Amount]), ALLSELECTED())

Reference: <https://docs.microsoft.com/en-us/dax/allselected-function-dax>

**QUESTION 8**

You have sales data in a star schema that contains four tables named Sales, Customer, Date, and Product. The Sales table contains purchase and ship dates.

Most often, you will use the purchase date to analyze the data, but you will analyze the data by both dates independently and together.

You need to design an imported dataset to support the analysis. The solution must minimize the model size and the number of queries against the data source.

Which data modeling design should you use?

- A. Use the Auto Date/Time functionality in Microsoft Power BI and do **NOT** import the Date table.
- B. Duplicate the Date query in Power Query and use active relationships between both Date tables.
- C. On the Date table, use a reference query in Power Query and create active relationships between Sales and both Date tables in the modeling view.
- D. Create an active relationship between Sales and Date for the purchase date and an inactive relationship for the ship date.

**Correct Answer: D**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Only one relationship can be active.

Note: If you query two or more tables at the same time, when the data is loaded, Power BI Desktop attempts to find and create relationships for you. The relationship options Cardinality, Cross filter direction, and Make this relationship active are automatically set.

Reference: <https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-create-and-manage-relationships> **Testlet 1**

**Case Study**

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Litware, Inc. is an online retailer that uses Microsoft Power BI dashboards and reports.

The company plans to leverage data from Microsoft SQL Server databases, Microsoft Excel files, text files, and several other data sources.

Litware uses Azure Active Directory (Azure AD) to authenticate users.

#### **Existing Environment**

#### **Sales Data**

Litware has online sales data that has the SQL schema shown in the following table.





Table name	Column name	Data type
Sales_Region	region_id	Integer
	name	Varchar
Region_Manager	region_id	Integer
	manager_id	Integer
Sales_Manager	sales_manager_id	Integer
	name	Varchar
	username	Varchar
Sales	sales_id	Integer
	sales_date_id	Integer
	sales_amount	Floating
	customer_id	Integer
	sales_ship_date_id	Integer
	region_id	Varchar
Customer_Date	customer_id	Integer
	first_name	Varchar
	last_name	Varchar
Date	date_id	Integer
	date	Date
	month	Integer
	week	Integer
	year	Integer
Weekly_Returns	week_id	Integer
	total_returns	Floating
	sales_region_id	Varchar
Targets	target_id	Integer
	sales_target	Decimal
	date_id	Integer
	region_id	Integer



In the Date table, the date\_id column has a format of yyyyymmdd and the month column has a format of yyyyymm.

The week column in the Date table and the week\_id column in the Weekly\_Returns table have a format of yyyyww.

The region\_id column can be managed by only one sales manager.

### Sales Data

Litware, Inc. is an online retailer that uses Microsoft Power BI dashboards and reports.

The company plans to leverage data from Microsoft SQL Server databases, Microsoft Excel files, text files, and several other data sources.

Litware uses Azure Active Directory (Azure AD) to authenticate users.

### Data Concerns

You are concerned with the quality and completeness of the sales data. You plan to verify the sales data for negative sales amounts. **Reporting**

### Requirements

Litware identifies the following technical requirements:

- Executives require a visual that shows sales by region.
- Region managers require a visual to analyze weekly sales and returns.
- Sales managers must be able to see the sales data of their respective region only.

- The sales managers require a visual to analyze sales performance versus sales targets. ▪  
The sale department requires reports that contain the number of sales transactions.
- Users must be able to see the month in reports as shown in the following example: Feb 2020.
  - The customer service department requires a visual that can be filtered by both sales month and ship month independently.

## QUESTION 1

### HOTSPOT

You need to create a visualization to meet the reporting requirements of the sales managers.

How should you create the visualization? To answer, select the appropriate options in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Correct Answer:**

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Scenario: The sales managers require a visual to analyze sales performance versus sales targets.

Box 1: KPI

A Key Performance Indicator (KPI) is a visual cue that communicates the amount of progress made toward a measurable goal.

Box 2: Sales[sales\_amount]

Box 3: Date[month]

Time > FiscalMonth. This value will represent the trend.

Box 4: Targets[sales\_target]

Reference:

<https://docs.microsoft.com/en-us/power-bi/visuals/power-bi-visualization-kpi>

## Testlet 2

### Case Study

This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other question on this case study.

At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

### To start the case study

To display the first question on this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. If the case study has an **All Information tab**, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the **Question** button to return to the question.

### Overview

### Existing Environment

Contoso, Ltd. is a manufacturing company that produces outdoor equipment. Contoso has quarterly board meetings for which financial analysts manually prepare Microsoft Excel reports, including profit and loss statements for each of the company's four business units, a company balance sheet, and net income projections for the next quarter.

### Data and Sources

Data for the reports comes from three sources. Detailed revenue, cost, and expense data comes from an Azure SQL database. Summary balance sheet data comes from Microsoft Dynamics 365 Business Central. The balance sheet data is not related to the profit and loss results, other than they both relate dates.

Monthly revenue and expense projections for the next quarter come from a Microsoft SharePoint Online list. Quarterly projections relate to the profit and loss results by using the following shared dimensions: date, business unit, department, and product category.

### Net Income Projection Data

Net income projection data is stored in a SharePoint Online list named Projections in the format shown in the following table.

MonthStartDate	Projection type	ProductCategory	Department	Projection
1-Apr-20	Revenue	Bikes	N/A	200,000
1-Apr-20	Revenue	Components	N/A	250,000
1-Apr-20	Revenue	Clothing	N/A	300,000
1-Apr-20	Revenue	Accessories	N/A	150,000
1-May-20	Revenue	Bikes	N/A	200,000
1-May-20	Revenue	Components	N/A	250,000
1-Apr-20	Expense	Bikes	Bike Manufacture	50,000
1-Apr-20	Expense	Bikes	Bike Sales	3,333

Revenue projections are set at the monthly level and summed to show projections for the quarter.

### Balance Sheet Data

The balance sheet data is imported with final balances for each account per month in the format shown in the following table.

AccountCategory	Account	Month	Year	BalanceAmount
Current assets	Cash and cash equivalents	3	2020	20,289
Current assets	Inventories	3	2020	4,855
Long-term liabilities	Long-term debt	3	2020	50,207
Current assets	Cash and cash equivalents	2	2020	28,209
Current assets	Inventories	2	2020	5,845
Long-term liabilities	Long-term debt	2	2020	49,887
Current assets	Cash and cash equivalents	1	2020	25,567
Current assets	Inventories	1	2020	65,998
Long-term liabilities	Long-term debt	1	2020	46,124

There is always a row for each account for each month in the balance sheet data.

### Dynamics 365 Business Central Data

Business Central contains a product catalog that shows how products roll up to product categories, which roll up to business units.

Revenue data is provided at the date and product level. Expense data is provided at the date and department level.

### Business Issues

Historically, it has taken two analysts a week to prepare the reports for the quarterly board meetings. Also, there is usually at least one issue each quarter where a value in a report is wrong because of a bad cell reference in an Excel formula. On occasion, there are conflicting results in the reports because the products and departments that roll up to each business unit are not defined consistently. **Requirements**

### Planned Changes

Contoso plans to automate and standardize the quarterly reporting process by using Microsoft Power BI. The company wants to how long it takes to populate reports to less than two days. The company wants to create common logic for business units, products, and departments to be used across all reports, including, but not limited, to the quarterly reporting for the board.

### Technical Requirements

Contoso wants the reports and datasets refreshed with minimal manual effort.

The company wants to provide a single package of reports to the board that contains custom navigation and links to supplementary information.

Maintenance, including manually updating data and access, must be minimized as much as possible.

### Security Requirements

The reports must be made available to the board from powerbi.com. A mail-enabled security group will be used to share information with the board.

The analysts responsible for each business unit must see all the data the board sees, except the profit and loss data, which must be restricted to only their business unit's data. The analysts must be able to build new reports from the dataset that contains the profit and loss data, but any reports that the analysts build must not be included in the quarterly reports for the board. The analysts must not be able to share the quarterly reports with anyone.

### Report Requirements

You plan to relate the balance sheet to a standard date table in Power BI in a many-to-one relationship based on the last day of the month. At least one of the balance sheet reports in the quarterly reporting package must show the ending balances for the quarter, as well as for the previous quarter.

Projections must contain a column named RevenueProjection that contains the revenue projection amounts. A relationship must be created from Projections to a table named Date that contains the columns shown in the following table.

Name	Data type	Example
Date	Date	4-Apr-2020
Month	Integer	20,2004
Month Name	Text	February
Quarter	Integer	20,202
Year	Integer	2,020

The relationships between products and departments to business units must be consistent across all reports.

The board must be able to get the following information from the quarterly reports:

- Revenue trends over time
- Ending balances for each account
- A comparison of expenses versus projections by quarter
- Changes in long-term liabilities from the previous quarter
- A comparison of quarterly revenue versus the same quarter during the prior year

### QUESTION 1

#### DRAG DROP

You need to create a DAX measure in the data model that only allows users to see projections at the appropriate level of granularity.

How should you complete the measure? To answer, drag the appropriate values to the correct targets. Each value may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

**NOTE:** Each correct selection is worth one point.

**Select and Place:**

**Correct Answer:**

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Scenario: Revenue projections are set at the monthly level and summed to show projections for the quarter.

Box 1: IF

Box 2: ISFILTERED

ISFILTERED returns TRUE when columnName is being filtered directly. If there is no filter on the column or if the filtering happens because a different column in the same table or in a related table is being filtered then the function returns FALSE. Box

3: SUM

Reference: <https://docs.microsoft.com/en-us/dax/isfiltered-function-dax>

## QUESTION 2

Which two types of visualizations can be used in the balance sheet reports to meet the reporting goals? Each correct answer presents part of the solution.

**NOTE:** Each correct selection is worth one point.

- A. a line chart that shows balances by quarter filtered to account categories that are long-term liabilities.
- B. a clustered column chart that shows balances by date (x-axis) and account category (legend) without filters.
- C. a clustered column chart that shows balances by quarter filtered to account categories that are long-term liabilities.
- D. a pie chart that shows balances by account category without filters.
- E. a ribbon chart that shows balances by quarter and accounts in the legend.

**Correct Answer:** AC

**Section:** [none]

**Explanation**

**Explanation/Reference:**



**Question Set 3****QUESTION 1**

**Note:** This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

**After you answer a question in this scenario, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.**

You have a clustered bar chart that contains a measure named Salary as the value and a field named Employee as the axis. Salary is present in the data as numerical amount representing US dollars.

You need to create a reference line to show which employees are above the median salary.

Solution: You create a constant line and set the value to **.5**.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Instead create a percentile line by using the Salary measure and set the percentile to 50%.

Note: The 50th percentile is also known as the median or middle value where 50 percent of observations fall below.

Reference: [https://dash-intel.com/powerbi/statistical\\_functions\\_percentile.php](https://dash-intel.com/powerbi/statistical_functions_percentile.php)



**QUESTION 2** You need to create a visualization that compares revenue and cost over time.

Which type of visualization should you use?

- A. stacked area chart
- B. donut chart
- C. line chart
- D. waterfall chart

**Correct Answer:** C

**Section:** [none]

**Explanation**

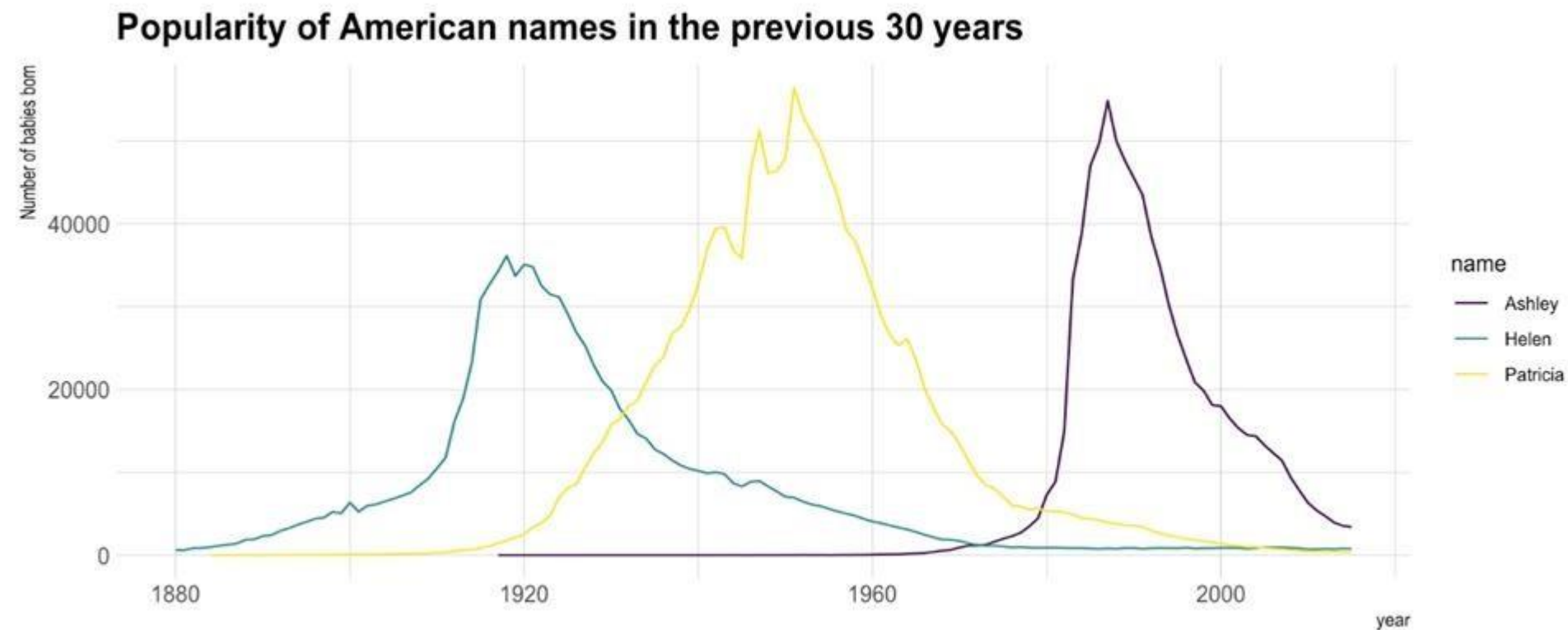
**Explanation/Reference:**

Explanation:

A line chart or line graph displays the evolution of one or several numeric variables. Data points are connected by straight line segments. A line chart is often used to visualize a trend in data over intervals of time – a time series – thus the line is often drawn chronologically.

Example:





Incorrect Answers:

A: Stacked area charts are not appropriate to study the evolution of each individual group: it is very hard to subtract the height of other groups at each time point.

Note: A stacked area chart is the extension of a basic area chart. It displays the evolution of the value of several groups on the same graphic. The values of each group are displayed on top of each other, what allows to check on the same figure the evolution of both the total of a numeric variable, and the importance of each group.

Reference: <https://www.data-to-viz.com/graph/line.html>

### QUESTION 3

You are developing a sales report that will have multiple pages. Each page will answer a different business question.

You plan to have a menu page that will show all the business questions.

You need to ensure that users can click each business question and be directed to the page where the question is answered. The solution must ensure that the menu page will work when deployed to any workspace.

What should you include on the menu page?

- A. Create a text box for each business question and insert a link.
- B. Create a button for each business question and set the action type to **Bookmark**.
- C. Create a Power Apps visual that contains a drop-down list. The drop-down list will contain the business questions.

**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:  
Power BI enables data insights and better decision-making, while Power Apps enables everyone to build and use apps that connect to business data. Using the Power Apps visual, you can pass context-aware data to a canvas app, which updates in real time as you make changes to your report. Now, your app users can derive business insights and take actions from right within their Power BI reports and dashboards.



Reference: <https://docs.microsoft.com/en-us/powerapps/maker/canvas-apps/powerapps-custom-visual>

#### QUESTION 4

You are developing a report page. Some users will navigate the report by using a keyboard, and some users will consume the report by using a screen reader.

You need to ensure that the users can consume the content on a report page in a logical order.

What should you configure in Microsoft Power BI Desktop?

- A. the tab order
- B. the layer order
- C. the bookmark order
- D. the X position

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

If you find yourself unable to navigate to an object or visual while using a keyboard, it may be because the report author has decided to hide that object from the tab order. Report authors commonly hide decorative objects from the tab order. If you find that you cannot tab through a report in a logical manner, you should contact the report author. Report authors can set the tab order for objects and visuals.

Reference: <https://docs.microsoft.com/en-us/power-bi/create-reports/desktop-accessibility-consuming-tools>

#### QUESTION 5

You use an R visual to produce a map of 500,000 customers. You include the values of CustomerID, Latitude, and Longitude in the fields sent to the visual. Each customer ID is unique.

In powerbi.com, when users load the visual, they only see some of the customers.

What is the cause of the issue?

- A. The visual was built by using a different version of R.
- B. The data comes from a Microsoft SQL Server source.
- C. The data is deduplicated.
- D. Too many records were sent to the visual.

**Correct Answer:** D

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

R visuals in the Power BI service have a few limitations including:

- Data size limitations – data used by the R visual for plotting is limited to 150,000 rows. If more than 150,000 rows are selected, only the top 150,000 rows are used and a message is displayed on the image. Additionally, the input data has a limit of 250 MB.

Reference: <https://docs.microsoft.com/en-us/power-bi/visuals/service-r-visuals>

**QUESTION 6** You have a line chart that shows the number of employees in a department over time.

You need to see the total salary costs of the employees when you hover over a data point.

What are two possible ways to achieve this goal? Each correct answer presents a complete solution.

**NOTE:** Each correct selection is worth one point.

- A. Add a salary to the tooltips.
- B. Add a salary to the visual filters.
- C. Add salary to the drillthrough fields.

**Correct Answer:** AB

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

A: When a visualization is created, the default tooltip displays the data point's value and category. There are many instances when customizing the tooltip information is useful. Customizing tooltips provides additional context and information for users viewing the visual. Custom tooltips enable you to specify additional data points that display as part of the tooltip.

B: Visual Filter applies to a single visual/tile on a report page. You can only see visual level filters selected visual on the report canvas.

Incorrect Answers:

C: With drill through in Power BI reports, you can create a page in your report that focuses on a specific entity such as a supplier, customer, or manufacturer. When your report readers use drill through, they right-click a data point in other report pages, and drill through to the focused page to get details that are filtered to that context. You can also create a button that drills through to details when they click it.

Reference:

<https://docs.microsoft.com/en-us/power-bi/create-reports/desktop-custom-tooltips>

<https://technovids.com/power-bi-filters/>

#### QUESTION 7

You have a report that contains a bar chart and a column chart. The bar chart shows customer count by customer segment. The column chart shows sales by month.

You need to ensure that when a segment is selected in the bar chart, you see which portion of the total sales for the month belongs to the customer segment.

How should the visual interactions be set on the column chart when the bar chart is selected?

- A. no impact
- B. highlight
- C. filter



**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Filters remove all but the data you want to focus on. Highlighting isn't filtering. It doesn't remove data, but instead highlights a subset of the visible data; the data that isn't highlighted remains visible but dimmed.

Reference: <https://docs.microsoft.com/en-us/power-bi/create-reports/service-reports-visual-interactions>

#### QUESTION 8

You have a dashboard that contains tiles pinned from a single report as shown in the Original Dashboard exhibit. (Click the **Original Dashboard** tab.)

Ask a question about your data

Total Defect Quantity

33M

Total Downtime  
Minutes

77K

Total Defect Qty  
WITH NO IMPACT

17M

Total Defect Qty  
WITH IMPACT

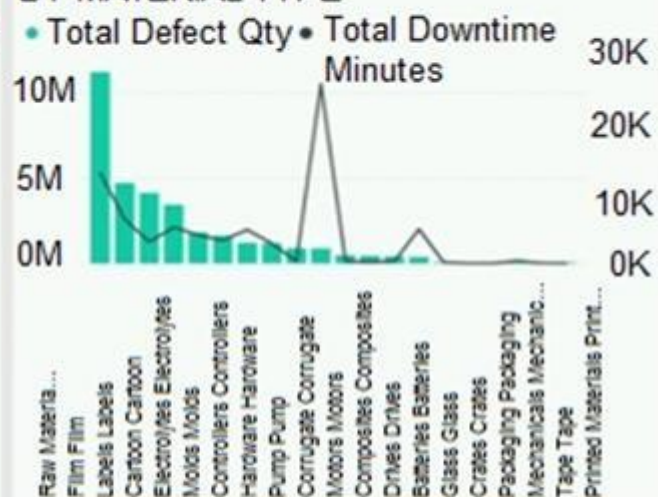
Total Defect Reports  
BY PLANT, DEFECT TYPE

Defect Type • Rejected • Impact • No impact



Total Defect Qty, Total Downtime  
Minutes

BY MATERIAL TYPE



Total Defect Quantity  
BY MONTH, YEAR

Year • 2013 • 2014

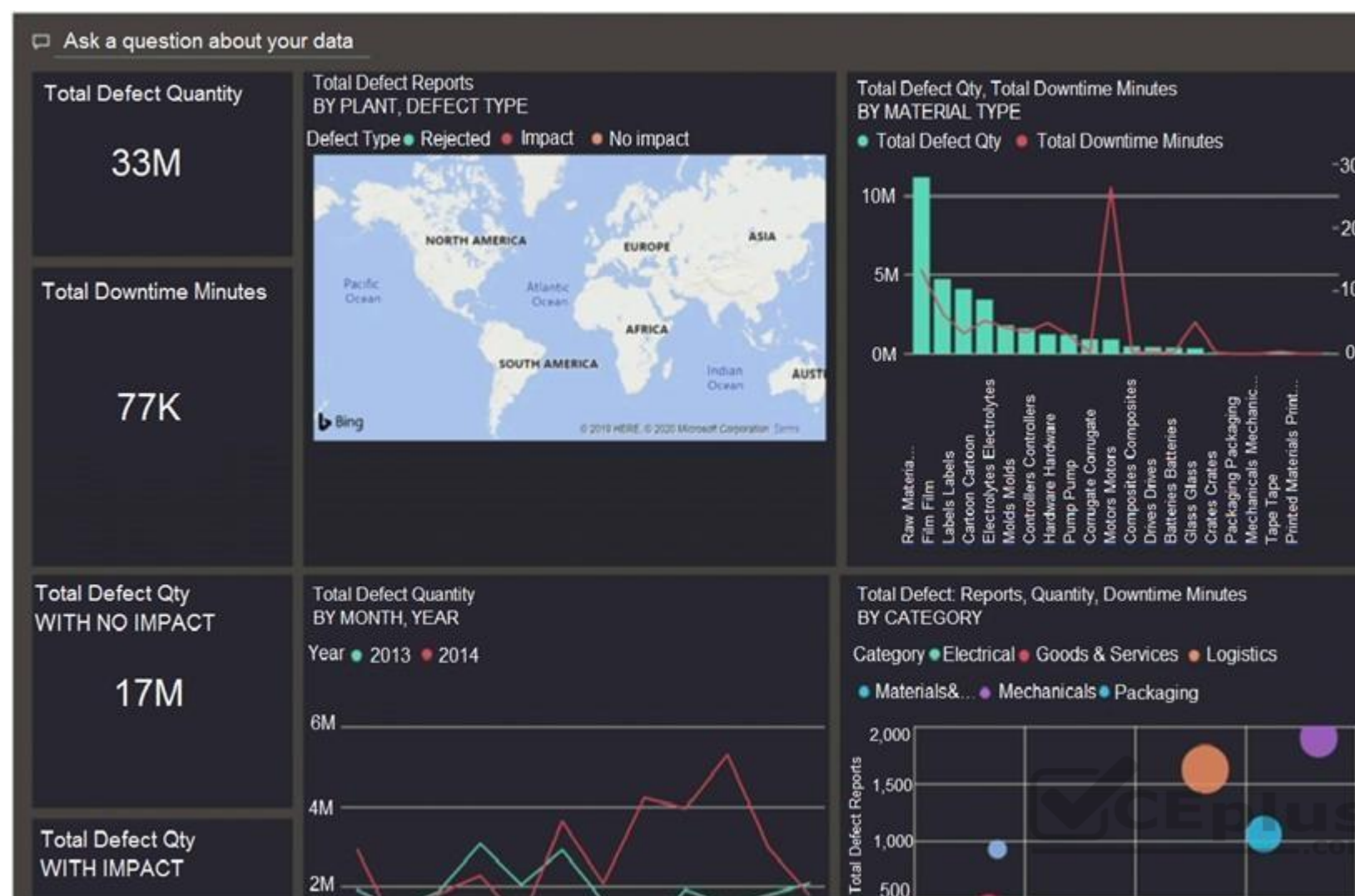


Total Defect: Reports, Quantity, Downtime Minutes  
BY CATEGORY

Category • Electrical • Goods & Services • Logistics • Materials &...  
• Mechanicals • Packaging



You need to modify the dashboard to appear as shown in the Modified Dashboard exhibit. (Click the **Modified Dashboard** tab.)



What should you do?

- A. Edit the details of each tile.
- B. Change the report theme.
- C. Change the dashboard theme.
- D. Create a custom CSS file.

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

With Power BI Desktop report themes, you can apply design changes to your entire report, such as using corporate colors, changing icon sets, or applying new default visual formatting. When you apply a report theme, all visuals in your report use the colors and formatting from your selected theme as their defaults.

Reference: <https://docs.microsoft.com/en-us/power-bi/create-reports/desktop-report-themes>

#### QUESTION 9

DRAG DROP

You are using existing reports to build a dashboard that will be viewed frequently in portrait mode on mobile phones.

You need to build the dashboard.

Which four actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

**Select and Place:**

**Correct Answer:**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

When you view dashboards in portrait mode on a phone, you notice the dashboard tiles are laid out one after another, all the same size. In the Power BI service, you can create a customized view of a dashboard, specifically for portrait mode on phones.

Step 1: Open the Dashboard.

Step 2: Change the dashboard view to Phone view

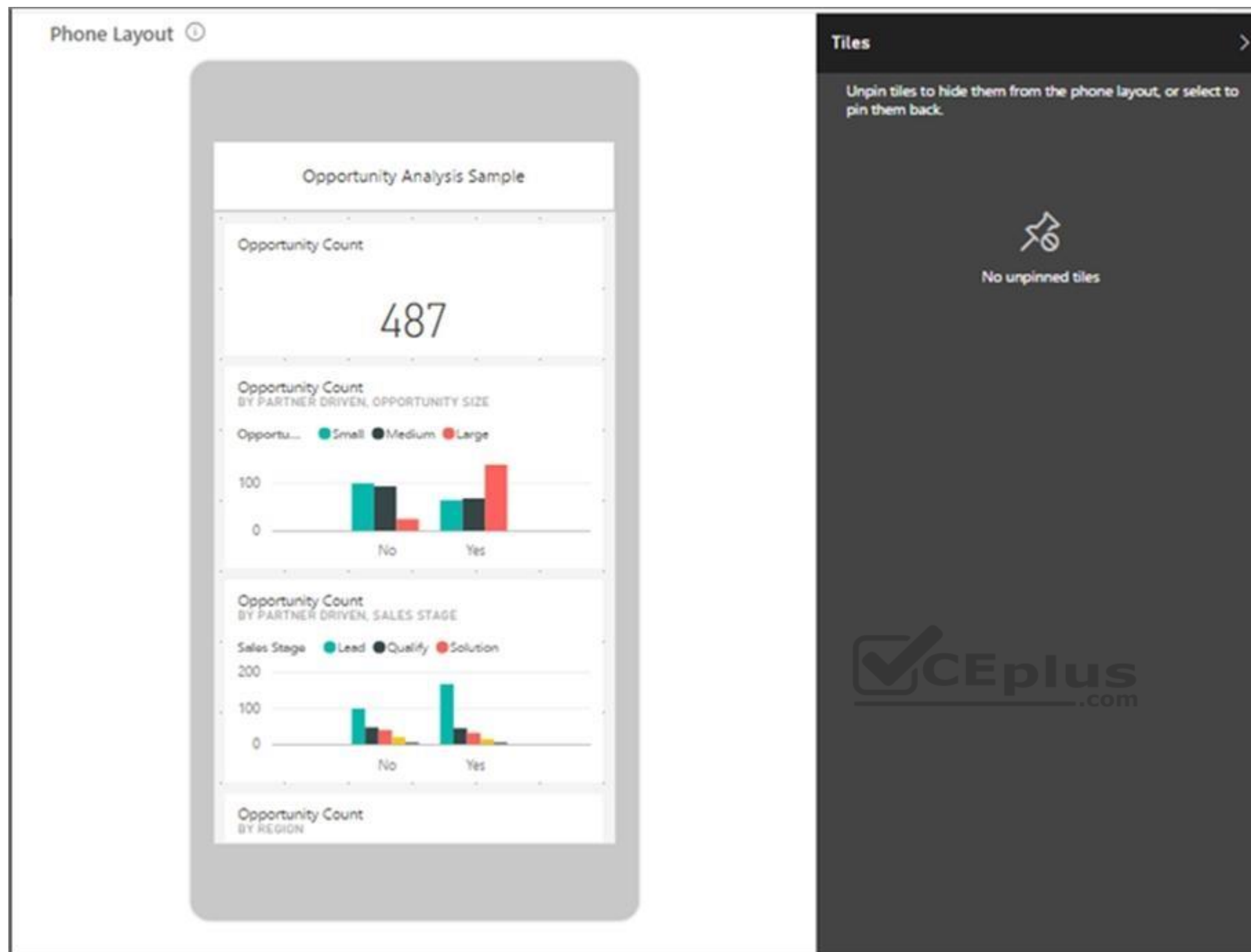
Step 3: Pin items from the reports to the dashboard.

Step 4: Rearrange, resize, or remote items from the Phone view.

Create a phone view of a dashboard

1. In the Power BI service, open a dashboard (Step 1)
2. Select the arrow next to Web view in the upper-right corner > select Phone view. (Step 2)





The phone dashboard edit view opens. Here you can unpin, resize, and rearrange tiles to fit the phone view. The web version of the dashboard doesn't change.

3. Select a tile to drag, resize, or unpin it. You notice the other tiles move out of the way as you drag a tile. The unpinned tiles go in the Unpinned tiles pane, where they stay unless you add them back.

4. If you change your mind, select Reset tiles to put them back in the size and order they were before.

5. When you're satisfied with the phone dashboard layout, select the arrow next to Phone view in the upper-right corner > select Web view.

Power BI saves the phone layout automatically.

Reference: <https://docs.microsoft.com/en-us/power-bi/create-reports/service-create-dashboard-mobile-phone-view>

**QUESTION 10** You build a report to help the sales team understand its performance and the drivers of sales.

The team needs to have a single visualization to identify which factors affect success.

Which type of visualization should you use?

- A. Line and clustered column chart
- B. Key influencers
- C. Q&A
- D. Funnel chart

**Correct Answer:** B

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

The key influencers visual helps you understand the factors that drive a metric you're interested in. It analyzes your data, ranks the factors that matter, and displays them as key influencers.

The key influencers visual is a great choice if you want to:

- See which factors affect the metric being analyzed.
- Contrast the relative importance of these factors. For example, do short-term contracts have more impact on churn than long-term contracts?

Reference:

<https://docs.microsoft.com/en-us/power-bi/visuals/power-bi-visualization-influencers>

## QUESTION 11

HOTSPOT

You have a dataset named Pens that contains the following columns:

- Unit Price
- Quantity Ordered

You need to create a visualization that shows the relationship between Unit Price and Quantity Ordered. The solution must highlight orders that have a similar unit price and ordered quantity.

Which type of visualization and which feature should you use? To answer, select the appropriate options in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Correct Answer:**

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: A scatter plot...

A scatter chart always has two value axes to show: one set of numerical data along a horizontal axis and another set of numerical values along a vertical axis. The chart displays points at the intersection of an x and y numerical value, combining these values into single data points. Power BI may distribute these data points evenly or unevenly across the horizontal axis. It depends on the data the chart represents.

Box 2: Automatically find clusters

Scatter charts are a great choice to show patterns in large sets of data, for example by showing linear or non-linear trends, clusters, and outliers.

Reference:

<https://docs.microsoft.com/en-us/power-bi/visuals/power-bi-visualization-scatter>

## QUESTION 12

HOTSPOT

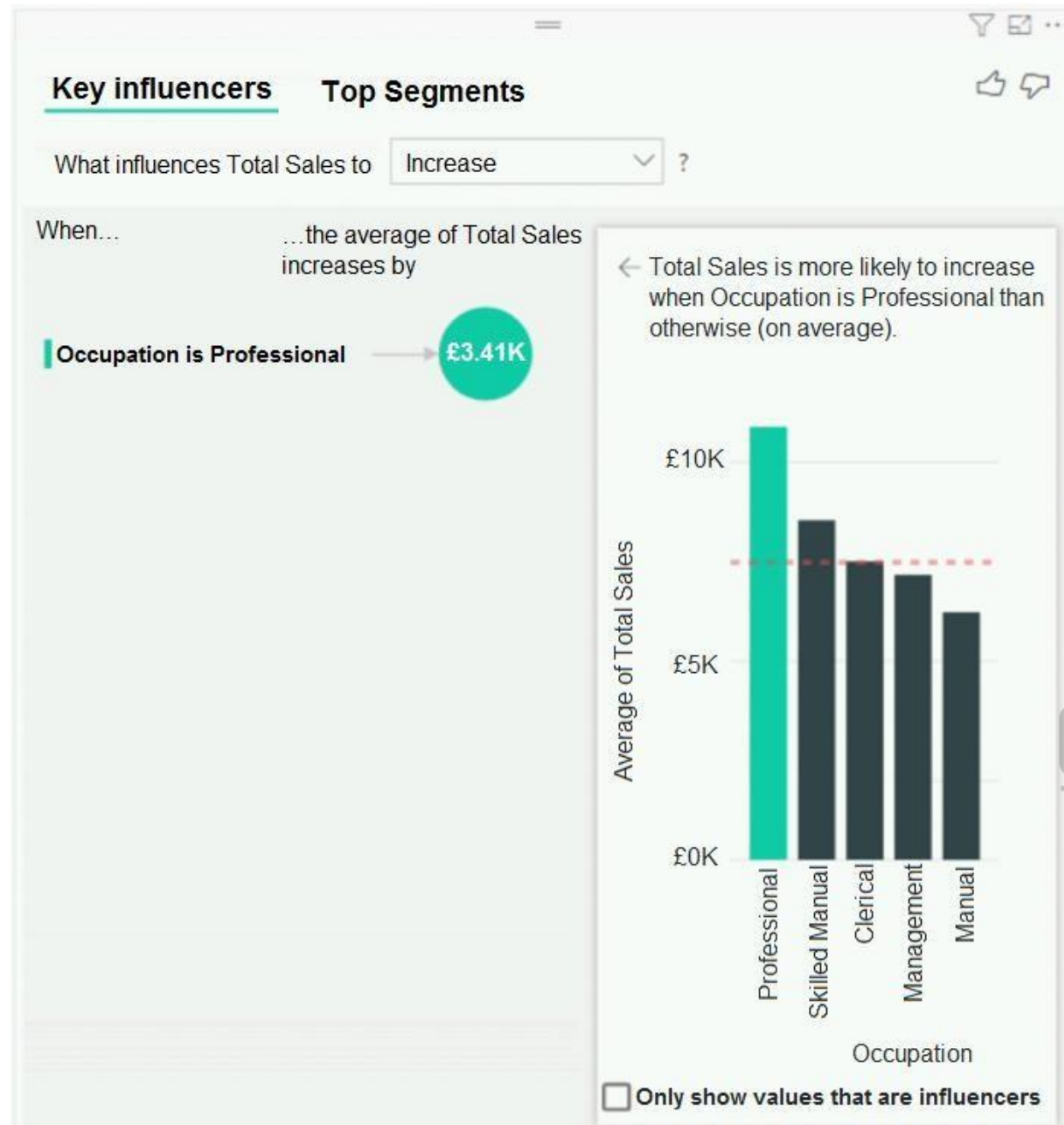
You have a table that contains the following three columns:

- City
- Total Sales



- Occupation

You need to create a key influencers visualization as shown in the exhibit. (Click the **Exhibit** tab.)



How should you configure the visualization? To answer, select the appropriate options in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Correct Answer:**

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: Total Sales

Box 2: Occupation

Box 3: City

You can use Expand By to add fields you want to use for setting the level of the analysis without looking for new influencers.

Reference:

<https://docs.microsoft.com/en-us/power-bi/visuals/power-bi-visualization-influencers>

### QUESTION 13

You have the dataset shown in the following exhibit.



City	Sales Profit
Abbottsburg	\$173,947
Absecon	\$129,358
Accomac	\$157,768
Aceitunas	\$119,283
Airport Drive	\$162,500
Akhiok	\$259,554
Alcester	\$127,040
Alden Bridge	\$152,138
Alstead	\$106,147
Amado	\$136,718
Amanda Park	\$117,444
Andrix	\$130,710
Annamoriah	\$139,499
Antares	\$147,562
Antonio	\$113,056
<b>Total</b>	<b>\$85,729,181</b>



You need to ensure that the visual shows only the 10 cities that have the highest sales profit.

What should you do?

- A. Add a Top N filter to the visual.
- B. Configure the Sales Profit measure to use the `RANKX` function.
- C. Add a calculated column to the table that uses the `TOPN` function. In the visual, replace Sales Profit with the calculated column.
- D. Add a calculated column to the table that returns the city name if the city is in the top 10, otherwise the calculated column will return "Not in Top 10". In the visual, replace Sales Profit with the calculated column.

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Power BI Top N Filters are useful to display the top performing records, and Bottom N filters are helpful to display the least performing records. For example, we can display top or bottom 10 products by orders or sales.

Note:

1. Select the Column you want to display the Top Sales Profit
2. Then change the Filter Type of that Column to Top N3. Fill in Top / Bottom number field
4. And lastly drag to the By Value field your Sales Profit

Incorrect Answers:

B: You would need a filter as well.

Reference:

<https://www.tutorialgateway.org/power-bi-top-10-filters/>

#### QUESTION 14

**Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.**

**After you answer a question in this scenario, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.**

You have a clustered bar chart that contains a measure named Salary as the value and a field named Employee as the axis. Salary is present in the data as numerical amount representing US dollars.

You need to create a reference line to show which employees are above the median salary.

Solution: You create an average line by using the Salary measure.

Does this meet the goal?

A. Yes

B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead create a percentile line by using the Salary measure and set the percentile to 50%.

Note: The 50th percentile is also known as the median or middle value where 50 percent of observations fall below.

Reference:

[https://dash-intel.com/powerbi/statistical\\_functions\\_percentile.php](https://dash-intel.com/powerbi/statistical_functions_percentile.php)

#### QUESTION 15

**Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.**

**After you answer a question in this scenario, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.**

You have a clustered bar chart that contains a measure named Salary as the value and a field named Employee as the axis. Salary is present in the data as numerical amount representing US dollars.

You need to create a reference line to show which employees are above the median salary.

Solution: You create a percentile line by using the Salary measure and set the percentile to 50%.

Does this meet the goal?

A. Yes

B. No

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

The 50th percentile is also known as the median or middle value where 50 percent of observations fall below.

Reference:

[https://dash-intel.com/powerbi/statistical\\_functions\\_percentile.php](https://dash-intel.com/powerbi/statistical_functions_percentile.php)





## Question Set 1

### QUESTION 1

#### DRAG DROP

You have a query named Customer that imports CSV files from a data lake. The query contains 500 rows as shown in the exhibit. (Click the **Exhibit** tab.)

	ABC Source.Name	123 Customer ID	Modified Date	ABC Customer	ABC Category
	Valid 100% Error 0% Empty 0%	Valid 100% Error 0% Empty 0%	Valid 100% Error 0% Empty 0%	Valid 100% Error 0% Empty 0%	Valid 100% Error 0% Empty 0%
1	Customer20200104.csv	1	1/1/2020 12:00:00 AM	Tailspin Toys (Head Office)	Novelty Shop
2	Customer20200104.csv	2	1/1/2020 12:00:00 AM	Tailspin Toys (Sylvanite, MT)	Novelty Shop
3	Customer20200104.csv	3	1/1/2020 12:00:00 AM	Tailspin Toys (Peeples Valley, AZ)	Novelty Shop
4	Customer20200104.csv	4	1/4/2020 12:00:00 AM	Tailspin Toys (Medicine Lodge, KS)	Novelty Shop
5	Customer20200104.csv	5	1/4/2020 12:00:00 AM	Tailspin Toys (Gasport, NY)	Novelty Shop
6	Customer20200104.csv	6	1/4/2020 12:00:00 AM	Tailspin Toys (Jessie, ND)	Novelty Shop
7	Customer20200104.csv	7	1/4/2020 12:00:00 AM	Tailspin Toys (Frankewing, TN)	Novelty Shop
8	Customer20200104.csv	8	1/4/2020 12:00:00 AM	Tailspin Toys (Bow Mar, CO)	Novelty Shop
9	Customer20200104.csv	9	1/4/2020 12:00:00 AM	Tailspin Toys (Netcong, NJ)	Novelty Shop
10	Customer20200104.csv	10	1/4/2020 12:00:00 AM	Tailspin Toys (Wimbledon, ND)	Novelty Shop
11	Customer20200112.csv	1	1/12/2020 12:00:00 AM	Tailspin Toys (Head Office)	Novelty Shop
12	Customer20200112.csv	2	1/12/2020 12:00:00 AM	Tailspin Toys (Sylvanite, MT)	Novelty Shop
13	Customer20200112.csv	3	1/12/2020 12:00:00 AM	Tailspin Toys (Peeples Valley, AZ)	Novelty Shop
14	Customer20200112.csv	4	1/12/2020 12:00:00 AM	Tailspin Toys (Medicine Lodge, KS)	Novelty Shop
15	Customer20200112.csv	5	1/12/2020 12:00:00 AM	Tailspin Toys (Gasport, NY)	Novelty Shop
16	Customer20200112.csv	2	1/22/2020 12:00:00 AM	Tailspin Toys (Sylvanite, MT)	Novelty Shop
17	Customer20200112.csv	7	1/22/2020 12:00:00 AM	Tailspin Toys (Frankewing, TN)	Novelty Shop
18	Customer20200112.csv	8	1/22/2020 12:00:00 AM	Tailspin Toys (Bow Mar, CO)	Novelty Shop
19	Customer20200112.csv	9	1/22/2020 12:00:00 AM	Tailspin Toys (Netcong, NJ)	Novelty Shop
20	Customer20200112.csv	10	1/22/2020 12:00:00 AM	Tailspin Toys (Wimbledon, ND)	Novelty Shop

Each file contains deltas of any new or modified rows from each load to the data lake. Multiple files can have the same customer ID.

You need to keep only the last modified row for each customer ID.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

**Select and Place:**

**Correct Answer:**

**Section:** [none]

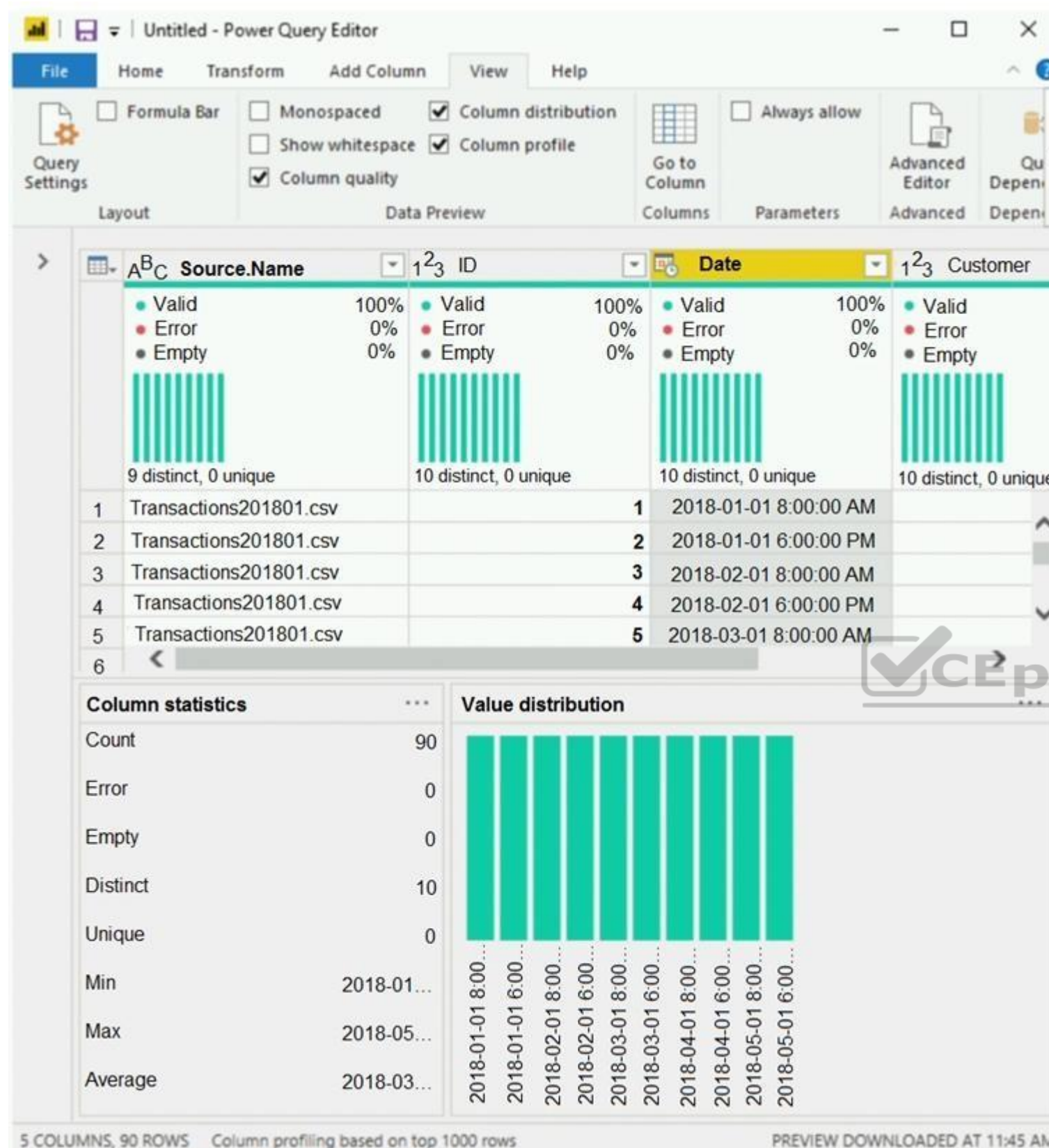
**Explanation**

**Explanation/Reference:**

### QUESTION 2

#### HOTSPOT

You view a query named Transactions as shown in the following exhibit.



The query gets CSV files from a folder.

Use the drop-down menus to select the answer choice that completes each statement based on the information presented in the graphic.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Correct Answer:**

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: 9

9 distinct CSV files.

Box 2: 10

10 distinct dates.

**QUESTION 3** Your company has employees in 10 states.

The company recently decided to associate each state to one of the following three regions: East, West, and North.

You have a data model that contains employee information by state. The model does **NOT** include region information.

You have a report that shows the employees by state.

You need to view the employees by region as quickly as possible.

What should you do?

- A. Create a new aggregation that summarizes by employee.
- B. Create a new group on the state column and set the Group type to **List**.
- C. Create a new group on the state column and set the Group type to **Bin**.
- D. Create a new aggregation that summarizes by state.



**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

With grouping you are normally working with dimensional attributes.

Here we add three new groups (East, West, and North) and add each state to the appropriate group.

Incorrect Answers:

C: You can set the bin size for numerical and time fields in Power BI Desktop.

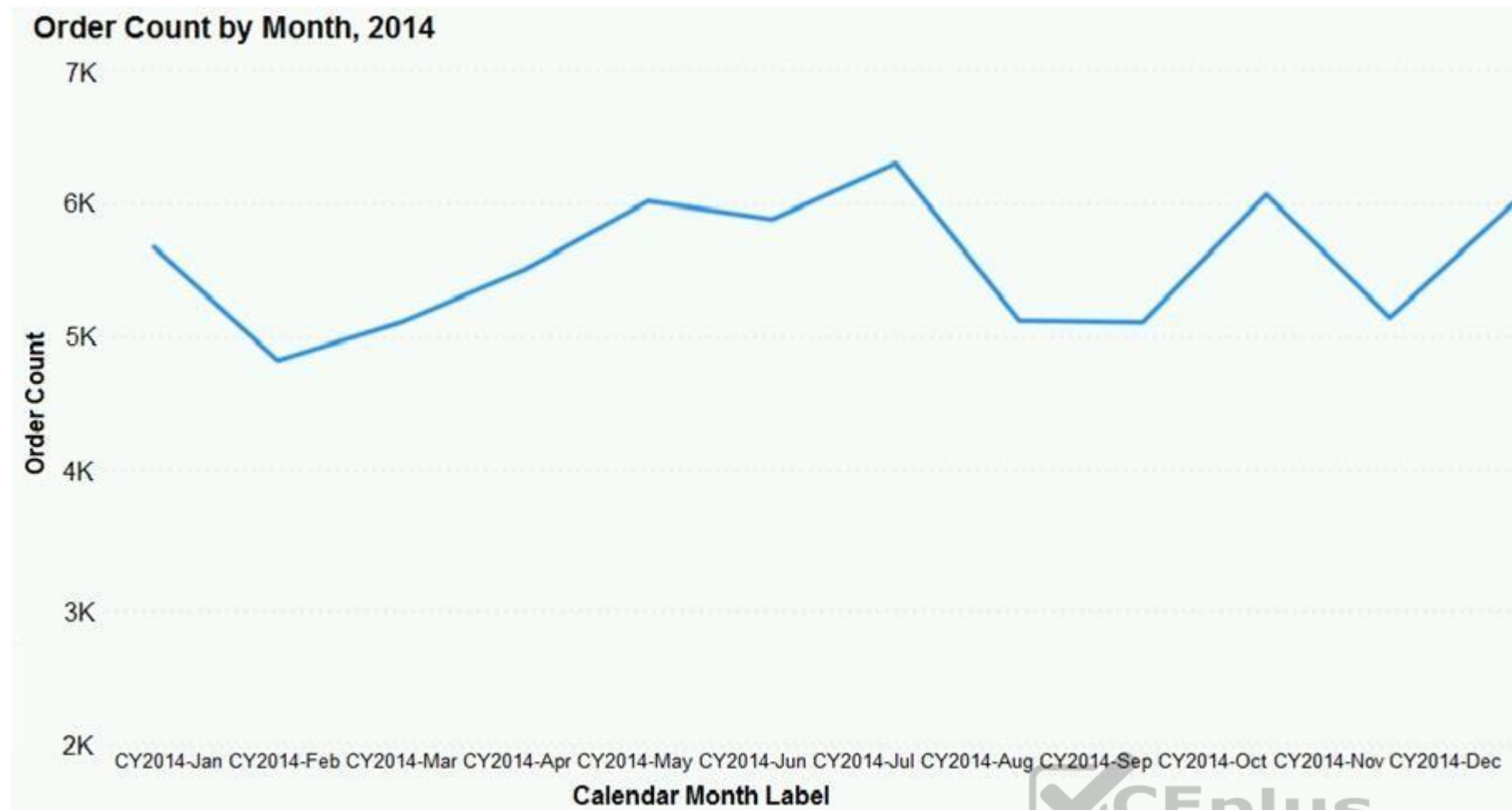
Reference: <https://www.mssqltips.com/sqlservertip/4720/binning-and-grouping-data-with-power-bi/>

**QUESTION 4**

DRAG DROP

You have the line chart shown in the exhibit. (Click the **Exhibit** tab.)





You need to modify the chart to meet the following requirements:

- Identify months that have order counts above the mean. ■
- Display the mean monthly order count.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

**Select and Place:**

**Correct Answer:**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Step 1: Create a 12-month...

You can use calculated measure to get the expected result.

- Create a calculated column for the date.
- Create a measure for 12 months moving average.
- Drag the Line Chart into your canvas as below. (step 2 below)



Step 2: Select the line chart Step 3: From the

Analytics pane, add a Median line

Reference:

<https://community.powerbi.com/t5/Desktop/Moving-Average/td-p/43041> Testlet 1

### Case Study

This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other question on this case study.

At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

### To start the case study

To display the first question on this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. If the case study has an **All Information tab**, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the **Question** button to return to the question.

## Overview

### Existing Environment

Contoso, Ltd. is a manufacturing company that produces outdoor equipment. Contoso has quarterly board meetings for which financial analysts manually prepare Microsoft Excel reports, including profit and loss statements for each of the company's four business units, a company balance sheet, and net income projections for the next quarter.

### Data and Sources

Data for the reports comes from three sources. Detailed revenue, cost, and expense data comes from an Azure SQL database. Summary balance sheet data comes from Microsoft Dynamics 365 Business Central. The balance sheet data is not related to the profit and loss results, other than they both relate dates.

Monthly revenue and expense projections for the next quarter come from a Microsoft SharePoint Online list. Quarterly projections relate to the profit and loss results by using the following shared dimensions: date, business unit, department, and product category.

### Net Income Projection Data

Net income projection data is stored in a SharePoint Online list named Projections in the format shown in the following table.

MonthStartDate	Projection type	ProductCategory	Department	Projection
1-Apr-20	Revenue	Bikes	N/A	200,000
1-Apr-20	Revenue	Components	N/A	250,000
1-Apr-20	Revenue	Clothing	N/A	300,000
1-Apr-20	Revenue	Accessories	N/A	150,000
1-May-20	Revenue	Bikes	N/A	200,000
1-May-20	Revenue	Components	N/A	250,000
1-Apr-20	Expense	Bikes	Bike Manufacture	50,000
1-Apr-20	Expense	Bikes	Bike Sales	3,333

Revenue projections are set at the monthly level and summed to show projections for the quarter.

### Balance Sheet Data

The balance sheet data is imported with final balances for each account per month in the format shown in the following table.

AccountCategory	Account	Month	Year	BalanceAmount
Current assets	Cash and cash equivalents	3	2020	20,289
Current assets	Inventories	3	2020	4,855
Long-term liabilities	Long-term debt	3	2020	50,207
Current assets	Cash and cash equivalents	2	2020	28,209
Current assets	Inventories	2	2020	5,845
Long-term liabilities	Long-term debt	2	2020	49,887
Current assets	Cash and cash equivalents	1	2020	25,567
Current assets	Inventories	1	2020	65,998
Long-term liabilities	Long-term debt	1	2020	46,124

There is always a row for each account for each month in the balance sheet data.

### Dynamics 365 Business Central Data

Business Central contains a product catalog that shows how products roll up to product categories, which roll up to business units.

Revenue data is provided at the date and product level. Expense data is provided at the date and department level.

## Business Issues

Historically, it has taken two analysts a week to prepare the reports for the quarterly board meetings. Also, there is usually at least one issue each quarter where a value in a report is wrong because of a bad cell reference in an Excel formula. On occasion, there are conflicting results in the reports because the products and departments that roll up to each business unit are not defined consistently. **Requirements**

## Planned Changes

Contoso plans to automate and standardize the quarterly reporting process by using Microsoft Power BI. The company wants to how long it takes to populate reports to less than two days. The company wants to create common logic for business units, products, and departments to be used across all reports, including, but not limited, to the quarterly reporting for the board.

## Technical Requirements

Contoso wants the reports and datasets refreshed with minimal manual effort.

The company wants to provide a single package of reports to the board that contains custom navigation and links to supplementary information.

Maintenance, including manually updating data and access, must be minimized as much as possible.

## Security Requirements

The reports must be made available to the board from powerbi.com. A mail-enabled security group will be used to share information with the board.

The analysts responsible for each business unit must see all the data the board sees, except the profit and loss data, which must be restricted to only their business unit's data. The analysts must be able to build new reports from the dataset that contains the profit and loss data, but any reports that the analysts build must not be included in the quarterly reports for the board. The analysts must not be able to share the quarterly reports with anyone.

## Report Requirements

You plan to relate the balance sheet to a standard date table in Power BI in a many-to-one relationship based on the last day of the month. At least one of the balance sheet reports in the quarterly reporting package must show the ending balances for the quarter, as well as for the previous quarter.

Projections must contain a column named RevenueProjection that contains the revenue projection amounts. A relationship must be created from Projections to a table named Date that contains the columns shown in the following table.

Name	Data type	Example
Date	Date	4-Apr-2020
Month	Integer	20,2004
Month Name	Text	February
Quarter	Integer	20,202
Year	Integer	2,020

The relationships between products and departments to business units must be consistent across all reports.

The board must be able to get the following information from the quarterly reports:

- Revenue trends over time
- Ending balances for each account
- A comparison of expenses versus projections by quarter
- Changes in long-term liabilities from the previous quarter
- A comparison of quarterly revenue versus the same quarter during the prior year

## QUESTION 1

### HOTSPOT

How should you distribute the reports to the board? To answer, select the appropriate options in the answer area.

**NOTE:** Each correct selection is worth one point.

**Hot Area:**

**Correct Answer:**



**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: Using a workspace membership

Scenario:

The company wants to provide a single package of reports to the board that contains custom navigation and links to supplementary information.

Note: Workspace is a shared environment for a group of people. You can have multiple Power BI content in a workspace. One workspace can have hundreds of dashboards, reports, and datasets in it.

Box 2: A mail-enabled security group

Scenario: Security Requirements

The reports must be made available to the board from powerbi.com. A mail-enabled security group will be used to share information with the board.

**Question Set 2**

### QUESTION 1

**Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.**

**After you answer a question in this scenario, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.**

You have several reports and dashboards in a workspace.

You need to grant all organizational users read access to a dashboard and several reports.

Solution: You create an Azure Active Directory group that contains all the users. You share each report and dashboard to the group.

Does this meet the goal?

A. Yes

B. No



**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead assign all the users the Viewer role to the workspace.

Note: The Viewer role gives a read-only experience to its users. They can view dashboards, reports, or workbooks in the workspace, but can't browse the datasets or dataflows. Use the Viewer role wherever you would previously use a classic workspace set to "Members can only view Power BI content".

Reference: <https://powerbi.microsoft.com/en-us/blog/announcing-the-new-viewer-role-for-power-bi-workspaces/>

### QUESTION 2

**Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.**

**After you answer a question in this scenario, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.**

You have several reports and dashboards in a workspace.

You need to grant all organizational users read access to a dashboard and several reports.

Solution: You assign all the users the Viewer role to the workspace.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

The Viewer role gives a read-only experience to its users. They can view dashboards, reports, or workbooks in the workspace, but can't browse the datasets or dataflows. Use the Viewer role wherever you would previously use a classic workspace set to "Members can only view Power BI content".

Reference: <https://powerbi.microsoft.com/en-us/blog/announcing-the-new-viewer-role-for-power-bi-workspaces/>

### QUESTION 3

You publish a Microsoft Power BI dataset to powerbi.com. The dataset appends data from an on-premises Oracle database and an Azure SQL database by using one query.

You have admin access to the workspace and permission to use an existing On-premises data gateway for which the Oracle data source is already configured.

You need to ensure that the data is updated every morning. The solution must minimize configuration effort.

Which two actions should you perform when you configure scheduled refresh? Each correct answer presents part of the solution.

**NOTE:** Each correct selection is worth one point.

- A. Configure the dataset to use the existing On-premises data gateway.
- B. Deploy an On-premises data gateway in personal mode.
- C. Set the refresh frequency to **Daily**.
- D. Configure the dataset to use the personal gateway.



**Correct Answer:** BC

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

B: The on-premises data gateway acts as a bridge to provide quick and secure data transfer between on-premises data (data that isn't in the cloud) and several Microsoft cloud services. These cloud services include Power BI.

On-premises data gateway (personal mode) allows one user to connect to sources, and can't be shared with others. An on-premises data gateway (personal mode) can be used only with Power BI. This gateway is well-suited to scenarios where you're the only person who creates reports, and you don't need to share any data sources with others.

C: For Power BI users, refreshing data typically means importing data from the original data sources into a dataset, either based on a refresh schedule or on-demand. You can perform multiple dataset refreshes daily, which might be necessary if the underlying source data changes frequently.

Incorrect Answers:

A: On-premises data gateway allows multiple users to connect to multiple on-premises data sources. You can use an on-premises data gateway with all supported services, with a single gateway installation. This gateway is well-suited to complex scenarios with multiple people accessing multiple data sources.

Reference: <https://docs.microsoft.com/en-us/power-bi/connect-data/refresh-data>

### QUESTION 4

You need to provide a user with the ability to add members to a workspace. The solution must use the principle of least privilege.

Which role should you assign to the user?

- A. Viewer
- B. Contributor
- C. Member
- D. Admin

**Correct Answer:** C

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

A Member can add members or others with lower permissions.

Note:

Capability	Admin	Member	Contributor	Viewer
Update and delete the workspace.	✓			
Add/remove people, including other admins.	✓			
Allow Contributors to update the app for the workspace	✓			
Add members or others with lower permissions.	✓	✓		

#### QUESTION 5

DRAG DROP

You have a Microsoft Power BI workspace.

You need to grant the user capabilities shown in the following table.

User name	Task
User1	Create and publish apps.
User2	Publish reports to the workspace and delete dashboards

The solution must use the principle of least privilege.

Which user role should you assign to each user? To answer, drag the appropriate roles to the correct users. Each role may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

**NOTE:** Each correct selection is worth one point.

**Select and Place:**

**Correct Answer:**

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

Box 1: Member



Capability	Admin	Member	Contributor	Viewer
Update and delete the workspace.	✓			
Add/remove people, including other admins.	✓			
Allow Contributors to update the app for the workspace	✓			
Add members or others with lower permissions.	✓	✓		
Publish and change permissions for an app	✓	✓		
Update an app.	✓	✓	If allowed <sup>1</sup>	

Incorrect Answers:

Contributors can update the app metadata but not publish a new app or change who has permission to the app.

Box 2: Contributor

Capability	Admin	Member	Contributor	Viewer
Create, edit, and delete content in the workspace.	✓	✓	✓	
Publish reports to the workspace, delete content.	✓	✓	✓	



Reference: <https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-new-workspaces>

**QUESTION 6** You create a dataset sourced from dozens of flat files in Azure Blob storage. The dataset uses incremental refresh.

From powerbi.com, you deploy the dataset and several related reports to Microsoft Power BI Premium capacity.

You discover that the dataset refresh fails after the refresh runs out of resources.

What is a possible cause of the issue?

- A. Query folding is not occurring.
- B. You selected **Only refresh complete periods**.
- C. The data type of the column used to partition the data changed.
- D. A filter is missing on the report.

**Correct Answer:** A

**Section:** [none]

**Explanation**

**Explanation/Reference:**

Explanation:

The Power BI service partitions data based on date range. This is what enables only certain partitions to be refreshed incrementally. To make this work, the partition filter conditions are pushed down to the source system by including them in the queries. Using Power Query terminology, this is called “query folding”. It is not recommended that incremental refresh is used when the required query folding cannot take place.

Reference: <https://powerbi.microsoft.com/en-us/blog/incremental-refresh-query-folding/>

#### QUESTION 7

**Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.**

**After you answer a question in this scenario, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.**

You have several reports and dashboards in a workspace.

You need to grant all organizational users read access to a dashboard and several reports.

Solution: You publish an app to the entire organization.

Does this meet the goal?

- A. Yes
- B. No

**Correct Answer: B**

**Section: [none]**

**Explanation**

**Explanation/Reference:**

Explanation:

Instead assign all the users the Viewer role to the workspace.

Note: The Viewer role gives a read-only experience to its users. They can view dashboards, reports, or workbooks in the workspace, but can't browse the datasets or dataflows. Use the Viewer role wherever you would previously use a classic workspace set to “Members can only view Power BI content”.

Reference: <https://powerbi.microsoft.com/en-us/blog/announcing-the-new-viewer-role-for-power-bi-workspaces/>