70-765

Number: 000-000
Passing Score: 800
Time Limit: 120 min
File Version: 1.0

70-765

Provisioning SQL Databases

Version 8.0

Sections

1. Implementing SQL in Azure
2. Manage databases and instances
3. Manage Storage

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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

Your company plans to use Microsoft Azure Resource Manager templates for all future deployments of SQL Server on Azure virtual machines.

You need to create the templates.

Solution: You use Visual Studio to create a XAML template that defines the deployment and configuration settings for the SQL Server environment.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Azure Resource Manager template consists of JSON, not XAML, and expressions that you can use to construct values for your deployment.

A good JSON editor can simplify the task of creating templates.
Note: In its simplest structure, an Azure Resource Manager template contains the following elements:

```
{
"$schema": "http://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
"contentVersion": "",
"parameters": { },
"variables": { },
"resources": [ ],
"outputs": { }
}
```

References: https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-group-authoring-templates

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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

Your company plans to use Microsoft Azure Resource Manager templates for all future deployments of SQL Server on Azure virtual machines.

You need to create the templates.

Solution: You create the desired SQL Server configuration in an Azure Resource Group, then export the Resource Group template and save it to the Templates Library.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Azure Resource Manager template consists of JSON, and expressions that you can use to construct values for your deployment.
A good JSON editor, not a Resource Group template, can simplify the task of creating templates.
Note: In its simplest structure, an Azure Resource Manager template contains the following elements:

```
{
"$schema": "http://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
"contentVersion": "",
"parameters": { },
"variables": { },
"resources": [ ],
"outputs": { }
}
```

References: https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-group-authoring-templates

QUESTION 3
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

Your company plans to use Microsoft Azure Resource Manager templates for all future deployments of SQL Server on Azure virtual machines.

You need to create the templates.

Solution: You use Visual Studio to create a JSON template that defines the deployment and configuration settings for the SQL Server environment.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Azure Resource Manager template consists of JSON, not XAML, and expressions that you can use to construct values for your deployment.

A good JSON editor can simplify the task of creating templates.
Note: In its simplest structure, an Azure Resource Manager template contains the following elements:

```
{
"$schema": "http://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
"contentVersion": "",
"parameters": { },
"variables": { },
"resources": [ ],
"outputs": { }
}
```

References: https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-group-authoring-templates

QUESTION 4
You have a Microsoft SQL Server 2014 named SRV2014 that has a single tempdb database file. The tempdb database file is eight gigabytes (GB) in size.

You install a SQL Server 2016 instance named SQL Server 2016 by using default settings. The new instance has eight logical processor cores.

You plan to migrate the databases from SRV2014 to SRV2016.

You need to configure the tempdb database on SRV2016. The solution must minimize the number of future tempdb autogrowth events.

What should you do?

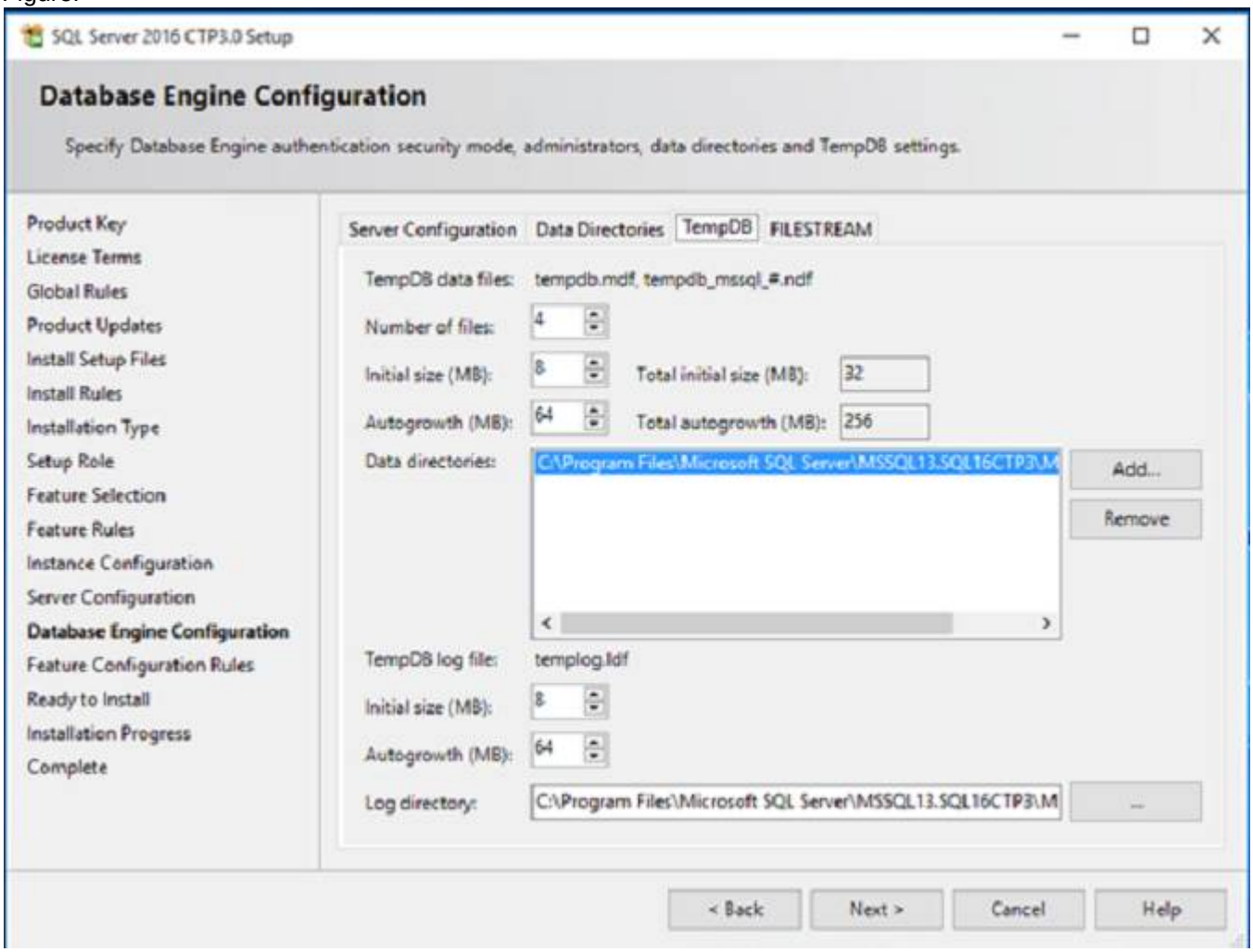
A. Increase the size of the tempdb data file to 1 GB. Add seven additional tempdb data files and set the size for each data file to 1 GB.
B. Increase the size of the tempdb data files to 1 GB.
C. Add seven additional tempdb data files and set the size for each data file to 1 GB.
D. Set the value for the autogrowth setting for the tempdb data file to128 megabytes (MB). Add seven additional tempdb data files and set the autogrowth value to 128 MB.

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
In an effort to simplify the tempdb configuration experience, SQL Server 2016 setup has been extended to configure various properties for tempdb for multi-processor environments.
A new tab dedicated to tempdb has been added to the Database Engine Configuration step of setup workflow.
Configuration options:
Data Files
Number of files – this will default to the lower value of 8 or number of logical cores as detected by setup.
Initial size – is specified in MB and applies to each tempdb data file. This makes it easier to configure all files of same size. Total initial size is the cumulative tempdb data file size (Number of files * Initial Size) that will be created.
Autogrowth – is specified in MB (fixed growth is preferred as opposed to a non-linear percentage based

growth) and applies to each file. The default value of 64MB was chosen to cover one PFS interval.

Figure:



References: https://blogs.msdn.microsoft.com/psssql/2016/03/17/sql-2016-it-just-runs-faster-automatic-tempdb-configuration/

QUESTION 5
Note: This question is part of a series of questions that use the same or similar answer choices. An answer choice may be correct for more than one question in the series. Each question is independent of the other questions in this series. Information and details provided in a question apply only to that question.

You have deployed several GS-series virtual machines (VMs) in Microsoft Azure. You plan to deploy Microsoft SQL Server in a development environment. Each VM has a dedicated disk for backups.

You need to backup a database to the local disk on a VM. The backup must be replicated to another region.

Which storage option should you use?

A. Premium P10 disk storage
B. Premium P20 disk storage
C. Premium P30 disk storage

D. Standard locally redundant disk storage
E. Standard geo-redundant disk storage
F. Standard zone redundant blob storage
G. Standard locally redundant blob storage
H. Standard geo-redundant blob storage

Correct Answer: E
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Note: SQL Database automatically creates a database backups and uses Azure read-access geo-redundant storage (RA-GRS) to provide geo-redundancy. These backups are created automatically and at no additional charge. You don't need to do anything to make them happen. Database backups are an essential part of any business continuity and disaster recovery strategy because they protect your data from accidental corruption or deletion.

References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-automated-backups

QUESTION 6
Note: This question is part of a series of questions that use the same or similar answer choices. An answer choice may be correct for more than one question in the series. Each question is independent of the other questions in this series. Information and details provided in a question apply only to that question.

You have a virtual machine (VM) in Microsoft Azure, which has a 2 terabyte (TB) database. Microsoft SQL Server backups are performed by using Backup to URL.

You need to provision the storage account for the backups while minimizing costs.

Which storage option should you use?

A. Premium P10 disk storage
B. Premium P20 disk storage
C. Premium P30 disk storage
D. Standard locally redundant disk storage
E. Standard geo-redundant disk storage
F. Standard zone redundant blob storage
G. Standard locally redundant blob storage
H. Standard geo-redundant blob storage

Correct Answer: G
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
A URL specifies a Uniform Resource Identifier (URI) to a unique backup file. The URL is used to provide the location and name of the SQL Server backup file. The URL must point to an actual blob, not just a container. If the blob does not exist, it is created. If an existing blob is specified, BACKUP fails, unless the “WITH FORMAT” option is specified to overwrite the existing backup file in the blob.

LOCALLY REDUNDANT STORAGE (LRS) makes multiple synchronous copies of your data within a single datacenter.

Incorrect Answers:
F: Zone redundant blob storage would be me more expensive as it stores three copies of data across multiple datacenters within or across regions.

References:
https://msdn.microsoft.com/en-us/library/dn435916.aspx
https://azure.microsoft.com/en-us/pricing/details/storage/blobs/

QUESTION 7
Note: This question is part of a series of questions that use the same or similar answer choices. An answer choice may be correct for more than one question in the series. Each question is independent of the other questions in this series. Information and details provided in a question apply only to that question.

You have deployed a GS-series virtual machine (VM) in Microsoft Azure. You plan to deploy Microsoft SQL Server.

You need to deploy a 30 megabyte (MB) database that requires 100 IOPS to be guaranteed while minimizing costs.

Which storage option should you use?

A. Premium P10 disk storage
B. Premium P20 disk storage
C. Premium P30 disk storage
D. Standard locally redundant disk storage
E. Standard geo-redundant disk storage
F. Standard zone redundant blob storage
G. Standard locally redundant blob storage
H. Standard geo-redundant blob storage

Correct Answer: A
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Premium Storage Disks Limits
When you provision a disk against a Premium Storage account, how much input/output operations per second (IOPS) and throughput (bandwidth) it can get depends on the size of the disk. Currently, there are three types of Premium Storage disks: P10, P20, and P30. Each one has specific limits for IOPS and throughput as specified in the following table:

Premium Storage Disk Type	P10	P20	P30
Disk Size	128 GiB	512 GiB	1024 GiB (1 TB)
IOPS per disk	500	2300	5000
Throughput per disk	100 MB per second	150 MB per second	200 MB per second

References: https://docs.microsoft.com/en-us/azure/storage/storage-premium-storage

QUESTION 8
Note: This question is part of a series of questions that use the same or similar answer choices. An answer choice may be correct for more than one question in the series. Each question is independent of the other questions in this series. Information and details provided in a question apply only to that question.

You have deployed several GS-series virtual machines (VMs) in Microsoft Azure. You plan to deploy Microsoft SQL Server in a development environment.

You need to provide storage to the environment that minimizes costs.

Which storage option should you use?

A. Premium P10 disk storage
B. Premium P20 disk storage
C. Premium P30 disk storage
D. Standard locally redundant disk storage
E. Standard geo-redundant disk storage
F. Standard zone redundant blob storage
G. Standard locally redundant blob storage
H. Standard geo-redundant blob storage

Correct Answer: D
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:

QUESTION 9
HOTSPOT

You use Resource Manager to deploy a new Microsoft SQL Server instance in a Microsoft Azure virtual machine (VM) that uses Premium storage. The combined initial size of the SQL Server user database files is expected to be over 200 gigabytes (GB). You must maximize performance for the database files and the log file.

You add the following additional drive volumes to the VM:

Drive volume	Storage	Host caching
E:	Premium storage	ReadOnly
F:	Premium storage	None

You have the following requirements:

Maximize performance of the SQL Server instance.
Use Premium storage when possible.

You need to deploy the SQL instance.

In the table below, identify the drive where you must store each SQL Server file type.

NOTE: Make only one selection in each column. Each correct selection is worth one point.

Hot Area:

Answer area

Drive	Data files	Log files
C:	○	○
D:	○	○
E:	○	○
F:	○	○

Correct Answer:

Answer area

Drive	Data files	Log files
C:	○	○
D:	○	○
E:	○	○
F:	○	○

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

Enable read caching on the disk(s) hosting the data files and TempDB.
Do not enable caching on disk(s) hosting the log file. Host caching is not used for log files.

Incorrect Answers:
C, D: Avoid using operating system or temporary disks for database storage or logging.

References: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sql/virtual-machines-windows-sql-performance

QUESTION 10
DRAG DROP

You are building a new Always On Availability Group in Microsoft Azure. The corporate domain controllers (DCs) are attached to a virtual network named ProductionNetwork. The DCs are part of an availability set named ProductionServers1.

You create the first node of the availability group and add it to an availability set named ProductionServers2. The availability group node is a virtual machine (VM) that runs Microsoft SQL Server. You attach the node to ProductionNetwork.

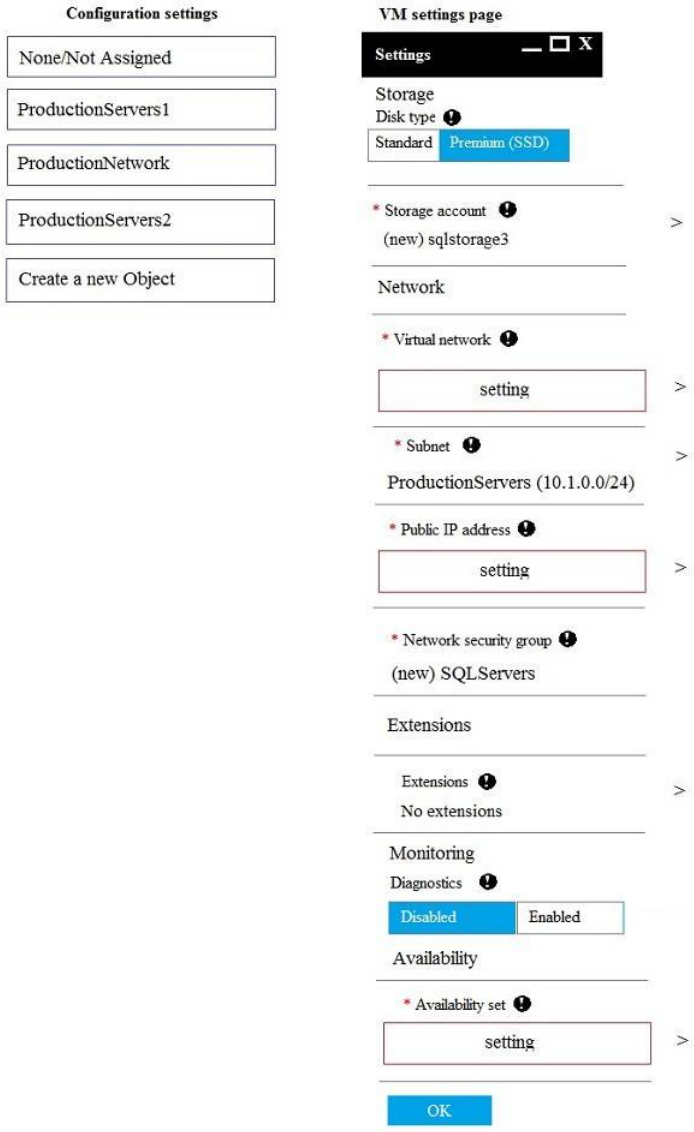
The servers in the availability group must be directly accessible only by other company VMs in Azure.

You need to configure the second SQL Server VM for the availability group.

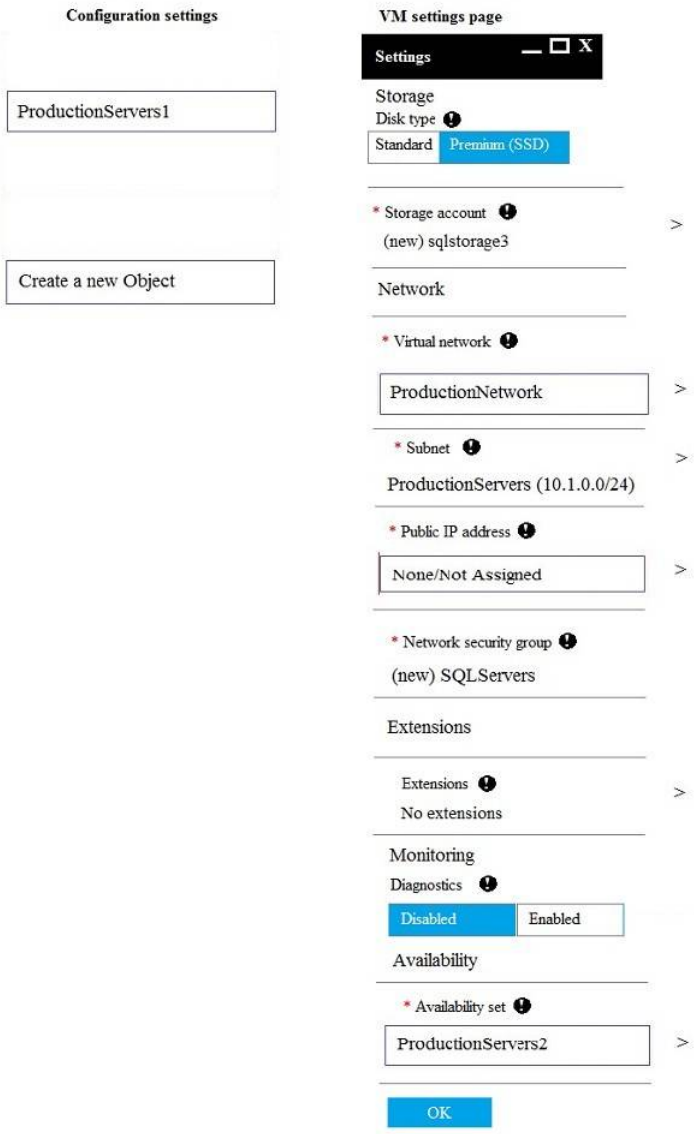
How should you configure the VM? To answer, drag the appropriate configuration settings to the correct target locations. Each configuration setting may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Box 1: ProductionNetwork
The virtual network is named ProductionNetwork.

Box 2: None /Not Assigned
As the servers in the availability group must be directly accessible only by other company VMs in Azure, there should be no Public IP address.

Box 3: ProductionServer2
You create the first node of the availability group and add it to an availability set named ProductionServers2. The availability group node is a virtual machine (VM) that runs Microsoft SQL Server.

QUESTION 11
HOTSPOT

You plan to migrate a Microsoft SQL Server workload from an on-premises server to a Microsoft Azure virtual machine (VM). The current server contains 4 cores with an average CPU workload of 6 percent and a peak workload of 10 percent when using 2.4Ghz processors.

You gather the following metrics:

	Minimum IOPS	Average IOPS	Maximum IOPS
Data Drive	100	938	7253
Transaction Log Drive	12	145	350
TempDB Drive	300	900	1900

You need to design a SQL Server VM to support the migration while minimizing costs.

For each setting, which value should you use? To answer, select the appropriate storage option from each list in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

VM setting	Value ▼
Data drive	Local storage Premium storage Standard storage
Transaction log drive	Local storage Premium storage Standard storage
TempDB drive	Local storage Premium storage Standard storage
VM size	A3 D3 DS3

Correct Answer:

Answer Area

VM setting	Value ▼
Data drive	Local storage **Premium storage** Standard storage
Transaction log drive	Local storage Premium storage **Standard storage**
TempDB drive	Local storage **Premium storage** Standard storage
VM size	**A3** D3 DS3

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

Note: A standard disk is expected to handle 500 IOPS or 60MB/s.
A P10 Premium disk is expected to handle 500 IOPS.
A P20 Premium disk is expected to handle 2300 IOPS.
A P30 Premium disk is expected to handle 5000 IOPS.

VM size: A3
Max data disk throughput is 8x500 IOPS

References: https://docs.microsoft.com/en-us/azure/virtual-machines/virtual-machines-windows-sizes

QUESTION 12
You plan to migrate a database to Microsoft Azure SQL Database. The database requires 500 gigabytes (GB) of storage.

The database must support 50 concurrent logins. You must minimize the cost associated with hosting the database.

You need to create the database.

Which pricing tier should you use?

A. Standard S3 pricing tier
B. Premium P2 tier
C. Standard S2 pricing tier
D. Premium P1 tier

Correct Answer: D

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
For a database size of 500 GB the Premium tier is required.
Both P1 and P2 are adequate. P1 is preferred as it is cheaper.

Note:

Premium service tier

Service tier	P1	P2	P4	P6	P11	P15
Max DTUs	125	250	500	1000	1750	4000
Max database size*	500 GB	500 GB	500 GB	500 GB	1 TB	1 TB
Max in-memory OLTP storage	1 GB	2 GB	4 GB	8 GB	14 GB	32 GB
Max concurrent workers	200	400	800	1600	2400	6400
Max concurrent logins	200	400	800	1600	2400	6400
Max concurrent sessions	30000	30000	30000	30000	30000	30000

Incorrect Answers:
A, C: Maximum database size is 250 GB for the Standard pricing tier.

References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-service-tiers

QUESTION 13
You plan to deploy 20 Microsoft Azure SQL Database instances to an elastic pool in Azure to support a batch processing application.

Two of the databases in the pool reach their peak workload threshold at the same time every day. This leads to inconsistent performance for batch completion.

You need to ensure that all batches perform consistently.

What should you do?

A. Create an In-Memory table.
B. Increase the storage limit in the pool.
C. Implement a readable secondary database.
D. Increase the total number of elastic Database Transaction Units (eDTUs) in the pool.

Correct Answer: D
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
In SQL Database, the relative measure of a database's ability to handle resource demands is expressed in Database Transaction Units (DTUs) for single databases and elastic DTUs (eDTUs) for databases in an elastic pool.

A pool is given a set number of eDTUs, for a set price. Within the pool, individual databases are given the flexibility to auto-scale within set parameters. Under heavy load, a database can consume more eDTUs to

meet demand.

Additional eDTUs can be added to an existing pool with no database downtime.
References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-elastic-pool

QUESTION 14
DRAG DROP

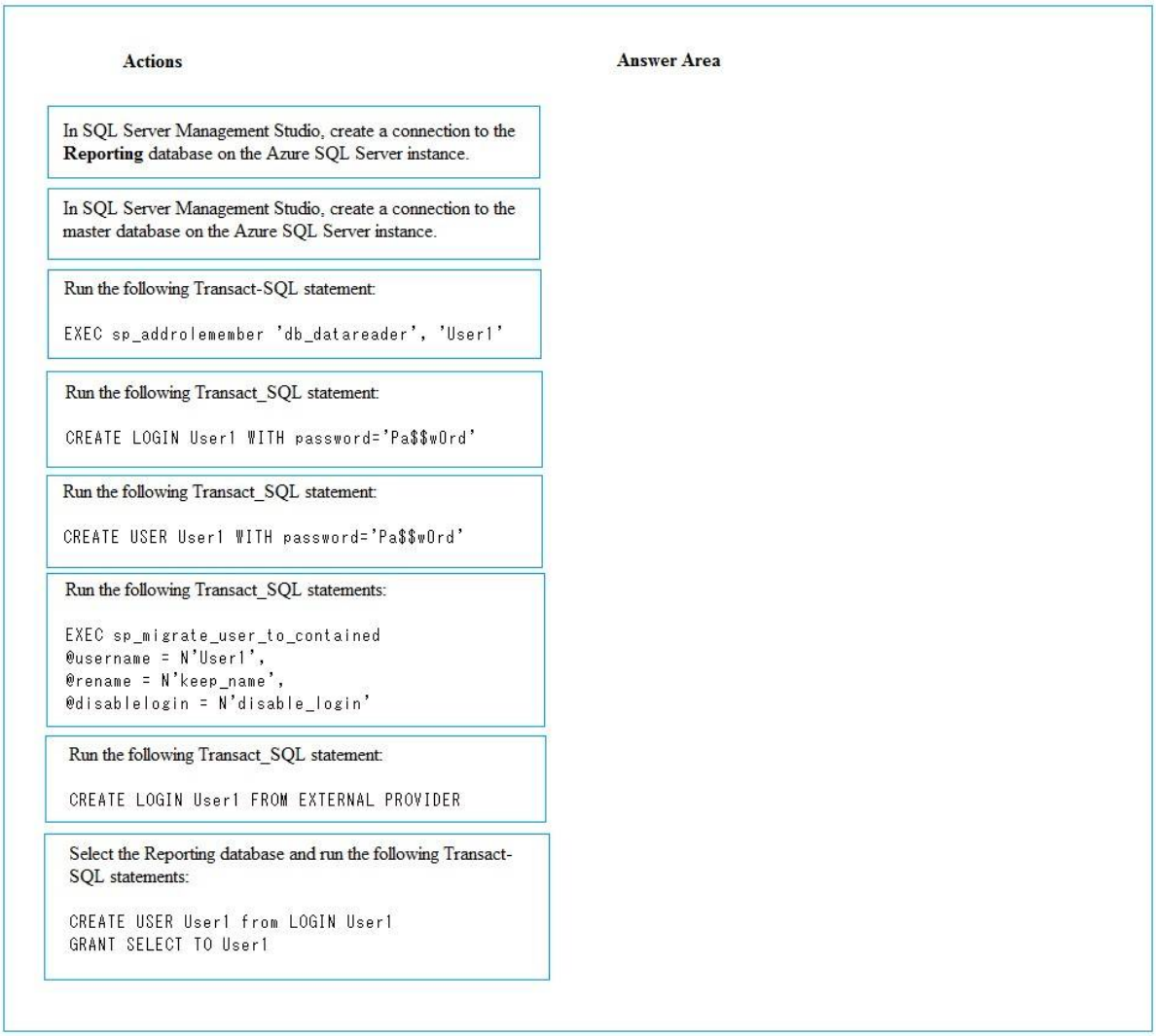
You deploy a new Microsoft Azure SQL Database instance to support a variety of mobile applications and public websites. You plan to create a new security principal named `User1`.

The principal must have access to select all current and future objects in a database named **Reporting**. The activity and authentication of the database user must be limited to the **Reporting** database.

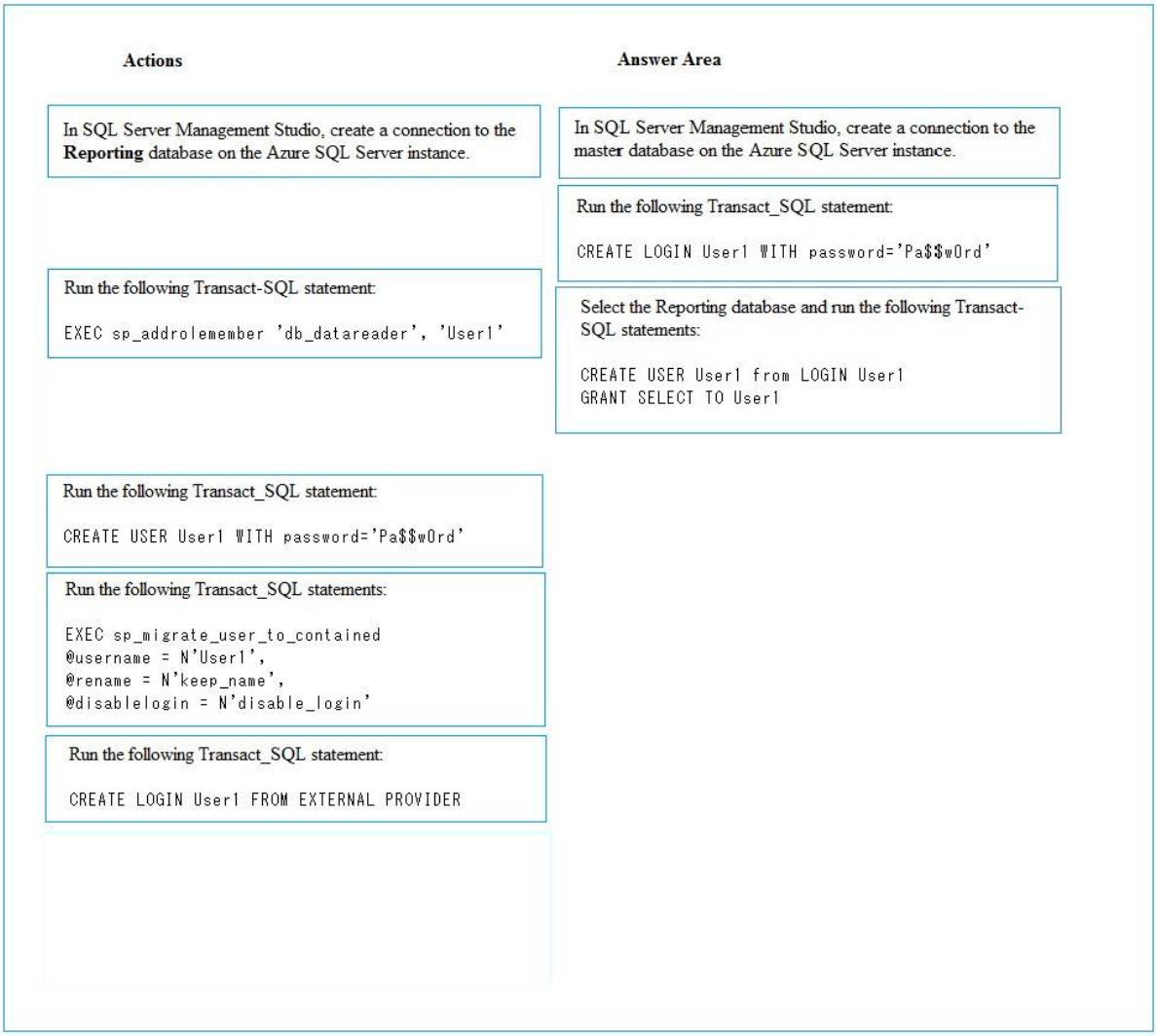
You need to create the new security principal.

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: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

Step 1, Step 2:

First you need to create a login for SQL Azure, it's syntax is as follows:

CREATE LOGIN username WITH password='password';
This command needs to run in master db. Only afterwards can you run commands to create a user in the database.

Step 3:
Users are created per database and are associated with logins. You must be connected to the database in where you want to create the user. In most cases, this is not the master database. Here is some sample Transact-SQL that creates a user:

CREATE USER readonlyuser FROM LOGIN readonlylogin;

References: https://azure.microsoft.com/en-us/blog/adding-users-to-your-sql-azure-database/

QUESTION 15
DRAG DROP

A new Azure Active Directory security principal named ReportUser@contoso.onmicrosoft.com should have access to select all current and future objects in the Reporting database. You should not grant the principal any other permissions. You should use your Active Directory Domain Services (AD DS) account to authenticate to the Azure SQL database.

You need to create the new security principal.

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:

Actions

Create a connection to the **master** database on the Azure SQL Server instance by using your Active Directory authenticated account.

Create a connection to the **Reporting** database on the Azure SQL Server instance by using your Active Directory authenticated account.

Run the following Transact-SQL statement:

```
EXEC sp_addrolemember 'db_datareader',
'reportuser@contoso.onmicrosoft.com'
```

Run the following Transact-SQL statement:

```
CREATE USER
[reportuser@contoso.onmicrosoft.com]
FROM EXTERNAL PROVIDER
```

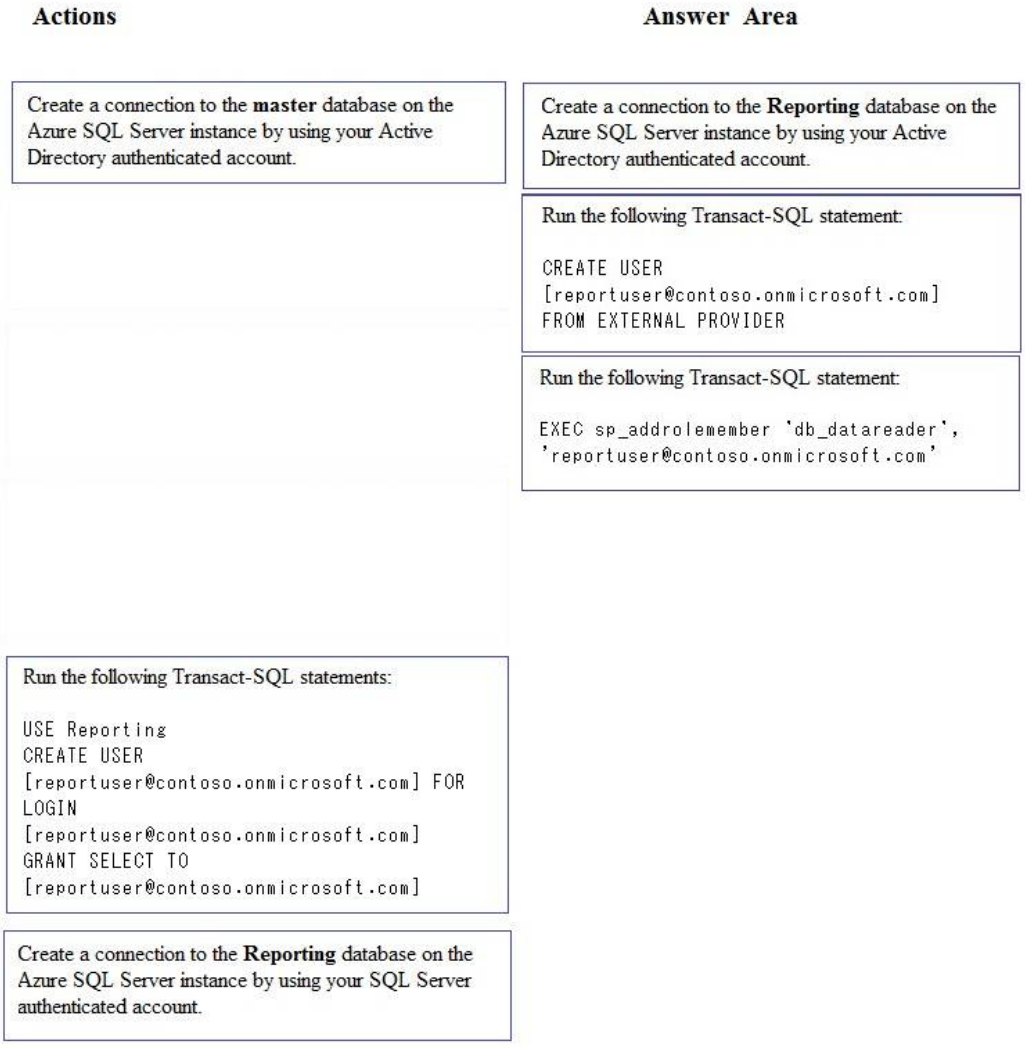
Run the following Transact-SQL statements:

```
USE Reporting
CREATE USER
[reportuser@contoso.onmicrosoft.com] FOR
LOGIN
[reportuser@contoso.onmicrosoft.com]
GRANT SELECT TO
[reportuser@contoso.onmicrosoft.com]
```

Create a connection to the **Reporting** database on the Azure SQL Server instance by using your SQL Server authenticated account.

Answer Area

Correct Answer:



Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

Step 1:
To provision an Azure AD-based contained database user (other than the server administrator that owns the database), connect to the database (here the Reporting database) with an Azure AD identity (not with a SQL Server account) that has access to the database.

Step 2: CREATE USER ... FROM EXTERNAL PROVIDER
To create an Azure AD-based contained database user (other than the server administrator that owns the database), connect to the database with an Azure AD identity, as a user with at least the ALTER ANY USER permission. Then use the following Transact-SQL syntax:

CREATE USER <Azure_AD_principal_name>
FROM EXTERNAL PROVIDER;

Step 3:
Grant the proper reading permissions.

References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-aad-authentication

QUESTION 16
A company has an on-premises Microsoft SQL Server 2014 environment. The company has a main office in Seattle, and remote offices in Amsterdam and Tokyo. You plan to deploy a Microsoft Azure SQL Database instance to support a new application. You expect to have 100 users from each office.

In the past, users at remote sites reported issues when they used applications hosted at the Seattle office.

You need to optimize performance for users running reports while minimizing costs.

What should you do?

A. Implement an elastic pool.
B. Implement a standard database with readable secondaries in Asia and Europe, and then migrate the application.
C. Implement replication from an on-premises SQL Server database to the Azure SQL Database instance.
D. Deploy a database from the Premium service tier.

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-geo-replication-transact-sql#add-secondary-database

QUESTION 17
HOTSPOT

Background

You are the database administrator for Contoso, Ltd. The company has 200 offices around the world. The company has corporate executives that are located in offices in London, New York, Toronto, Sydney, and Tokyo.

Contoso, Ltd. has a Microsoft Azure SQL Database environment. You plan to deploy a new Azure SQL Database to support a variety of mobile applications and public websites.

The company is deploying a multi-tenant environment. The environment will host Azure SQL Database instances. The company plans to make the instances available to internal departments and partner companies. Contoso is in the final stages of setting up networking and communications for the environment.

Existing Contoso and Customer instances need to be migrated to Azure virtual machines (VM) according to the following requirements:
Contoso instances – should use the method requiring the least administrative effort to migrate instances to Azure Vms.
Customer instances – should use a method that allows customers to bring their own licenses to Azure VMs. Customers have approved down time for the migration.

The company plans to deploy a new order entry application and a new business intelligence and analysis application. Each application will be supported by a new database. Contoso creates a new Azure SQL database named Reporting. The database will be used to support the company's financial reporting requirements. You associate the database with the Contoso Azure Active Directory domain.

Each location database for the data entry application may have an unpredictable amount of activity. Data must be replicated to secondary databases in Azure datacenters in different regions.

To support the application, you need to create a database named contosodb1 in the existing environment.

Objects

Parameter	Name
Logical Server	contososrv
Resource Group	contosodbrg

Database
The contosodb1 database must support the following requirements:
a size of at least 200 gigabytes (GB)
1,000 concurrent sessions
point-in-time restore to any point in the two weeks prior to a failure
minimize costs

Application
For the business intelligence application, corporate executives must be able to view all data in near real-time with low network latency.

Contoso has the following security, networking, and communications requirements:
Multi-Location Load Balancing – to ensure customers have access to their tenants at multiple Azure locations across the world.
Secure Message/Data Flow – to securely support communication between Azure and on-premises applications and services.
Accounts should support accessing external domain resources and be configured in the most secure and lowest-maintenance way possible, including meeting the company policy of regular service account password changes.

You need to configure the data entry and business intelligence databases.

In the table below, identify the option that you must use for each database.

NOTE: Make only one selection in each column.

Hot Area:

Answer Area

Option	Data entry	Business intelligence
Elastic database pools only	○	○
Geo-replicated database only	○	○
Elastic database pools and geo-replicated databases	○	○

Correct Answer:

Answer Area

Option	Data entry	Business intelligence
Elastic database pools only	○	○
Geo-replicated database only	○	○
Elastic database pools and geo-replicated databases	○	○

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

Data Entry: Geo-replicated database only
From Contoso scenario: Each location database for the data entry application may have an unpredictable amount of activity. Data must be replicated to secondary databases in Azure datacenters in different regions.
Business intelligence: Elastic database pools only
From Contoso scenario: For the business intelligence application, corporate executives must be able to view all data in near real-time with low network latency.

SQL DB elastic pools provide a simple cost effective solution to manage the performance goals for multiple databases that have widely varying and unpredictable usage patterns.

References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-elastic-pool

QUESTION 18
HOTSPOT

Background

You are the database administrator for Contoso, Ltd. The company has 200 offices around the world. The company has corporate executives that are located in offices in London, New York, Toronto, Sydney, and Tokyo.

Contoso, Ltd. has a Microsoft Azure SQL Database environment. You plan to deploy a new Azure SQL Database to support a variety of mobile applications and public websites.

The company is deploying a multi-tenant environment. The environment will host Azure SQL Database instances. The company plans to make the instances available to internal departments and partner companies. Contoso is in the final stages of setting up networking and communications for the environment.

Existing Contoso and Customer instances need to be migrated to Azure virtual machines (VM) according to the following requirements:
Contoso instances – should use the method requiring the least administrative effort to migrate instances to Azure Vms.
Customer instances – should use a method that allows customers to bring their own licenses to Azure VMs. Customers have approved down time for the migration.

The company plans to deploy a new order entry application and a new business intelligence and analysis application. Each application will be supported by a new database. Contoso creates a new Azure SQL database named Reporting. The database will be used to support the company's financial reporting requirements. You associate the database with the Contoso Azure Active Directory domain.

Each location database for the data entry application may have an unpredictable amount of activity. Data must be replicated to secondary databases in Azure datacenters in different regions.

To support the application, you need to create a database named contosodb1 in the existing environment.

Objects

Parameter	Name
Logical Server	contososrv
Resource Group	contosodbrg

Database
The contosodb1 database must support the following requirements:
a size of at least 200 gigabytes (GB)
1,000 concurrent sessions
point-in-time restore to any point in the two weeks prior to a failure
minimize costs

Application
For the business intelligence application, corporate executives must be able to view all data in near real-time with low network latency.

Contoso has the following security, networking, and communications requirements:
Multi-Location Load Balancing – to ensure customers have access to their tenants at multiple Azure locations across the world.
Secure Message/Data Flow – to securely support communication between Azure and on-premises applications and services.
Accounts should support accessing external domain resources and be configured in the most secure and lowest-maintenance way possible, including meeting the company policy of regular service account password changes.

You need to create the contosodb1 database.

How should you complete the Azure PowerShell command? To answer, select the appropriate Azure PowerShell segments in the answer area.

Hot Area:

Answer Area

▼
New-AzureSqlDatabase
New-AzureRmSqlDatabase
Set-AzureRmSqlDatabase

- ResourceGroupName "contosodbrg"

- ServerName "contososrv"

-DatabaseName "contosodb1"

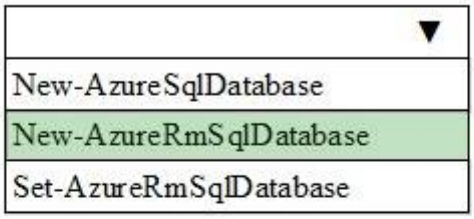
- Edition

▼
Basic
Standard
Premium

-RequestedServiceObjectName S2

Correct Answer:

Answer Area

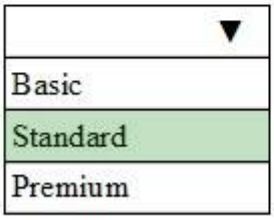


- ResourceGroupName "contosodbrg"

- ServerName "contososrv"

-DatabaseName "contosodb1"

- Edition



-RequestedServiceObjectName S2

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

Box 1: New-AzureRmSqlDatabase
New-AzureRmSqlDatabase creates a database or an elastic database.
New-AzureRmSqlDatabase is a command with the Azure Resource Manager (AzureRM) module. Azure Resource Manager enables you to work with the resources in your solution as a group.

Incorrect Answers:
Not New-AzureSqlDatabase: New-AzureSqlDatabase cannot used be used for Resource Groups.

Box 2: Standard
The maximum database size for the Standard edition is 250 GB, while 200 GB is required
The maximum concurrents sessions for the Standard edition is 1200 for S2 and 2400 for S3, while 1000 concurrent sessions is required.

From the scenario: The contosodb1 database must support the following requirements:
a size of at least 200 gigabytes (GB)
1,000 concurrent sessions
point-in-time restore to any point in the two weeks prior to a failure
minimize costs

Incorrect Answers:
Not Basic: The maximum database size for the Basic edition is only 2 GB, while 200 GB is required.
Not Premium: Standard Edition meets the requirements, and Premium would be a more expensive solution.

References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-service-tiers

QUESTION 19
You administer all the deployments of Microsoft SQL Server 2012 in your company. You have two servers in the same data center that hosts your production database.

You need to ensure that the database remains available if a catastrophic server failure or a disk failure occurs.

You also need to maintain transactional consistency of the data across both servers.

You need to achieve these goals without manual intervention.

Which configuration should you use?

A. Two servers configured in a Windows Failover Cluster in the same data center SQL Server configured as a clustered instance
B. SQL Server that includes an application database configured to perform transactional replication
C. Two servers configured in the same data centerA primary server configured to perform log-shipping every 10 minutes A backup server configured as a warm standby
D. Two servers configured in different data centersSQL Server Availability Group configured in Synchronous-Commit Availability Mode One server configured as an Active Secondary
E. Two servers configured in the same data centerSQL Server Availability Group configured in Asynchronous-Commit Availability Mode One server configured as an Active Secondary
F. Two servers configured in different data centersSQL Server Availability Group configured in Asynchronous-Commit Availability Mode
G. SQL Server that includes an application database configured to perform snapshot replication
H. Two servers configured on the same subnetSQL Server Availability Group configured in Synchronous-Commit Availability Mode

Correct Answer: H
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Always On availability groups supports two availability modes—asynchronous-commit mode and synchronous-commit mode
Synchronous-commit mode emphasizes high availability over performance, at the cost of increased transaction latency.
References: https://docs.microsoft.com/en-us/sql/database-engine/availability-groups/windows/availability-modes-always-on-availability-groups#SyncCommitAvMode

QUESTION 20
You create an availability group that has replicas named HA/Server01 and HA/Server02.

Currently, HA/Server01 is the primary replica.

You have multiple queries that read data and produce reports from the database.

You need to offload the reporting workload to the secondary replica when HA/Server01 is the primary replica.

What should you do?

A. Set the Availability Mode property of HA/Server02 to Asynchronous commit.
B. Set the Readable Secondary property of HA/Server02 to Read-intent only.
C. Set the Connections in Primary Role property of HA/Server01 to Allow read/write connections.
D. Set the Availability Mode property of HA/Server01 to Asynchronous commit.

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
To set up a readable secondary replica, you first create an availability group. Then you add replicas. You can choose either Yes or Read-intent only options.

References: http://msdn.microsoft.com/en-us/library/jj542414.aspx

QUESTION 21
You administer a Microsoft SQL Server 2012 database instance.

You plan to migrate the database to Windows Azure SQL Database. You verify that all objects contained in the database are compatible with Windows Azure SQL Database.

You need to ensure that database users and required server logins are migrated to Windows Azure SQL Database.

What should you do?

A. Use the copy database wizard
B. Use the Database Transfer wizard
C. Use SQL Server Management Studio to deploy the database to Windows Azure SQL Database
D. Backup the database from the local server and restore it to Windows Azure SQL Database

Correct Answer: C

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
You would need to use either the SQL Server Management Studio or Transact-SQL.

References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-cloud-migrate

QUESTION 22
You administer a Microsoft SQL Server 2012 environment. One of the SQL Server 2012 instances contains a database named Sales.

You plan to migrate Sales to Windows Azure SQL Database.

To do so, you need to implement a contained database.

What should you do? (Each correct answer presents part of the solution. Choose all that apply.)

A. Set database containment to AZURE.
B. Enable server property contained database authentication.
C. Disable server property cross db ownership chaining.
D. Set database containment to PARTIAL.
E. Disable server property contained database authentication.
F. Set database containment to FULL.

Correct Answer: BD
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
A contained database is a database that is isolated from other databases and from the instance of SQL Server that hosts the database.

B: In the contained database user model, the login in the master database is not present. Instead, the authentication process occurs at the user database, and the database user in the user database does not have an associated login in the master database.

SQL Database and SQL Data Warehouse support Azure Active Directory identities as contained database users.

D: The contained database feature is currently available only in a partially contained state. A partially contained database is a contained database that allows the use of uncontained features.

References: https://docs.microsoft.com/en-us/sql/relational-databases/databases/contained-databases

QUESTION 23
You plan to install Microsoft SQL Server 2012 for a web hosting company.

The company plans to host multiple web sites, each supported by a SQL Server database.

You need to select an edition of SQL Server that features backup compression of databases, basic data integration features, and low total cost of ownership.

Which edition should you choose?

A. Express Edition with Tools
B. Standard Edition
C. Web Edition
D. Express Edition with Advanced Services

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Incorrect Answers:
A, D: Express edition has severe limitations.

C: SQL Server 2012 Web edition is a low total-cost-of-ownership option for Web hosters and Web VAPs to provide scalability, affordability, and manageability capabilities for small to large scale Web properties.

References: https://msdn.microsoft.com/en-us/library/ms144275(v=sql.110).aspx

QUESTION 24
HOTSPOT

You are building the database platform for a multi-tenant application. The application will have one database per tenant and will have at least 30 tenants. Each tenant will have a separate resource group for billing purposes.

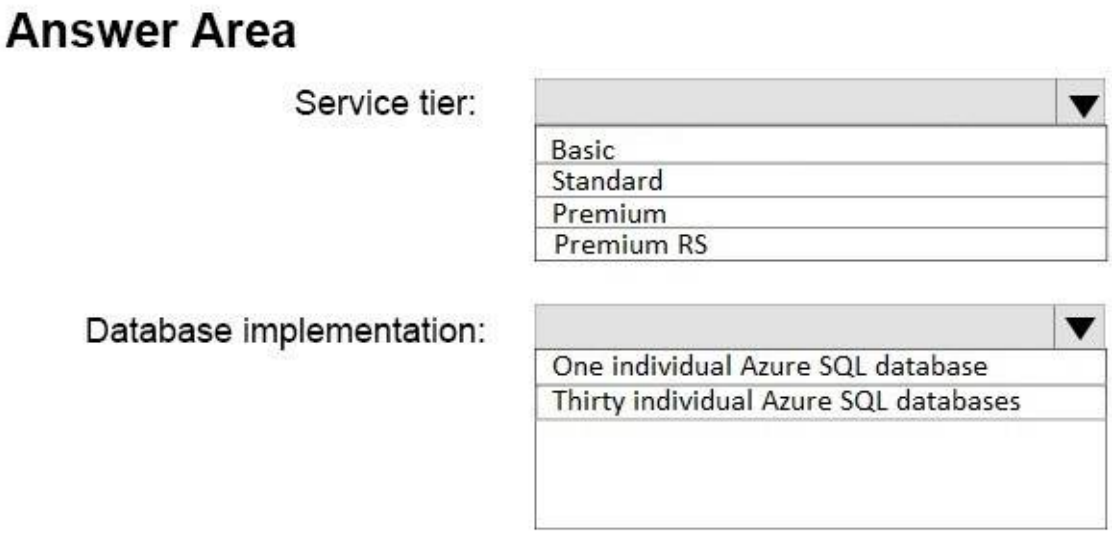
The application will require at least 10 GB of clustered columnstore indexes for each database.

You need to implement the database platform for the application. The solution must minimize costs.

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

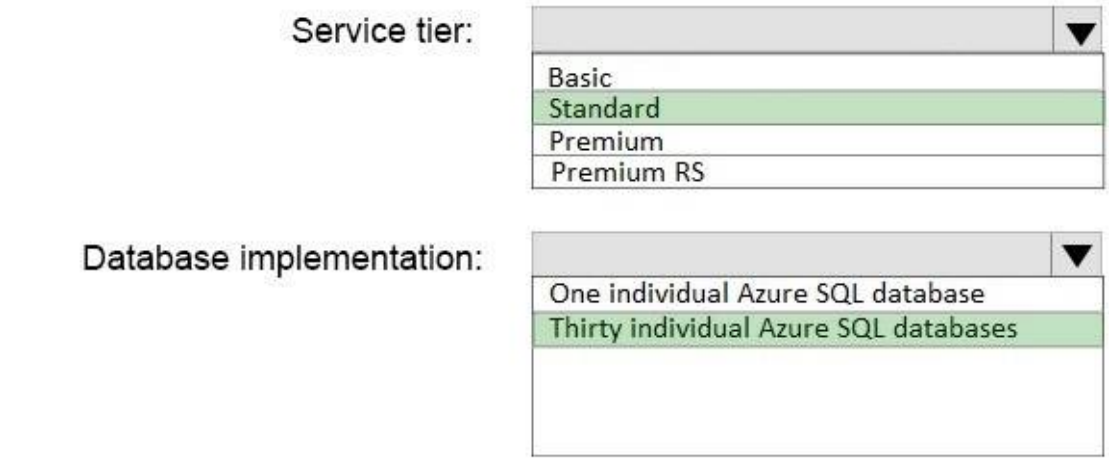
NOTE: Each correct selection is worth one point.

Hot Area:



Correct Answer:

Answer Area



Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Service tier: Standard
Database implementation: Thirty individual Azure SQL databases.

The Standard tier service allows for 1TB of data. Here 30 x 10 GB, 0.3 TB, is required.

References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-service-tiers

QUESTION 25
DRAG DROP

You have on-premises database server.

The database files for a user database are configured as shown in the following table:

File type	Drive letter	Used space	Peak IOPS
Data	F	800 GB	7,000
Log	G	100 GB	1,000

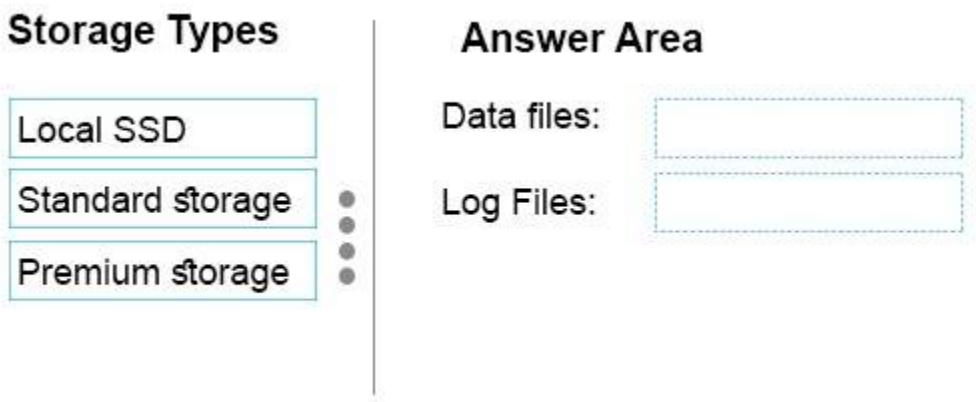
You plan to migrate the on-premises database server to Microsoft SQL Server on a Microsoft Azure virtual machine.

You need to provision storage for the virtual machine to meet the following requirements:
Support the same configurations as the on-premises database server.
Provide a Service Level Agreement (SLA) for performance.
Minimize costs.

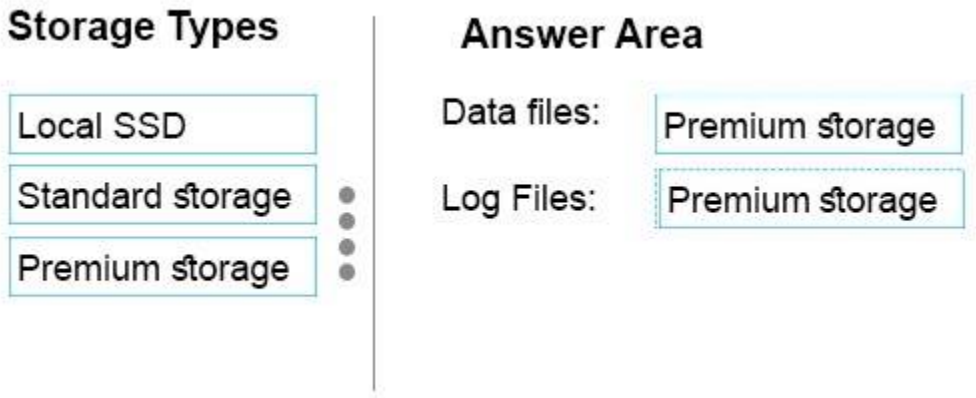
Which type of storage should you provision for each file type? To answer, drag the appropriate storage types to the correct file types. Each storage type may be used once, more than once or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Standard Storage has varying latencies and bandwidth and is only recommended for dev/test workloads. Production workloads should use Premium Storage.

References: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sql/virtual-machines-windows-sql-performance

QUESTION 26
HOTSPOT

You have an on-premises database.

You plan to migrate the database to Microsoft SQL Server on a Microsoft Azure virtual machine.

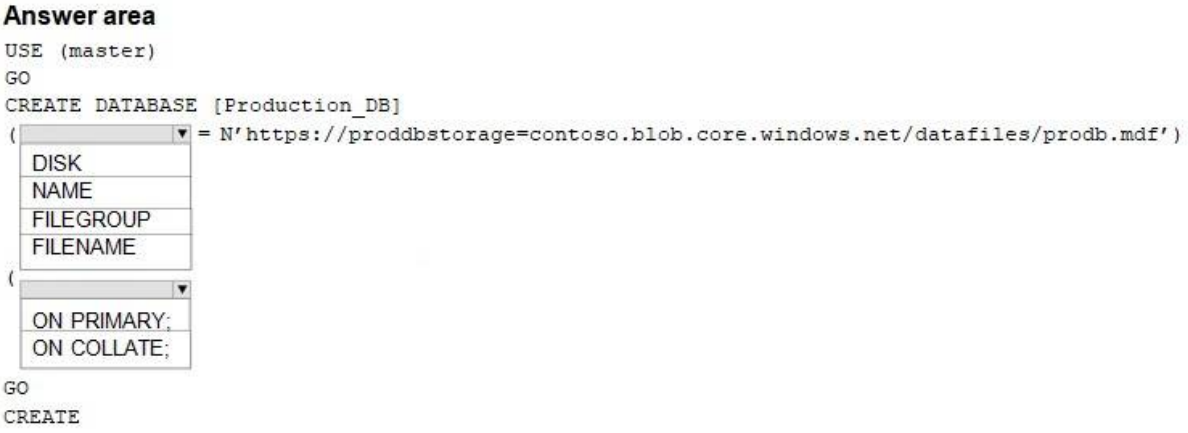
You move the database files to Azure.

You need to attach the database files to the SQL Server instance on the virtual machine. The solution must ensure that you can run file snapshot backups.

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

NOTE: Each correct selection is worth one point.

Hot Area:



Correct Answer:

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
References: https://docs.microsoft.com/en-us/sql/t-sql/statements/create-database-sql-server-transact-sql

QUESTION 27
HOTSPOT

You plan to deploy a Microsoft SQL Server database that will use FILESTREAM. The database will store 4 TB of FILESTREAM data on a single Windows partition.

You need to configure the hard disk that will support the FILESTREAM data. The solution must provide the fastest read and write access to the data.

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

NOTE: Each correct selection is worth one point.

Hot Area:

Answer area

File system:
- FAT32
- FAT
- NTFS
- exFAT

8.3 filename support:
- Enabled
- Disabled

Indexing:
- Enabled
- Disabled

Correct Answer:

Answer area

File system:
- FAT32
- FAT
- NTFS
- exFAT

8.3 filename support:
- Enabled
- Disabled

Indexing:
- Enabled
- Disabled

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

NTFS is required.
Disable generation of 8.3 names on all NTFS volumes used for FILESTREAM data storage.
Check that search indexing is not enabled on FILESTREAM volumes, under the Volume Properties window, unchecking the “Allow files on this drive to have contents indexed in addition to file properties” box.

References: https://blogs.msdn.microsoft.com/blogdoezequiel/2011/02/11/best-practices-on-filestream-implementations/

QUESTION 28
You use Microsoft Azure Resource Manager to deploy two new Microsoft SQL Server instances in an Azure virtual machine (VM). VM has 28 gigabytes (GB) of memory. The instances are named Instance1 and Instance2, respectively.

The various databases on the instances have the following characteristics:

Instance name	Aggregate database size	Daily working set	Concurrent users
Instance1	200 GB	25 GB	2,000
Instance2	300 GB	10 GB	2,000

You run the following Transact-SQL statements:

```
sp_configure 'show advanced options', 1;
GO
RECONFIGURE;
GO
```

You need to configure each SQL Server instance to correctly allocate memory.

What should you do?

A. On Instance1, run the following Transact-SQL code:

```
sp_configure 'awe enabled', 1
RECONFIGURE
GO
sp_configure 'affinity64 mask', 0
RECONFIGURE
GO
sp_configure 'min server memory', 18432
RECONFIGURE
```

On Instance2, run the following Transact-SQL code:

```
sp_configure 'awe enabled', 1
RECONFIGURE
GO
sp_configure 'affinity64', 0
RECONFIGURE
GO
sp_configure 'min server memory', 6144
RECONFIGURE
```

B. A. On Instance1, run the following Transact-SQL code:

```
sp_configure 'automatic soft-NUMA disabled', 1
RECONFIGURE
GO
sp_configure 'min server memory', 18432
RECONFIGURE
```

On Instance2, run the following Transact-SQL code:

```
sp_configure 'automatic soft-NUMA disabled', 1
RECONFIGURE
GO
sp_configure 'min server memory', 6144
RECONFIGURE
```

C. On Instance1, run the following Transact-SQL code:

```
sp_configure 'awe enabled', 1
RECONFIGURE
GO
sp_configure 'min server memory', 15360
RECONFIGURE
```

On Instance2, run the following Transact-SQL code:

```
sp_configure 'awe enabled', 1
RECONFIGURE
GO
sp_configure 'min server memory', 6144
RECONFIGURE
```

D. On Instance1, run the following Transact-SQL code:

```
sp_configure 'max server memory', 18432
RECONFIGURE
```

On Instance2, run the following Transact-SQL code:

```
sp_configure 'min server memory', 6144
RECONFIGURE
```

Correct Answer: D
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Incorrect Answers:
A, C: The awefeature will be removed in newer version of Microsoft SQL Server. Do not use this feature in new development work, and modify applications that currently use this feature as soon as possible.

B: Automatic soft-NUMA is disabled by default, and this setting is not relevant here.

References: https://docs.microsoft.com/en-us/sql/database-engine/configure-windows/server-configuration-options-sql-server

QUESTION 29
You manage a Microsoft SQL Server environment in a Microsoft Azure virtual machine.

You must enable Always Encrypted for columns in a database.

You need to configure the key store provider.

What should you do?

A. Use the Randomized encryption type
B. Modify the connection string for applications.
C. Auto-generate a column master key.
D. Use the Azure Key Vault.

Correct Answer: D
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
There are two high-level categories of key stores to consider - Local Key Stores, and Centralized Key Stores.
Centralized Key Stores - serve applications on multiple computers. An example of a centralized key store is Azure Key Vault.
Local Key Stores

References: https://docs.microsoft.com/en-us/sql/relational-databases/security/encryption/create-and-store-column-master-keys-always-encrypted

QUESTION 30
Note: This question is part of a series of questions that use the same or similar answer choices. An answer choice may be correct for more than one question in the series. Each question is independent of the other questions in this series. Information and details provided in a question apply only to that question.

You have deployed several GS-series virtual machines (VMs) in Microsoft Azure. You plan to deploy Microsoft SQL Server in an Always On Availability Group. You expect to have less than 1 million IO transaction per month.

You need to recommend a storage solution for the SQL Servers. The solution must minimize costs.

Which storage option should you use?

A. Premium P10 disk storage
B. Premium P20 disk storage
C. Premium P30 disk storage
D. Standard locally redundant disk storage
E. Standard geo-redundant disk storage
F. Standard zone redundant blob storage
G. Standard locally redundant blob storage

H. Standard geo-redundant blob storage

Correct Answer: A
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
P10 has 500 IOPS per disk, which provides for more than 1 million IOPS per month.

Note: 3600*30* 500 is 54 million IOPS/month.

References: https://azure.microsoft.com/en-us/pricing/details/managed-disks/

QUESTION 31
You create a new Microsoft Azure subscription.

You need to create a group of Azure SQL databases that share resources.

Which cmdlet should you run first?

A. **New-AzureRmAvailabilitySet**
B. **New-AzureRmLoadBalancer**
C. **New-AzureRmSqlDatabaseSecondary**
D. **New-AzureRmSqlElasticPool**
E. **New-AzureRmVM**
F. **New-AzureRmSqlServer**
G. **New-AzureRmSqlDatabaseCopy**
H. **New-AzureRmSqlServerCommunicationLink**

Correct Answer: D
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
SQL Database elastic pools are a simple, cost-effective solution for managing and scaling multiple databases that have varying and unpredictable usage demands. The databases in an elastic pool are on a single Azure SQL Database server and share a set number of resources (elastic Database Transaction Units (eDTUs)) at a set price. Elastic pools in Azure SQL Database enable SaaS developers to optimize the price performance for a group of databases within a prescribed budget while delivering performance elasticity for each database.

References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-elastic-pool

QUESTION 32
You have a Microsoft Azure SQL database in the US West region.

You need to create a replica in the US East region.

Which cmdlet should you run first?

A. **New-AzureRmAvailabilitySet**
B. **New-AzureRmLoadBalancer**
C. **New-AzureRmSqlDatabaseSecondary**

D. **New-AzureRmSqlElasticPool**
E. **New-AzureRmVM**
F. **New-AzureRmSqlServer**
G. **New-AzureRmSqlDatabaseCopy**
H. **New-AzureRmSqlServerCommunicationLink**

Correct Answer: G
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
The New-AzureRmSqlDatabaseCopy command creates a copy of a SQL Database that uses the snapshot at the current time.

References: https://docs.microsoft.com/en-us/powershell/module/azurerm.sql/new-azurermsqldatabasecopy?view=azurermps-5.1.1

QUESTION 33
You plan to deploy Microsoft SQL Server on a Microsoft Azure Virtual machine. The virtual machine will have a 30-TB database and will have 10 1-TB VHDs for the database.

You need to configure the storage to meet the following requirements:
Evenly distribute read and write operations across the VHDs.
Minimize the read and write time.

Which storage configuration should you use?

A. a parity storage pool
B. a simple storage pool
C. a mirrored storage pool
D. a striped volume
E. a RAID-5 volume

Correct Answer: D
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Data that is written to a striped volume is interleaved to all disks at the same time instead of sequentially. Therefore, disk performance is the fastest on a RAID 0 volume as compared to any other type of disk configuration.

Reference: https://support.microsoft.com/en-us/help/323433/how-to-establish-a-striped-volume-raid-0-in-windows-server-2003

QUESTION 34
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 sections, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are migrating an on-premises Microsoft SQL Server instance to SQL Server on a Microsoft Azure virtual machine. The instance has 30 databased that consume a total of 2 TB of disk space. The instance sustains more than 30,000 transactions per second.

You need to provision storage for the virtual machine. The storage must be able to support the same load as the on-premises deployment.

Solution: You create one storage account that has 30 containers. You create a VHD in each container.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Each Storage Account handles up to 20.000 IOPS, and 500TB of data.

References: https://whttps://www.tech-coffee.net/understand-microsoft-azure-storage-for-virtual-machines/

QUESTION 35
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.

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You are migrating an on-premises Microsoft SQL Server instance to SQL Server on a Microsoft Azure virtual machine. The instance has 30 databased that consume a total of 2 TB of disk space. The instance sustains more than 30,000 transactions per second.

You need to provision storage for the virtual machine. The storage must be able to support the same load as the on-premises deployment.

Solution: You create 30 storage accounts that each has one container. You create a VHD in each container.

Does this meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Each Storage Account handles up to 20.000 IOPS, and 500TB of data.

References: https://www.tech-coffee.net/understand-microsoft-azure-storage-for-virtual-machines/

QUESTION 36
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 sections, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are migrating an on-premises Microsoft SQL Server instance to SQL Server on a Microsoft Azure virtual machine. The instance has 30 databased that consume a total of 2 TB of disk space. The instance sustains more than 30,000 transactions per second.

You need to provision storage for the virtual machine. The storage must be able to support the same load as the on-premises deployment.

Solution: You create one storage account that has one container. You create multiple VHDs in the container.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Each Storage Account handles up to 20.000 IOPS, and 500TB of data.

References: https://www.tech-coffee.net/understand-microsoft-azure-storage-for-virtual-machines/

QUESTION 37
You plan to deploy an on-premises SQL Server 2014 database to Azure SQL Database. You have the following requirements:

Maximum database size of 500 GB
A point-in-time-restore of 35 days
Maximum database transaction units (DTUs) of 500

You need to choose the correct service tier and performance level.

Which service tier should you choose?

A. Standard S3
B. Premium P4
C. Standard SO
D. Basic

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
You should choose Premium P4. The Premium tier is the highest Azure SQL Database tier offered. This tier is used for databases and application that require the highest level of performance and recovery. The P4 level

supports a maximum of 500 DTUs, a maximum database size of 500 GB, and a point-in-time-restore to any point in the last 35 days.

Incorrect Answers:
A: You should not choose Standard S3. The Standard tier with a performance level of S3 only supports a maximum database size of 250 GB. a maximum of 100 DTUs, and a point-in-timerestore of 35 days.

C: You should not choose Standard SO. The Standard tier with a performance level of SO only supports a maximum database size of 250 GB. a maximum of 10 DTUs, and a point-in-timerestore of 35 days.

D: You should not choose Basic. The Basic service tier only supports a maximum database size of 2 GB, a maximum of 5 DTUs, and a point-in-time-restore of 7 days.

References: https://azure.microsoft.com/en-us/pricing/details/sql-database/

QUESTION 38
You manage an on-premises, multi-tier application that has the following configuration:
Two SQL Server 2012 databases named SQL1 and SQL2
Two application servers named AppServerl and AppServer2 that run IIS

You plan to move your application to Azure.

You need to ensure that during an Azure update cycle or a hardware failure, the application remains available.

Which two deployment configurations should you implement? Each correct answer presents part of the solution.

A. Deploy AppServerl and AppServer2 in a single availability set.
B. Deploy all servers in a single availability set.
C. Deploy SQL1 and AppServerl in a single availability set.
D. Deploy SQL2 and AppServer2 in a single availability set.
E. Deploy SQL1 and SQL2 in a single availability set.

Correct Answer: AE
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
You should deploy AppServerl and AppServer2 in a single availability set.

You should deploy SQL1 and SQL2 in a single availability set.

Note: Using availability sets allows you to build in redundancy for your Azure services. By grouping related virtual machines and services (tiers) into an availability set (in this case, deploying both of your databases into an availability set), you ensure that if there is a planned or unplanned outage, your services will remain available. At the most basic level, virtual machines in an availability set are put into a different fault domain and update domain. An update domain allows virtual machines to have updates installed and then the virtual machines are rebooted together.

If you have two virtual machines in an availability set, each in its own update domain, a rebooting of one server does not bring down all of the servers in a given tier. A fault domain operates in the same manner, so if there is a physical problem with a server, rack, network, or other service, both machines are separated, and services will continue.

Incorrect Answers:
B: You should not deploy all servers in a single availability set. This will not provide the fault tolerance

needed, as all machines would be rebooted (or suffer a hardware failure) together.

C: SQL1 and AppServerl provide different services, so they should not be grouped together.

D: You should not deploy SQL2 and AppServer2 in a single availability set. SQL2 and AppServer2 provide different services, so they should not be grouped together.

References: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/manage-availability

QUESTION 39
You are the database administrator in your company. You plan to create 10 identical environments that use SQL Server 2016 as a database engine. Each environment has the following custom requirements:
Three user databases must be preinstalled.
The tempdb database must contain eight data files that are 1024 MB each.
Trace flag 2371 must be turned at the instance level.

The solution must meet the following requirements:

The instance must be preconfigured.
No other database features are required in the future.
The solution must use the minimum administrative effort.

You need to prepare the environments. What should you do?

A. Provision 10 Azure virtual machines that each contain SQL Server 2016, installed by using the default settings.
B. Create an installation configuration file and perform unattended installations of SQL Server 2016.
C. Create a virtual machine template by using a prepared instance of SQL Server 2016.
D. Create a virtual machine template by using a complete instance of SQL Server 2016.

Correct Answer: D
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
You should create a virtual machine template by using a complete instance of SQL Server 2016. You use the sysprep tool to prepare a complete instance of SQL Server 2016. By using a complete instance, SQL Server, the network, and the users are all created, and the system cannot be reconfigured during the installation process.

Incorrect Answers:
A: You should not provision 10 Azure virtual machines that each contain SQL Server 2016, installed by using the default settings. A virtual machine created by using the Azure library provides you with a standard installation, and the requirements call for a custom installation. The instance will need some specific parameters for your custom installation. Therefore, you would have to customize each Azure virtual machine.

B: You should not create an installation configuration file and perform unattended installations of SQL Server 2016. This could be a valid option, but you would need to prepare 10 installations, and this would require a lot of effort. There are also some other administrative actions that must be performed that could also increase the amount of effort required, such as user database configuration.

C: You should not create a virtual machine template by using a prepared instance of SQL Server 2016. A virtual machine template that contains a prepared instance of SQL Server could be modified during the installation process. For example, some features could be added or removed during the installation process. The prepared instance contains a preconfigured version of SQL Server without network and user configurations.

References: https://support.neverfail.com/hc/en-us/articles/115015350287-Deploy-Microsoft-SQL-Server-2016-Virtual-Machine-Template

QUESTION 40
You have an on-premises server that runs Windows Server 2012 R2. The server has a Microsoft SQL Server 2016 instance that has one user database. The database is 2 TB.

Your company has a Win32 application installed on 1,000 computers. The application connects to the database by using a network name of server1.contoso.local.

You need to migrate the database to SQL Server 2016 on a Microsoft Azure virtual machine that runs Windows Server 2016. The solution must minimize outages to the application.

What should you do?

A. Copy the database files and update the records in DNS.
B. Implement an availability group and update the records in DNS.
C. Implement database mirroring and update the records in DNS.
D. Implement database mirroring and change the connection string.
E. Copy the database files and change the connection string.

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
SQL Server high availability and disaster recovery (HADR) technologies that are supported in Azure include:
Always On Availability Groups
Always On Failover Cluster Instances
Log Shipping
SQL Server Backup and Restore with Azure Blob Storage Service

Incorrect Answers:
A: We need a high availability solution.
C, D: Database Mirroring is deprecated in SQL Server 2016.

Reference: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sql/virtual-machines-windows-sql-high-availability-dr

QUESTION 41
You plan to deploy an AlwaysOn failover cluster in Microsoft Azure. The cluster has a Service Level Agreement (SLA) that requires an uptime of at least 99.95 percent.

You need to ensure that the cluster meets the SLA.

Which cmdlet should you run before you deploy the virtual machine?

A. **New-AzureRmAvailabilitySet**
B. **New-AzureRmLoadBalancer**
C. **New-AzureRmSqlDatabaseSecondary**
D. **New-AzureRmSqlElasticPool**
E. **New-AzureRmVM**
F. **New-AzureRmSqlServer**
G. **New-AzureRmSqlDatabaseCopy**

H. **New-AzureRmSqlServerCommunicationLink**

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
On Azure virtual machines, a SQL Server Availability Group requires a load balancer. The load balancer holds the IP address for the Availability Group listener. The New-AzureRmLoadBalancer cmdlet creates an Azure load balancer.

Incorrect Answers:
E: The New-AzureRmVM cmdlet creates a virtual machine in Azure.

Reference: https://docs.microsoft.com/en-us/powershell/module/azurerm.network/new-azurermloadbalancer?view=azurermps-6.2.0

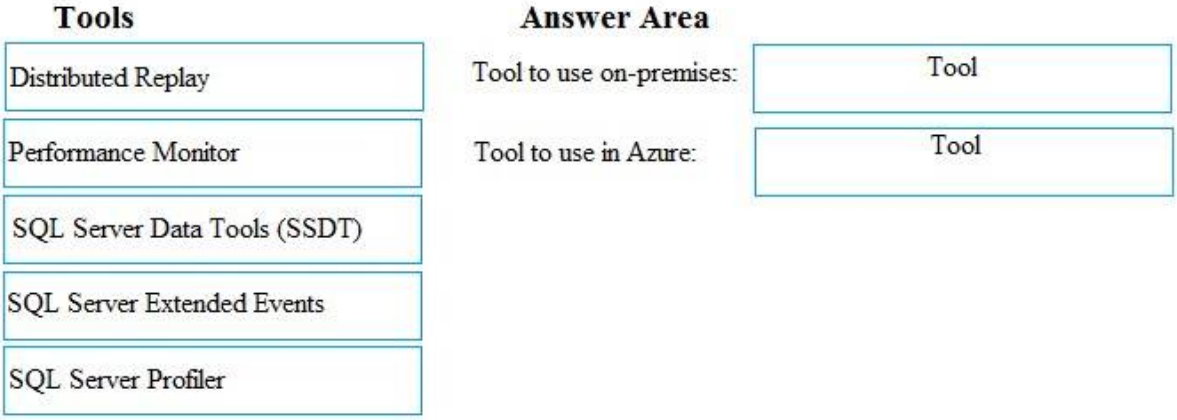
QUESTION 42
DRAG DROP

You plan to migrate on-premises Microsoft SQL Server to SQL Server on a Microsoft Azure virtual machine.

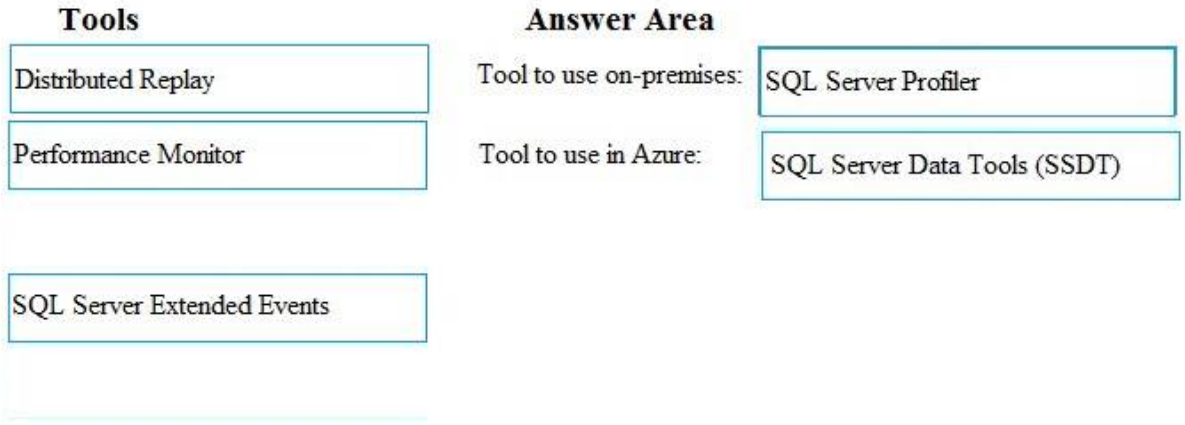
You need to ensure that the Azure virtual machine can handle the workload.

Which tool should you use for each environment? To answer, drag the appropriate tools to the correct options. Each tool may be used once. More than once, or not at all.

Select and Place:



Correct Answer:



Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

QUESTION 43
You have an on-premises Microsoft SQL server that has a database named DB1. DB1 contains several tables that are stretched to Microsoft Azure.

A network administrator upgrades the hardware firewalls on the network.

You need to verify whether data migration still runs successfully.

Which stored procedure should you run?

A. **Sys_sp_testlinkedserver**
B. **Sys_sp_rda_test_connection**
C. **Sys_sp_rda_reauthorized_db**
D. **Sp_set_firewall_rule**

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
The Sys_sp_rda_test_connection cmdlet tests the connection from SQL Server to the remote Azure server and reports problems that may prevent data migration.

References: https://docs.microsoft.com/en-us/sql/relational-databases/system-stored-procedures/sys-sp-rda-test-connection-transact-sql?view=sql-server-2017

QUESTION 44
HOTSPOT

A company has an on-premises Microsoft SQL Server 2016 environment. All futures databases must meet the following requirements:
The recovery model must be set to simple.
The compatibility level must be set to SQL server 2014 (120).
Your need to configure the SQL server 2016 environment.

In the table below, identify the database you must modify for each requirement.

Hot Area:

Answer Area

System database	Recovery model	Compatibility level
Master	simple	○
Msdb	simple	○
Model	full	○
Resource		○
Tempdb	simple	○

Correct Answer:

Answer Area

System database	Recovery model	Compatibility level
Master	simple	○
Msdb	simple	○
Model	full	○
Resource		○
Tempdb	simple	○

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Model: Change from full to simple Recovery Model
Newly created user databases use the same recovery model as the model database.
The model database is used as the template for all databases created on an instance of SQL Server. Because tempdb is created every time SQL Server is started, the model database must always exist on a SQL Server system. The entire contents of the model database, including database options, are copied to the new database.

Model: Set compatibility level to 120
For all installations of SQL Server, the default compatibility level is set to the version of the Database Engine. Databases are set to this level unless the model database has a lower compatibility level.

References:
https://docs.microsoft.com/en-us/sql/relational-databases/databases/model-database?view=sql-server-2017

https://docs.microsoft.com/en-us/sql/t-sql/statements/alter-database-transact-sql-compatibility-level?view=sql-server-2017

QUESTION 45
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution. Determine whether the solution meets stated goals.

You plan to migrate an on-premises Microsoft SQL Server virtual machine (VM) to a Microsoft Azure IaaS VM.

You deploy the VM by using the following settings:

Setting	Value
VM size	D3
Storage Location	Drive E
Storage type	Standard
Tempdb location	Drive C

The workload on this instance has a very high `tempdb` load.

You need to maximize the performance of the `tempdb` database.

Solution: You use a D-Series VM and store the `tempdb` database on drive D.

Does this meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
For D-series, Dv2-series, and G-series VMs, the temporary drive on these VMs is SSD-based. If your workload makes heavy use of TempDB (such as temporary objects or complex joins), storing TempDB on the D drive could result in higher TempDB throughput and lower TempDB latency.

References: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sql/virtual-machines-windows-sql-performance

QUESTION 46
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution. Determine whether the solution meets stated goals.

You plan to migrate an on-premises Microsoft SQL Server virtual machine (VM) to a Microsoft Azure IaaS VM.

You deploy the VM by using the following settings:

Setting	Value
VM size	D3
Storage Location	Drive E
Storage type	Standard
Tempdb location	Drive C

The workload on this instance has a very high `tempdb` load.

You need to maximize the performance of the `tempdb` database.

Solution: You use an A8 compute-intensive instance and store the `tempdb` database in Standard storage.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
For D-series, Dv2-series, and G-series VMs, the temporary drive on these VMs is SSD-based. If your workload makes heavy use of TempDB (such as temporary objects or complex joins), storing TempDB on the D drive could result in higher TempDB throughput and lower TempDB latency.

References: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sql/virtual-machines-windows-sql-performance

QUESTION 47
Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution. Determine whether the solution meets stated goals.

You plan to migrate an on-premises Microsoft SQL Server virtual machine (VM) to a Microsoft Azure IaaS VM.

You deploy the VM by using the following settings:

Setting	Value
VM size	D3
Storage Location	Drive E
Storage type	Standard
Tempdb location	Drive C

The workload on this instance has a very high `tempdb` load.

You need to maximize the performance of the `tempdb` database.

Solution: You use a GS-Series VM and store the tempdb database on attached Premium storage.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
For VMs that support Premium Storage (DS-series, DSv2-series, and GS-series), we recommend storing TempDB on a disk that supports Premium Storage with read caching enabled. There is one exception to this recommendation; if your TempDB usage is write-intensive, you can achieve higher performance by storing

TempDB on the local D drive, which is also SSD-based on these machine sizes.

References: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sql/virtual-machines-windows-sql-performance

QUESTION 48
DRAG DROP

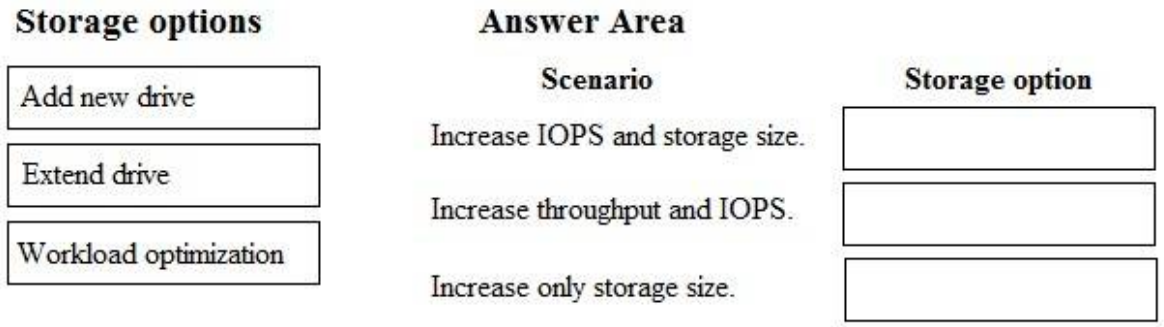
A company has Microsoft Azure virtual machines (VMs) that host SQL Server 2017 instances. The VM require additional storage.

You need to recommend storage options for several scenarios that you are considering.

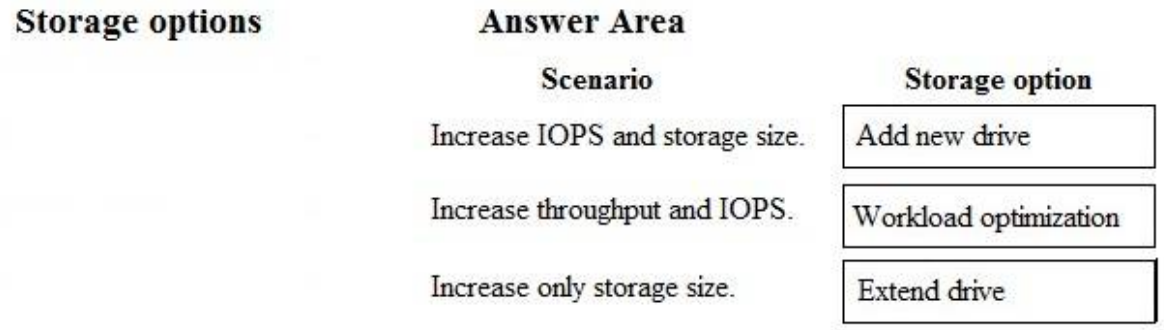
What should you recommend? To answer, drag the appropriate storage options to the correct scenarios. Each storage option may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

QUESTION 49
You plan to deploy Microsoft SQL Server on a Microsoft Azure virtual machine. The virtual machine will have two databases. Each database will reside on a separate VHD and will be between 600 and 800 GB.

Each database will have the I/O requirements shown in the following table.

Database name	Maximum IOPS
DB1	4,000
DB2	1,200

You are evaluating whether to use the P30 storage disk type.

What is the minimum number of disks required for each database when using P30 storage disk type? (Select two.)

A. DB1: 0
B. DB1: 1
C. DB1: 2
D. DB1: 3
E. DB1: 4
F. DB2: 0
G. DB2: 1
H. DB2: 2
I. DB2: 3
J. DB2: 4

Correct Answer: CG
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
P30 stats: Disk size is 1024 GB (1 TB), IOPS per disk is 5000.

Recommendation: Use a minimum of 2 P30 disks (1 for log files and 1 for data files and TempDB; or stripe two or more disks and store all files in a single volume).

References: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/premium-storage#scalability-and-performance-targets

QUESTION 50
You plan to migrate on-premises Microsoft SQL Server databases to SQL Server on a Microsoft Azure virtual machine.

A full back up of the databases is 3 TB. The corporate network has a 1.5 MB/sec Internet connection.

You need to move the backups to Azure to ensure that you can restore the databases to the Azure virtual machine as quickly as possible.

What should you do?

A. Use SQL Server Backup to URL.
B. Run **azcopy.exe** and specify the */SetContentType* parameter.
C. Create an availability group that is configured for automatic seeding.
D. Run **robocopy.exe** and specify the */mir* parameter.
E. Use the Azure Import/Export service.

Correct Answer: E

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Azure Import/Export service is used to securely import large amounts of data to Azure Blob storage and Azure Files by shipping disk drives to an Azure datacenter. This service can also be used to transfer data from Azure Blob storage to disk drives and ship to your on-premises sites. Data from one or more disk drives can be imported either to Azure Blob storage or Azure Files.

References: https://docs.microsoft.com/en-us/azure/storage/common/storage-import-export-service

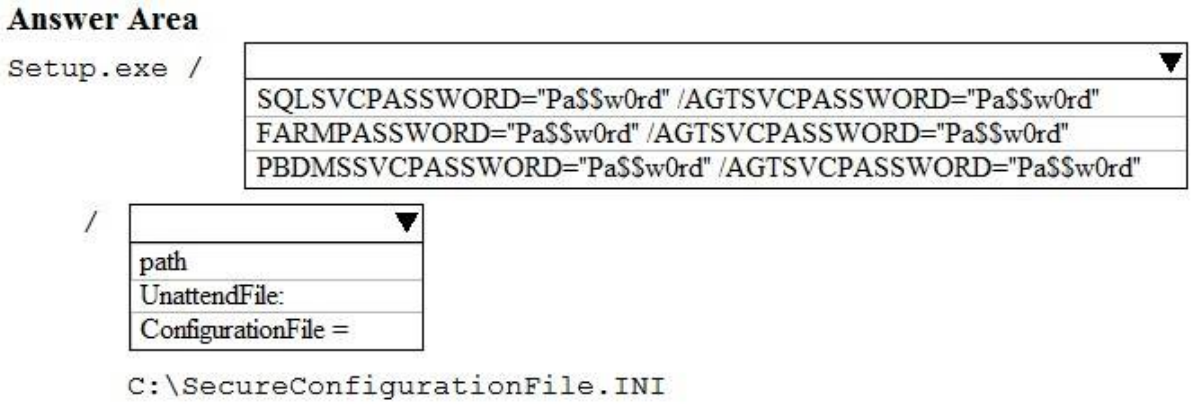
QUESTION 51
HOTSPOT

You plan to install a new Microsoft SQL Server instance with only the SQL Server engine and the SQL Agent service. You use the SQL Server Installation Wizard to generate a file that contains the configurations. You do not store SQL Server engine or SQL Agent service account information in the file.

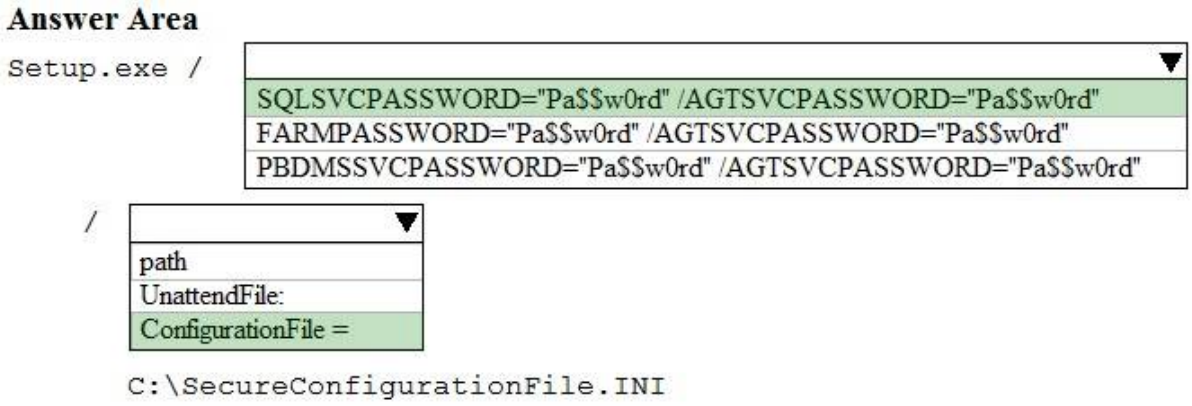
You need to install SQL Server from a command line interface.

How should you complete the command? To answer, select the appropriate command segments in the answer area.

Hot Area:



Correct Answer:



Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

Following are some examples on how to use the configuration file:

To specify passwords at the command prompt instead of in the configuration file:
Setup.exe /SQLSVCPASSWORD="**********" /AGTSVCPASSWORD="**********" /ASSVCP

To specify the configuration file at the command prompt:
Setup.exe /ConfigurationFile=MyConfigurationFile.INI

References: https://docs.microsoft.com/en-us/sql/database-engine/install-windows/install-sql-server-using-a-configuration-file?view=sql-server-2017

QUESTION 52
DRAG DROP

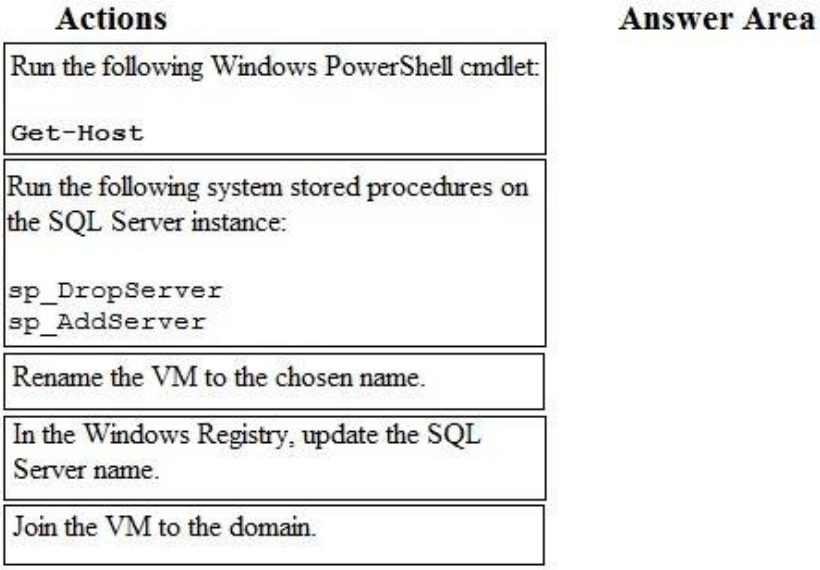
You install Microsoft SQL Server onto a virtual machine (VM) and then run `sysprep`.

Corporate policy requires the use of Windows authentication for access to all production SQL Server instances.

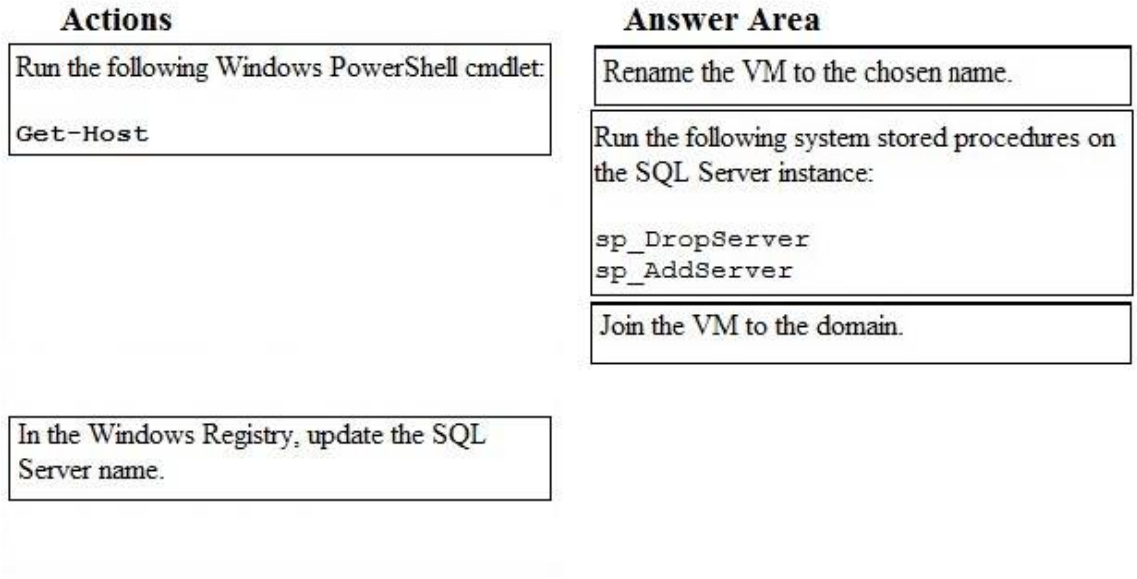
You need to prepare the newly deployed SQL Server for use.

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: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
Box 1: Rename the VM to the chosen name.
Box 2:
For a renamed computer that hosts a default instance of SQL Server, run the following procedures:

sp_dropserver <old_name>;
GO
sp_addserver <new_name>, local;
GO
Restart the instance of SQL Server.

Note: When you use sysprep to generalize the image, the SID for the machine is deleted and Windows users you created will be deleted as well. If you rely on Windows login to access SQL Server, you won't be able to log in.

Box 3: Join the VM to the domain

Incorrect:
* The Get-Host cmdlet gets an object that represents the program that is hosting PowerShell.

References:
https://docs.microsoft.com/en-us/sql/database-engine/install-windows/rename-a-computer-that-hosts-a-stand-alone-instance-of-sql-server?view=sql-server-2017

QUESTION 53
You are developing customized Microsoft Azure Resource Group templates to automate the process of deploying Microsoft SQL Server in Azure to enforce consistency during future deployments.

You need to deploy the customized templates to the Azure environment and to external endpoints.

Which resource value should you populate?

A. properties
B. apiVersion
C. dependsOn
D. tags

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-group-template-deploy-rest

QUESTION 54
DRAG DROP

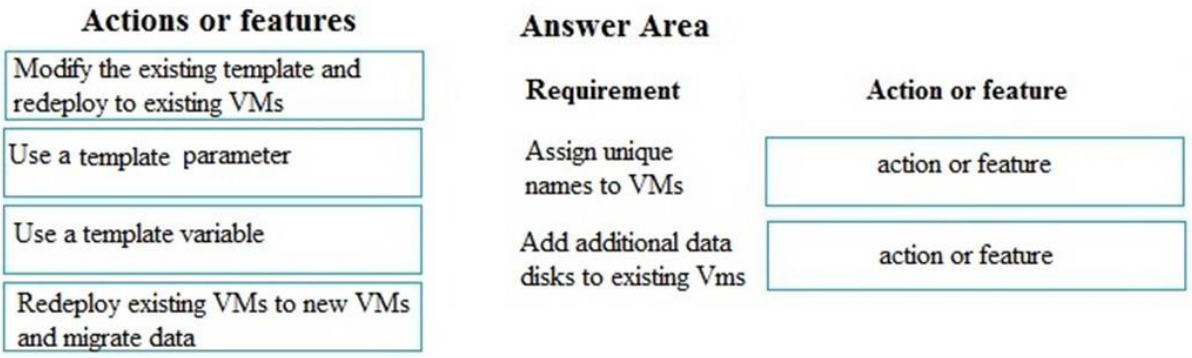
You are responsible for deploying and maintaining the Microsoft SQL Server virtual machines (VMs) in Microsoft Azure. You use Azure Resource Group templates to deploy and modify the VMs.

With the exception of their names, all deployed VMs must be identical. You may need to add additional data disks to the VMs in the future.

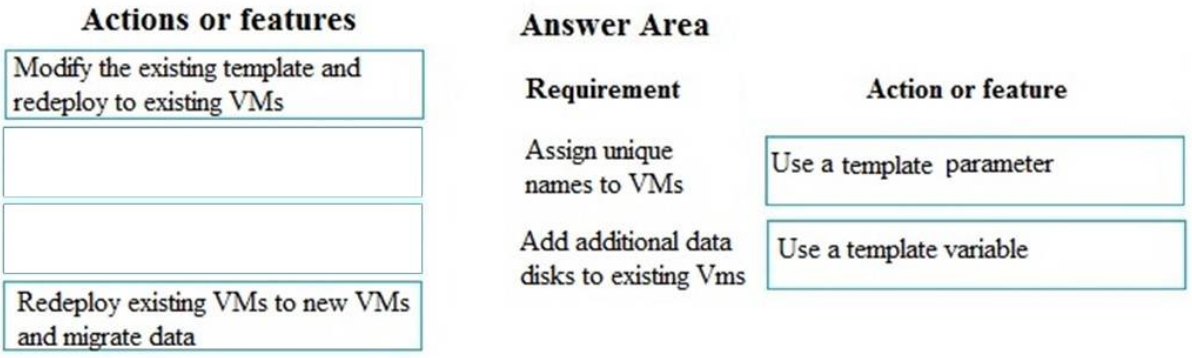
You need to streamline the template creation and deployment process as much as possible.

For each requirement, what should you do? To answer, drag the appropriate actions or features to the correct locations. Each action or feature 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.

Select and Place:



Correct Answer:



Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-manager-templates-parameters

https://docs.microsoft.com/en-us/azure/azure-resource-manager/resource-manager-templates-variables

QUESTION 55
You have a single-server on-premises Microsoft SQL Server deployment.

You must migrate the environment to an Azure virtual machine (VM). You must minimize costs while maintaining the same level of performance as the on-premises SQL environment.

You need to evaluate the number and types of read/write operations for the existing deployment.

Which tool should you use?

A. SQL Disk Usage Standard Report
B. Database Engine Tuning Advisor
C. SQLIOSim
D. SQL Profiler trace using TSQL template

Correct Answer: C
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
References:
https://support.microsoft.com/en-za/help/231619/how-to-use-the-sqliosim-utility-to-simulate-sql-server-activity-on-a-d

QUESTION 56
A company plans to run Microsoft SQL Server on Linux-based servers.

You need to ensure that performance tuning settings are automatically configured during installation.

Which Linux platform should you recommend?

A. Kali Linux
B. RHEL
C. SUSE
D. Ubuntu Server

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/sql/linux/sql-server-linux-performance-best-practices?view=sql-server-2017#linux-os-configuration

QUESTION 57
DRAG DROP

You have an AlwaysOn availability group that has two replicas in Microsoft Azure.

A full backup of the database is 3 TB. A transaction log backup occurs every 15 minutes. Each transaction log backup is 150 MB. All full and transaction log backups are created by using SQL Server Backup to URL.

Your corporate network has a 20 MB/sec Internet connection dedicated to SQL Server replication.

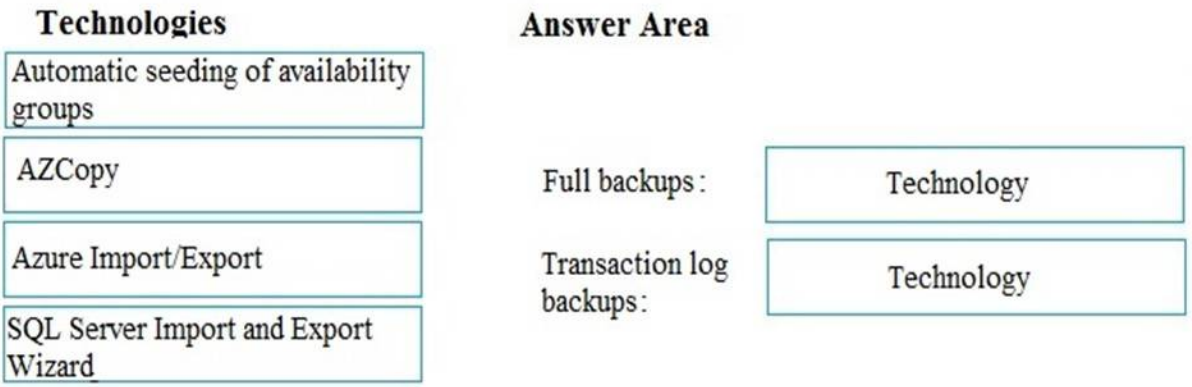
You plan to add an on-premises replica to the availability group. The replica will be used for reporting only.

You need to copy the backups from Azure to the corporate network to ensure that you can initialize the on-premises replica as quickly as possible. The solution must minimize disruption to the backups.

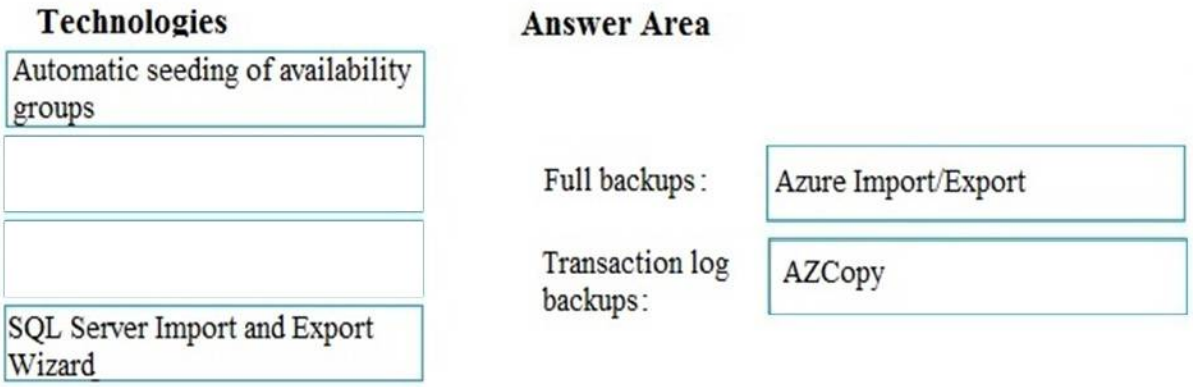
Which technology should you use for each type of backup? To answer, drag the appropriate technologies to the correct backup types. Each technology may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
References:

https://docs.microsoft.com/en-us/azure/storage/common/storage-import-export-service

https://docs.microsoft.com/en-us/azure/storage/common/storage-use-azcopy

QUESTION 58
HOTSPOT

You are planning to perform an automated deployment of Microsoft SQL Server. Passwords will be provided at the command prompt when the installation proceeds.

You need to prevent the user that performs the installation from being prompted for information. The user should see the installation progress.

What should you do? To answer, select the appropriate actions in the answer area.

Hot Area:

Answer Area

Step	Action
Generate the configuration file	Rub setup.exe /ConfigurationFile=Config.ini. Run setup.exe /ACTION=INSTALL. Create a blank Config.Ini file and add the keyword [OPTIONS].
Modify the configuration file	Ensure IACCEPTSERVERLICENSETERMS="true" to Config.ini under the [OPTIONS] section. Ensure Quiet="true" to Config.ini under the [OPTIONS] section. Add ACTION="Install" to the Config.ini under the [OPTIONS] section.

Correct Answer:

Answer Area

Step	Action
Generate the configuration file	Rub setup.exe /ConfigurationFile=Config.ini. **Run setup.exe /ACTION=INSTALL.** Create a blank Config.Ini file and add the keyword [OPTIONS].
Modify the configuration file	**Ensure IACCEPTSERVERLICENSETERMS="true" to Config.ini under the [OPTIONS] section.** Ensure Quiet="true" to Config.ini under the [OPTIONS] section. Add ACTION="Install" to the Config.ini under the [OPTIONS] section.

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
References:

https://docs.microsoft.com/en-us/sql/database-engine/install-windows/install-sql-server-from-the-command-prompt?view=sql-server-2017

QUESTION 59
Note: This question is part of a series of questions that use the same or similar answer choices. An answer choice may be correct for more than one question in the series. Each question is independent of the other questions in this series. Information and details provided in a question apply only to that question.

You have deployed several GS-series virtual machines (VMs) in Microsoft Azure. You plan to deploy Microsoft SQL Server in an Always On Availability Group.

The new environment has the following storage requirements:

Two terabytes (TB) of total storage capacity
5,000 total IOPS for pooled storage

You need to add the storage to all VMs while minimizing the number of disks per VM.

Which storage option should you use?

A. Premium P10 disk storage
B. Premium P20 disk storage
C. Premium P30 disk storage
D. Standard locally redundant disk storage
E. Standard geo-redundant disk storage
F. Standard zone redundant blob storage
G. Standard locally redundant blob storage
H. Standard geo-redundant blob storage

Correct Answer: C
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:

QUESTION 60
You have an on-premises Microsoft SQL Server database named DB1 that contains a table named TB1. TB1 is stretched to Microsoft Azure.

A catastrophic hardware failure occurs on the on-premises SQL server.

You deploy a new on-premises server and restore all databases to the new server.

You need to resume Stretch Database operations to Azure.

Which statements should you execute?

A.

```
sp_rda_deauthorize_db
GO
ALTER TABLE tb1
    SET ( REMOTE_DATA_ARCHIVE=ON (
        FILTER_PREDICATE = dbo.fn_stretchpredicate ( ),
        MIGRATION_STATE = OUTBOUND) );
```

B.

```
EXEC sp_rda_reauthorize_db @credential = <credential>;
GO
ALTER TABLE tb1
        SET ( REMOTE_DATA_ARCHIVE=ON (
            FILTER_PREDICATE = dbo.fn_stretchpredicate ( ),
            MIGRATION_STATE = OUTBOUND) );
```

C.

```
USE master
RESTORE DATABASE DB1- Stretched
   FROM URL = <URL>
 ( REMOTE_DATA_ARCHIVE = ON (MIGRATION_STATE = OUTBOUD) );
GO
Use DB1-Sretched
EXEC sp_rda_reauthorize_db @credential = <credential>;
GO
```

D.

```
EXEC sp_rda_reauthorize_db @credential = <credential>;
GO
CREATE TABLE tb1
    ...
    WITH ( REMOTE_DATA_ARCHIVE = ON ( MIGRATION_STATE = OUTBOUND ) );
```

Correct Answer: B

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:

QUESTION 61
You have a single-server on-premises Microsoft SQL Server deployment.

You must migrate the environment to an Azure virtual machine (VM). You must minimize costs while maintaining the same level of performance as the on-premises SQL environment.

You need to evaluate the number and types of read/write operations for the existing deployment.

Which tool should you use?

A. SQL Profiler trace using Tuning template
B. DiskSpd
C. Import/Export wizard
D. SQL Server Logs

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:
The DiskSpd utility is a feature-rich and versatile storage testing tool that is ideal for testing the storage subsystem. DiskSpd supersedes SQLIO

References:
https://gallery.technet.microsoft.com/DiskSpd-A-Robust-Storage-6ef84e62

QUESTION 62
HOTSPOT

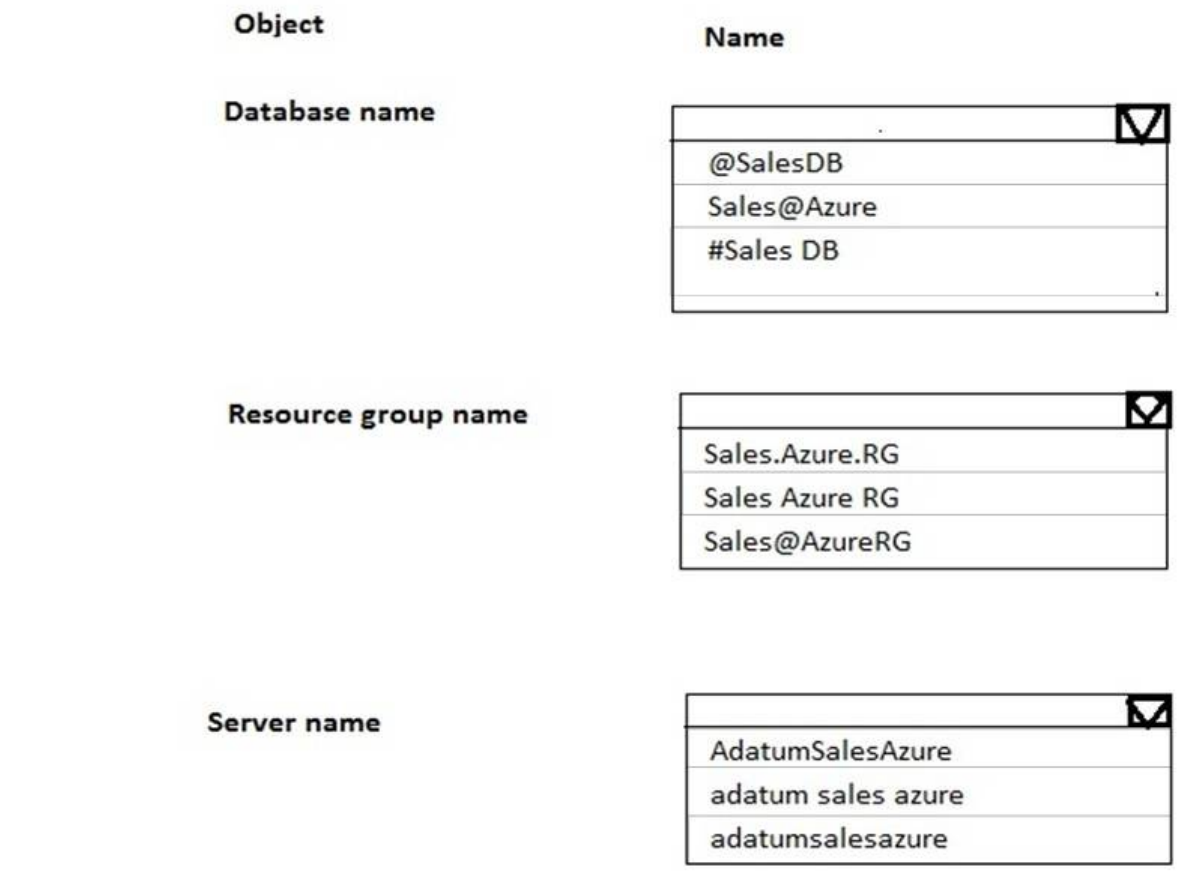
You plan to create a database in Microsoft Azure to manage sales data for an organization.

You need to create an Azure SQL Database that meets standard naming requirements.

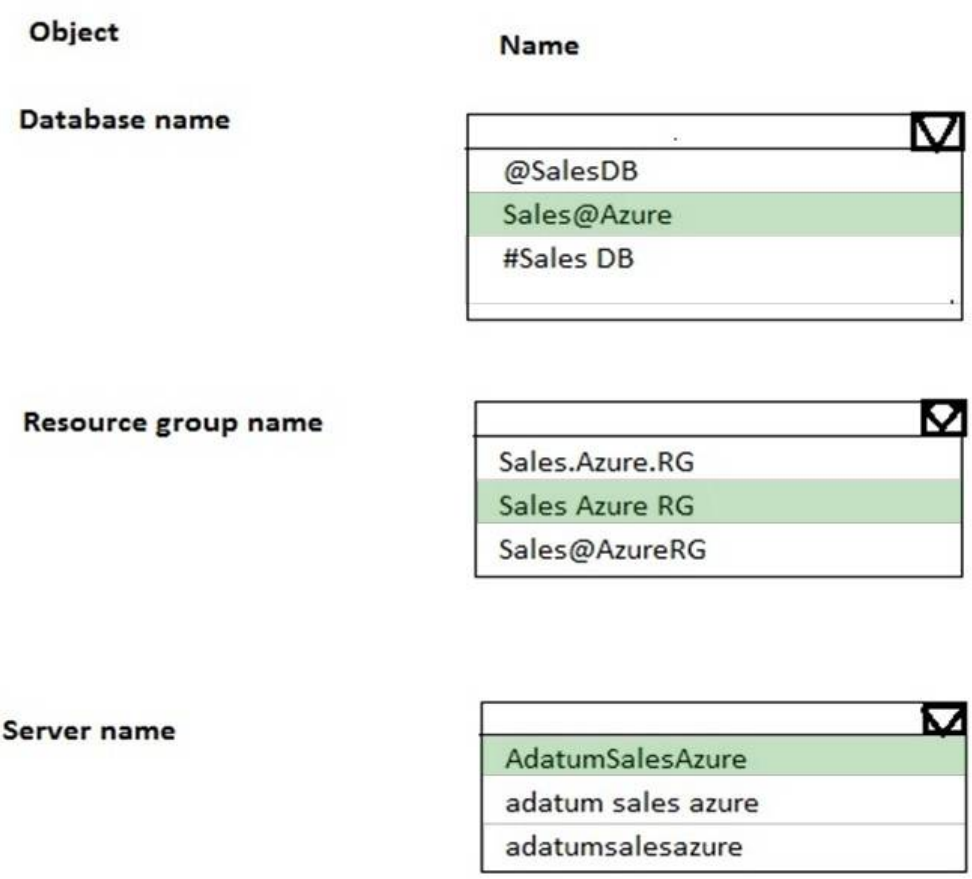
Which names should you use? To answer, select the appropriate options in the answer area.

Note: Each correct selection is worth one point.

Hot Area:



Correct Answer:



Section: Implementing SQL in Azure
Explanation

Explanation/Reference:

QUESTION 63
HOTSPOT

A company plans to deploy Microsoft SQL Server on Azure using an Azure Resource Manager template. The deployment must be fault-tolerant with a 99.99 percent service level agreement (SLA).

You need to complete the Azure Resource manager template while minimizing costs.

How should you complete the Azure Resource manager template? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

```
"variables": {
  "sqlServerName": "[concat('sqlserver')]",
  "databaseName": "sampleDB",
  "databaseEdition": "[ ▼ ]"
                     Basic
                     Standard
                     Premium
  "databaseCollation": "SQL_Latin1_General_CP1_CI_AS",
  "databaseServiceObjectiveName": "[ ▼ ]"
                                  8
                                  S0
                                  S12
                                  P6
  ...
}
```

Correct Answer:

```
"variables": {
  "sqlServerName": "[concat('sqlserver')]",
  "databaseName": "sampleDB",
  "databaseEdition": "[ ▼ ]"
                     Basic
                     Standard
                     Premium
  "databaseCollation": "SQL_Latin1_General_CP1_CI_AS",
  "databaseServiceObjectiveName": "[ ▼ ]"
                                  8
                                  S0
                                  S12
                                  P6
  ...
}
```

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/azure/sql-database/sql-database-dtu-resource-limits-single-databases

QUESTION 64
DRAG DROP

You are deploying a virtual machine (VM) to run Microsoft SQL Server in Azure.

The environment currently requires 10,000 IOPS and two terabytes (TB) of data. You expect the IOPS and data volume to double in the first six months after you deploy. The server is currently configured with an Azure Blob storage volume as the F: drive on the SQL Server.

You need to ensure that the environment can support growth requirements while providing the lowest cost solution.

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:

Actions	Answer Area
Create a new virtual disk that uses a simple layout.	
Create a virtual disk within the storage pool.	
Add four premium storage volumes in Azure Blob storage.	
Format each storage volume individually.	
Create a new storage pool within the VM.	

Correct Answer:

Actions	Answer Area
Create a new virtual disk that uses a simple layout.	Add four premium storage volumes in Azure Blob storage.
Create a virtual disk within the storage pool.	Format each storage volume individually.
Add four premium storage volumes in Azure Blob storage.	Create a new storage pool within the VM.
Format each storage volume individually.	Create a virtual disk within the storage pool.
Create a new storage pool within the VM.	

Section: Implementing SQL in Azure
Explanation

Explanation/Reference:

QUESTION 65
DRAG DROP

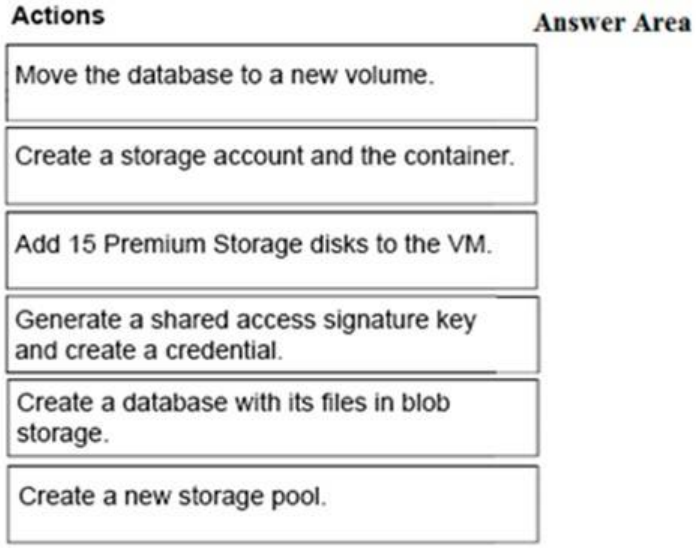
You are deploying a DS-13 series virtual machine (VM) to run Microsoft SQL Server in Azure. You plan to migrate a large data warehouse to the SQL Server instance. The data warehouse is currently 15 terabytes (TB) in size.

You expect growth of 5 TB per year. You cannot increase the size of the VM.

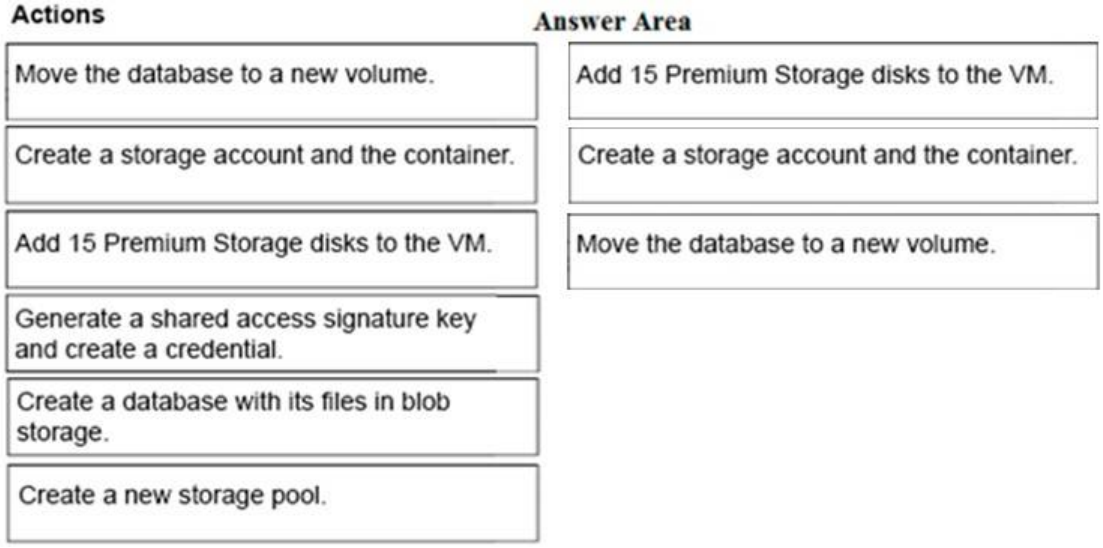
You need to design a storage strategy to support the expected growth of the data warehouse over the next five years.

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: Implementing SQL in Azure
Explanation

Explanation/Reference:
Explanation:

The DS-13 has 16TB storage. However, the database is 15TB and is expected to grow by 5TB a year over the next 5 years for a total of 25TB over the 5 years.

References:

https://cloudblogs.microsoft.com/sqlserver/2015/04/23/azure-premium-storage-provides-highest-performance-for-sql-server-in-azure-vm/

QUESTION 66
You have three Microsoft SQL Server instances. Each instance is deployed to a separate physical server.

You must install a new SQL Server instance for the marketing team. All instances must have the same configuration.

You need to create an unattended answer file to deploy the marketing SQL instance.

What should you do?

A. Create an autounattend.xml file.
B. Cope the ConfigurationFile.ini from one of the other servers.
C. Cope the setup.exe.config file from one of the other servers.
D. Copy the rlauncher.log file from one of the other servers.

Correct Answer: B
Section: Implementing SQL in Azure
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/sql/database-engine/install-windows/install-sql-server-using-a-configuration-file?view=sql-server-2017

QUESTION 67
You administer a Microsoft SQL Server 2012 Enterprise Edition server that uses 64 cores.

You discover performance issues when large amounts of data are written to tables under heavy system load.

You need to limit the number of cores that handle I/O.

What should you configure?

A. Processor affinity
B. Lightweight pooling
C. Max worker threads
D. I/O affinity

Correct Answer: D
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
The affinity Input-Output (I/O) mask Server Configuration Option.
To carry out multitasking, Microsoft Windows 2000 and Windows Server 2003 sometimes move process threads among different processors. Although efficient from an operating system point of view, this activity can reduce Microsoft SQL Server performance under heavy system loads, as each processor cache is repeatedly reloaded with data. Assigning processors to specific threads can improve performance under these conditions by eliminating processor reloads; such an association between a thread and a processor is called processor affinity.

References:

http://msdn.microsoft.com/en-us/library/ms189629.aspx

QUESTION 68
You administer a Microsoft SQL Server 2012 database named Contoso on a server named Server01.

You need to be notified immediately when fatal errors occur on Server01.

What should you create?

A. A Database Audit Specification
B. A Policy
C. An Alert
D. A SQL Profiler Trace
E. A Resource Pool
F. An Extended Event session
G. A Server Audit Specification

Correct Answer: C
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
SQL Server has alerts that get more important based on the severity of the alert. Anything of severity 16 or below tends to refer to the database and deals with issues that are tied to syntax errors, violations of foreign keys, etc. While those errors are typically important, they don't refer to anything with regards to overall health of the SQL Server. Alerts 17 through 25 do. Those are the ones your health checks are probably firing on.

Severity Level	Meaning
17	Insufficient Resources
18	Nonfatal Internal Error Detected
19	SQL Server Error in Resource
20	SQL Server Fatal Error in Current Process
21	SQL Server Fatal Error in Database (dbid) Process
22	SQL Server Fatal Error Table Integrity Suspect
23	SQL Server Fatal Error: Database Integrity Suspect
24	Hardware Error
25	*(no description)*

References:
https://www.mssqltips.com/sqlservertip/3384/configuring-critical-sql-server-alerts/

QUESTION 69
You administer a Microsoft SQL Server 2012 database.

You configure Transparent Data Encryption (TDE) on the Orders database by using the following statements:

```
CREATE MASTER KEY ENCRYPTION BY PASSWORD = 'MyPassword1!'
CREATE CERTIFICATE TDE_Certificate WITH SUBJECT = 'TDE Certificate';
BACKUP CERTIFICATE TDE_Certificate TO FILE = ''d:\TDE_Certificate.cer'
WITH PRIVATE KEY (FILE = 'D:\TDE_Certificate.key',
ENCRYPTION BY PASSWORD = 'MyPassword1!');
CREATE DATABASE ENCRYPTION KEY
WITH ALGORITHM = AES_256
ENCRYPTION BY SERVER CERTIFICATE TDE_Certificate;
ALTER DATABASE Orders SET ENCRYPTION ON;
```

You attempt to restore the Orders database and the restore fails. You copy the encryption file to the original location.

A hardware failure occurs and so a new server must be installed and configured.

After installing SQL Server to the new server, you restore the Orders database and copy the encryption files to their original location. However, you are unable to access the database.

You need to be able to restore the database.

Which Transact-SQL statement should you use before attempting the restore?

A.
```
ALTER DATABASE Master SET ENCRYPTION OFF;
```
B.
```
CREATE CERTIFICATE TDE_Certificate
FROM FILE = 'd:\TDE_Certificate.cer'
WITH PRIVATE KEY (FILE = 'D:\TDE_Certificate.key',
DECRYPTION BY PASSWORD = 'MyPassword1!');
```
C.
```
CREATE CERTIFICATE TDE_Certificate
WITH SUBJECT = 'TDE Certificate'; USE Orders;
CREATE DATABASE ENCRYPTION KEY
WITH ALGORITHM = AES_256
ENCRYPTION BY SERVER CERTIFICATE TDE_Certificate;
```
D.
```
CREATE CERTIFICATE TDE_Certificate
FROM FILE = 'd:\TDE_Certificate.cer';
```

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
The CREATE CERTIFICATE command adds a certificate to a database in SQL Server.
Creating a certificate from a file

The following example creates a certificate in the database, loading the key pair from files.
Code
Copy
USE AdventureWorks2012;
CREATE CERTIFICATE Shipping11
FROM FILE = 'c:\Shipping\Certs\Shipping11.cer'
WITH PRIVATE KEY (FILE = 'c:\Shipping\Certs\Shipping11.pvk',
DECRYPTION BY PASSWORD = 'sldkflk34et6gs%53#v00');
GO

References: https://docs.microsoft.com/en-us/sql/t-sql/statements/create-certificate-transact-sql

QUESTION 70
You administer a Microsoft SQL Server 2012 instance that has multiple databases. You have a two-node SQL Server failover cluster. The cluster uses a storage area network (SAN). You discover I/O issues. The SAN is at capacity and additional disks cannot be added.

You need to reduce the I/O workload on the SAN at a minimal cost.

What should you do?

A. Move user databases to a local disk.
B. Expand the tempdb data and log files
C. Modify application code to use table variables
D. Move the tempdb files to a local disk

Correct Answer: D
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
The use of local disks for TempDB allows us to have more flexibility when configuring for optimal performance. It is a common performance recommendation to create the TempDB database on the fastest

storage available. With the capability to utilize local disk for TempDB placement we can easily utilize disks that are larger, have a higher rotational speed or use SSD disks.

References: https://www.mssqltips.com/sqlservertip/2817/sql-server-2012-cluster-with-tempdb-on-local-disk/

QUESTION 71
HOTSPOT

You plan to deploy two new Microsoft Azure SQL Database instances. Once instance will support a data entry application. The other instance will support the company's business intelligence efforts. The databases will be accessed by mobile applications from public IP addresses.

You need to ensure that the database instances meet the following requirements:
The database administration team must receive alerts for any suspicious activity in the data entry database, including potential SQL injection attacks.
Executives around the world must have access to the business intelligence application.
Sensitive data must never be transmitted. Sensitive data must not be stored in plain text in the database.

In the table below, identify the feature that you must implement for each database.

NOTE: Make only one selection in each column. Each correct selection is work one point.

Hot Area:

Answer Area

Option	Data entry	Business intelligence
Transparent Data Encryption	○	○
Dynamic Data Masking	○	○
Always Encrypted	○	○
Database-level firewall rules	○	○
Threat Detection	○	○

Correct Answer:

Answer Area

Option	Data entry	Business intelligence
Transparent Data Encryption	○	○
Dynamic Data Masking	○	●
Always Encrypted	○	○
Database-level firewall rules	○	○
Threat Detection	●	○

Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Data entry: Threat Detection
SQL Threat Detection provides a new layer of security, which enables customers to detect and respond to potential threats as they occur by providing security alerts on anomalous activities. Users receive an alert upon suspicious database activities, potential vulnerabilities, and SQL injection attacks, as well as anomalous database access patterns.

Business intelligence: Dynamic Data Masking
Dynamic data masking limits (DDM) sensitive data exposure by masking it to non-privileged users. It can be used to greatly simplify the design and coding of security in your application.

References:

https://docs.microsoft.com/en-us/azure/sql-database/sql-database-threat-detection

https://docs.microsoft.com/en-us/sql/relational-databases/security/dynamic-data-masking

QUESTION 72
DRAG DROP

Background

You manage the Microsoft SQL Server environment for a company that manufactures and sells automobile parts.

The environment includes the following servers: SRV1 and SRV2. SRV1 has 16 logical cores and hosts a SQL Server instance that supports a mission-critical application. The application has approximately 30,000 concurrent users and relies heavily on the use of temporary tables.

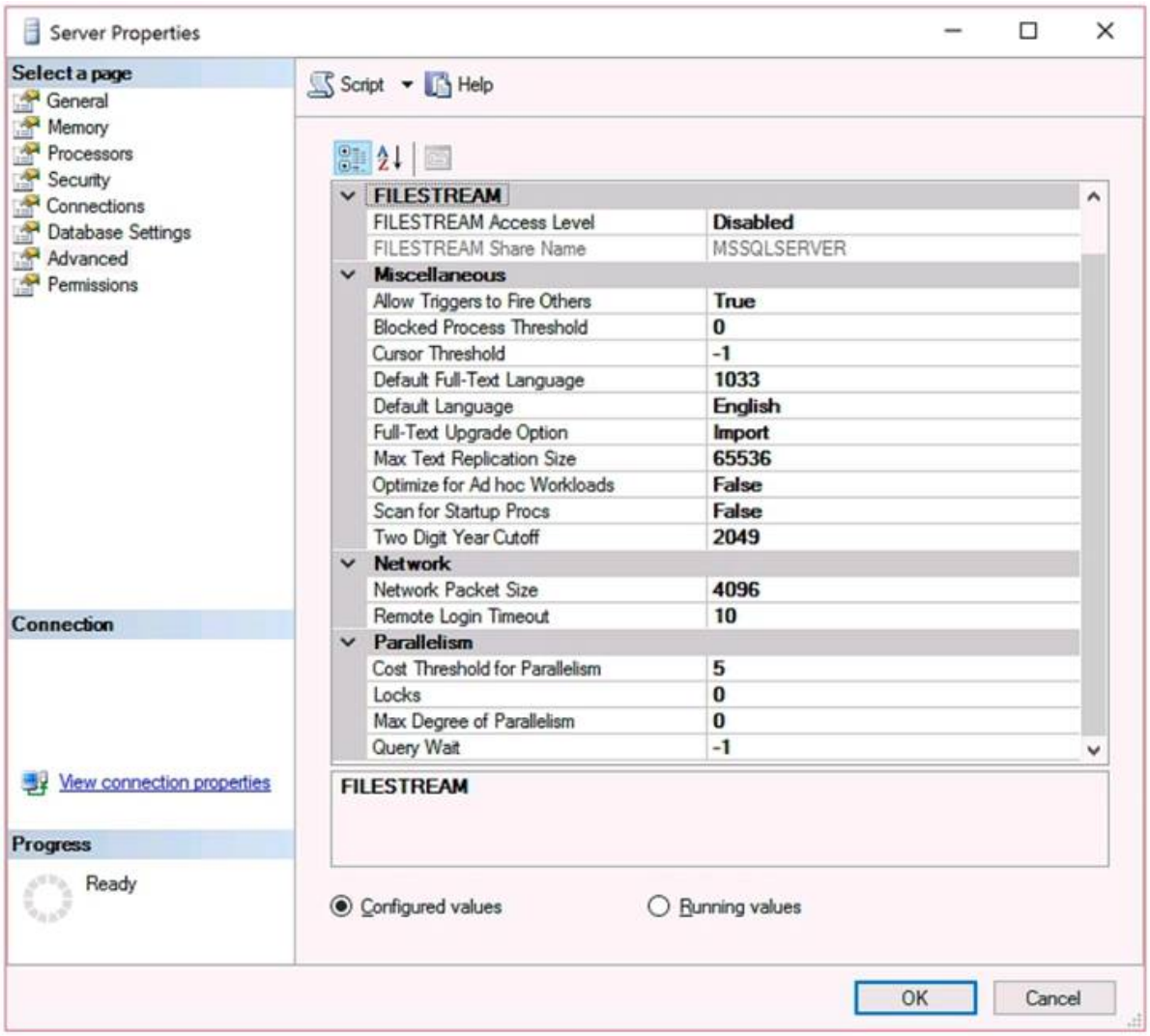
The environment also includes the following databases: `DB1`, `DB2`, and `Reporting`. The `Reporting` database is protected with Transparent Data Encryption (TDE). You plan to migrate this database to a new server. You detach the database and copy it to the new server.

You are performing tuning on a SQL Server database instance. The application which uses the database was written using an object relationship mapping (ORM) tool which maps tables as objects within the application code. There are 30 stored procedures that are regularly used by the application.

After reviewing the plan cache you have identified that a large number of simple queries are using parallelism, and that execution plans are not being kept in the plan cache for very long.

You review the properties of the instance (Click the **Exhibit** button).

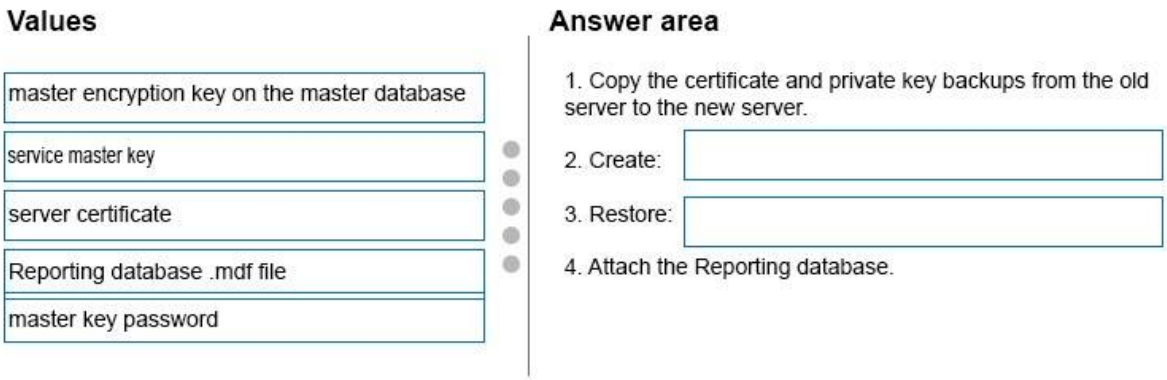
Exhibit:



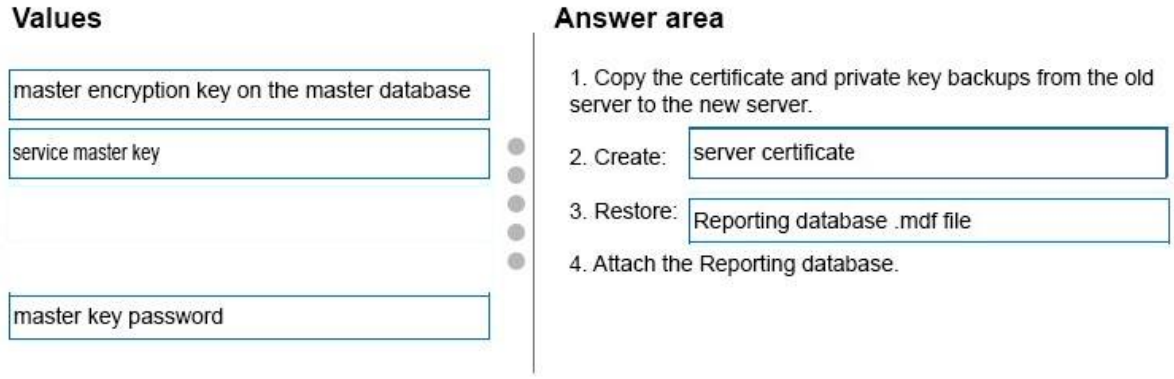
You need to restore the Reporting database to SRV2.

What should you do? To answer, drag the appropriate options to the correct locations. Each option 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.

Select and Place:



Correct Answer:



Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Step 2: Create: server certificate
Recreate the server certificate by using the original server certificate backup file.
Note: The password must be the same as the password that was used when the backup was created.

Step 3: Restore: Reporting database .mdf file.
-- Attach the database that is being moved.
-- The path of the database files must be the location where you have stored the database files.
Example:
CREATE DATABASE [CustRecords] ON
(FILENAME = N'C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\DATA\CustRecords.mdf'),
(FILENAME = N'C:\Program Files\Microsoft SQL Server\MSSQL13.MSSQLSERVER\MSSQL\DATA\CustRecords_log.LDF')
FOR ATTACH ;
GO

From scenario: The Reporting database is protected with Transparent Data Encryption (TDE). You plan to migrate this database to a new server. You detach the database and copy it to the new server.

References: https://docs.microsoft.com/en-us/sql/relational-databases/security/encryption/move-a-tde-protected-database-to-another-sql-server

QUESTION 73
HOTSPOT

Background

You manage the Microsoft SQL Server environment for a company that manufactures and sells automobile parts.

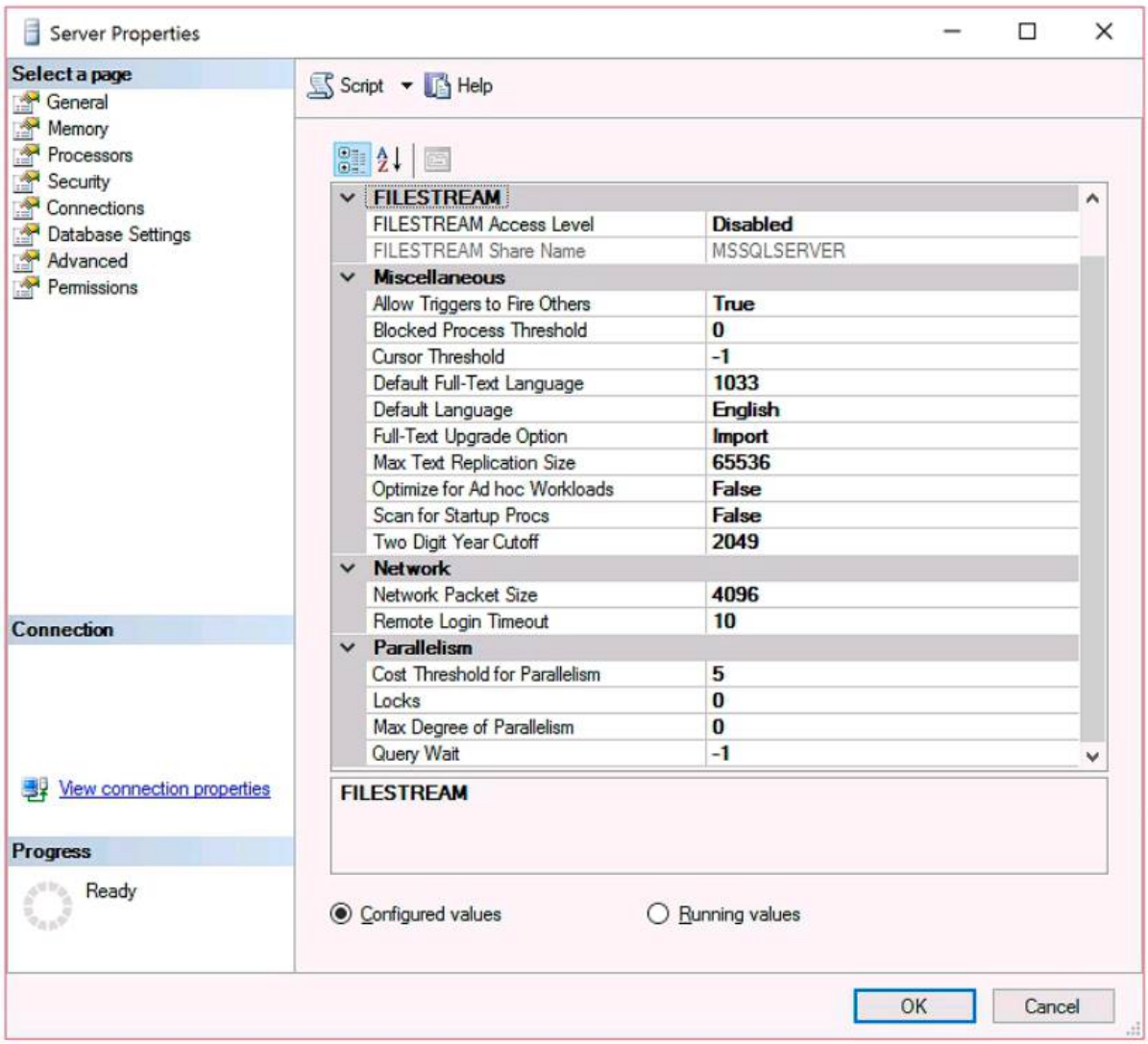
The environment includes the following servers: SRV1 and SRV2. SRV1 has 16 logical cores and hosts a SQL Server instance that supports a mission-critical application. The application has approximately 30,000 concurrent users and relies heavily on the use of temporary tables.

The environment also includes the following databases: DB1, DB2, and Reporting. The Reporting database is protected with Transparent Data Encryption (TDE). You plan to migrate this database to a new server. You detach the database and copy it to the new server.

You are performing tuning on a SQL Server database instance. The application which uses the database was written using an object relationship mapping (ORM) tool which maps tables as objects within the application code. There are 30 stored procedures that are regularly used by the application.

You review the properties of the instance (Click the **Exhibit** button).

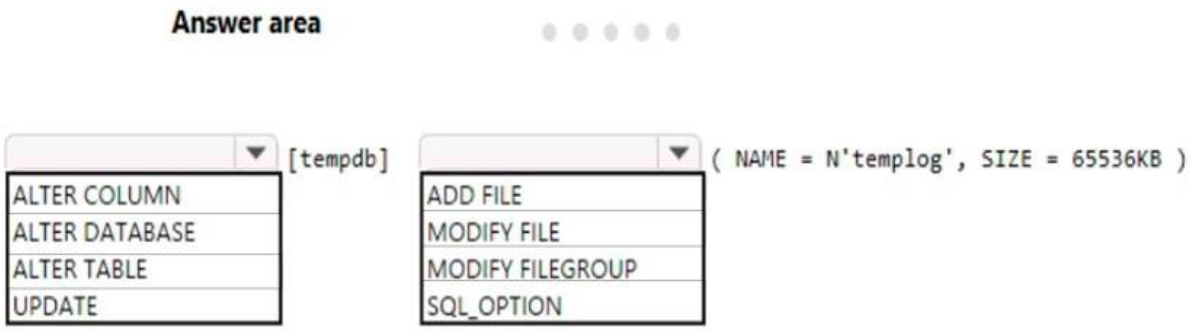
Exhibit:



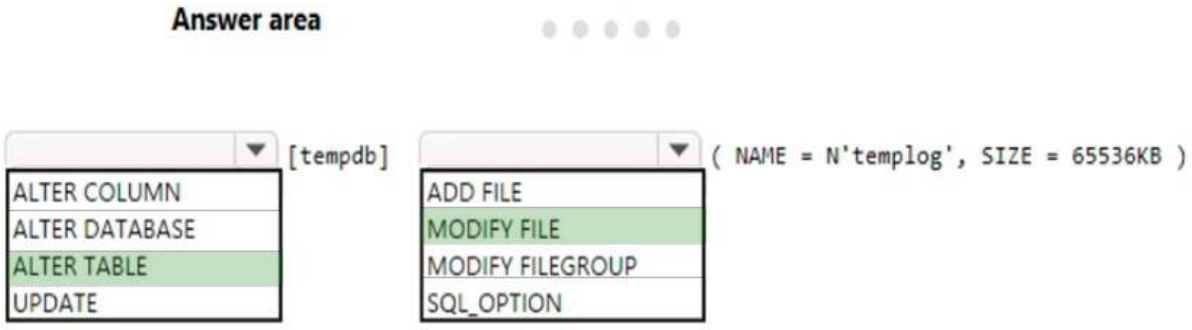
You need to set the size of the log files for the tempdb database on SRV1.

How should you complete the Transact-SQL statement? To answer, select the appropriate Transact-SQL segments in the answer area.

Hot Area:



Correct Answer:



Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
The ALTER DATABASE with MODIFY FILE command can make a file size bigger (but not smaller).

Example:
ALTER DATABASE AdventureWorks2012
MODIFY FILE
(NAME = test1dat3,
SIZE = 200MB);

Note: MODIFY FILE
Specifies the file that should be modified. Only one <filespec> property can be changed at a time. NAME must always be specified in the <filespec> to identify the file to be modified. If SIZE is specified, the new size must be larger than the current file size.

References: https://docs.microsoft.com/en-us/sql/relational-databases/security/encryption/move-a-tde-protected-database-to-another-sql-server

QUESTION 74
You are the database administrator for your company. Your company has one main office and two branch offices. You plan to create three databases named DB1, DB2, and DB3 that will be hosted on one Azure SQL Database server. You have the following requirements:

The main office must be able to connect to all three databases.
The branch offices must be able to connect to DB2 and DB3.
The branch offices must not be able to access DB1.

You need to configure transparent data encryption (TDE) for DB1.

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

A. Run `CREATE CERTIFICATE certl WITH Subject = TDE Cert1 on DB1`.
B. Connect to DB1.
C. Run `ALTER DATABASE DB1 SET ENCRYPTION ON;`.
D. Connect to the master database.
E. Run `CREATE MASTER KEY` on the master database.

Correct Answer: BC
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
You should connect to DB1. To encrypt DB1, you connect directly to DB1. When you connect to DB1.
You use your dbmanager or administrative credentials.
You should run ALTER DATABASE DB1 SET ENCRYPTION ON.
You use the ALTER DATABASE DB1 SET ENCRYPTION ON statement to encrypt the database. This is the statement that turns on TDE for Azure SQL Database.

Incorrect Answers:
A: You should not run CREATE CERTIFICATE certl WITH Subject = TDE Cert' on DB1. You do not need to create a certificate to encrypt an Azure SQL database. This would be a part of the solution when you encrypt an on-premises database. You should not connect to the master database. To encrypt DB1, you need to connect directly to DB1. not to the master database.

E: You should not run CREATE MASTER KEY on the master database.
You would execute CREATE MASTER KEY when you have to encrypt an on-premises database.

References: https://docs.microsoft.com/en-us/sql/relational-databases/security/encryption/transparent-data-encryption

QUESTION 75
You have a server named Serverl that is hosted in an Azure virtual machine. Server1 contains the following:

One instance of SQL Server 2016 Enterprise
10 databases
500 stored procedures

You have a database named Databasel that is hosted on Server1.

Database1 contains 100 queries that are executed dynamically from web applications.

You plan to remove data from the procedure cache on Database1.

You have the following requirements:

Changes to Database1 must not affect other databases that are hosted on Server1
Changes to Database1 must not affect the performance of queries that are stored in other databases.
The solution must minimize administrative effort.

You need to remove the data from the procedure cache as quickly as possible.

What should you do?

A. Run `DBCC FREEPROCCACHE`.
B. Run `ALTER DATABASE SCOPED CONFIGURATION CLEAR PROCEDURE CACHE` in the context of Database 1.
C. Run `DBCC DROPCLEANBUFFERS`.
D. Write a script that iterates through each stored procedure definition and add `WITH RECOMPILE` to the definition.

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
You should run ALTER DATABASE SCOPED CONFIGURATION CLEAR PROCEDURE CACHE in the context of Database! This statement lets you change the settings of a database without affecting other databases that are installed on the instance of SQL Server 2016.

Incorrect Answers:
A: You should not run DBCC FREEPROCCACHE. DBCC FREEPROCCACHE would clean the entire plan cache and would affect all databases. It is possible to remove a single plan from the cache by using the plan_handle argument to DBCC FREEPROCCACHE, but you would have to identify all plans that are related to Databasel, which requires a lot more administrative effort.

C: You should not run DBCC DROPCLEANBUFFERS. DBCC DROPCLEANBUFFERS will remove the clean pages from the buffer cache. Columnstore pages are removed from the columnstore cache.

D: You should not write a script that will iterate through each stored procedure definition and add WITH RECOMPILE to the definition. Each time the procedure is called, it will be recompiled, and this might degrade the server's performance.
This approach would require additional administrative effort to produce the script. In addition, some calls are made from the web application and the script would not have any control over these calls. In earlier versions of SQL Server, prior to the availability of the ALTER DATABASE statement, this option would have been the way to avoid affecting other databases.

References: https://docs.microsoft.com/en-us/sql/t-sql/statements/alter-database-scoped-configuration-transact-sql

QUESTION 76
You have a server named server1-contoso.database.windows.net that has a Microsoft Azure SQL database.

You need to create a group of Azure SQL databases that share the resources on server1-contoso.database.windows.net.

Which cmdlet should you run before you create the database?

A. **New-AzureRmAvailabilitySet**
B. **New-AzureRmLoadBalancer**
C. **New-AzureRmSqlDatabaseSecondary**
D. **New-AzureRmSqlElasticPool**
E. **New-AzureRmVM**
F. **New-AzureRmSqlServer**
G. **New-AzureRmSqlDatabaseCopy**
H. **New-AzureRmSqlServerCommunicationLink**

Correct Answer: D

Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
The New-AzureRmSqlElasticPool cmdlet creates an elastic database pool for an Azure SQL Database. SQL Database elastic pools are a simple, cost-effective solution for managing and scaling multiple databases that have varying and unpredictable usage demands. The databases in an elastic pool are on a single Azure SQL Database server and share a set number of resources at a set price. Elastic pools in Azure SQL Database enable SaaS developers to optimize the price performance for a group of databases within a prescribed budget while delivering performance elasticity for each database.

Reference: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-elastic-pool

QUESTION 77
HOTSPOT

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 questions in 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 in 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.

Background

You manage a Microsoft SQL Server environment that includes the following databases: **`DB1, DB2, Reporting.`**

The environment also includes SQL Server Reporting Services (SSRS) and SQL Server Analysis Services (SSAS). All SSRS and SSAS servers use named instances. You configure a firewall rule for SSAS.

Databases

Database Name	Notes
DB1	This database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are inserted into `DB1` or updated each second. Inserts are made by many different external applications that your company's developers do not control. You observe that transaction log write latency is a bottleneck in performance. Because of the transient nature of all data in this database, the business can tolerate some data loss in the event of a server shutdown.
DB2	This database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are updated or inserted per second. You observe that the `WRITELOG` wait type is the highest aggregated wait type. Most writes must have no tolerance for data loss in the event of a server shutdown. The business has identified certain write queries where data loss is tolerable in the event of a server shutdown.
Reporting	You create a SQL Server-authenticated login named `BIAppUser` on the SQL server instance to support users of the `Reporting` database. The `BIAppUser` login is not a member of the sysadmin role. You plan to configure performance-monitoring alerts for this instance by using SQL Agent Alerts.

Database DB1 must use two CPU cores.

Queries that were running on database DB2 prior to migration do not complete.

You need to configure the databases.

In the table below, identify the parameter that must be configured for each databases.

Select one option for DB1, and one option for DB2. Select one option for each column.

Hot Area:

Parameter	DB1	DB2
MAXDOP	○	○
LEGACY_CARDINALITY_ESTIMATION	○	○
PARAMETER_SNIFFING	○	○
QUERY_OPTIMIZER_HOTFIXES	○	○
CLEAR PROCEDURE_CACHE	○	○

Correct Answer:

Parameter	DB1	DB2
MAXDOP	⬭	⬭
LEGACY_CARDINALITY_ESTIMATION	⬭	⬭
PARAMETER_SNIFFING	⬭	⬭
QUERY_OPTIMIZER_HOTFIXES	⬭	⬭
CLEAR PROCEDURE_CACHE	⬭	⬭

Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Query_optimizer_hotfixes

Explanation:
DB1: MAXDOP
You can use the max degree of parallelism (MAXDOP) option to limit the number of processors to use in parallel plan execution.

DB2: LEGACY_CARDINALITY_ESTIMATION
The CE (Cardinality Estimation) predicts how many rows your query will likely return. The cardinality prediction is used by the Query Optimizer to generate the optimal query plan. With more accurate estimations, the Query Optimizer can usually do a better job of producing a more optimal query plan.
Legacy CE: For a SQL Server database set at compatibility level 120 and above, the CE version 70 can be can be activated by using the at the database level by using the ALTER DATABASE SCOPED CONFIGURATION.
Example:
ALTER DATABASE SCOPED CONFIGURATION
SET LEGACY_CARDINALITY_ESTIMATION = ON;
GO

Reference:
https://social.technet.microsoft.com/wiki/contents/articles/34718.new-sql-server-2016-scoped-configuration.aspx

QUESTION 78
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You plan to migrate a Microsoft SQL server instance between physical servers.

You must migrate the metadata associated with the database instance.

You need to ensure that the new instance retains the existing jobs and alerts.

Solutions: You restore the service master key.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
The Service Master Key is the root of the SQL Server encryption hierarchy. It does not handle alerts and jobs.

The msdb database is used by SQL Server Agent for scheduling alerts and jobs and by other features such as SQL Server Management Studio, Service Broker and Database Mail.

References: https://docs.microsoft.com/en-us/sql/relational-databases/databases/msdb-database?view=sql-server-2017

QUESTION 79
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You plan to migrate a Microsoft SQL server instance between physical servers.

You must migrate the metadata associated with the database instance.

You need to ensure that the new instance retains the existing jobs and alerts.

Solution: You restore the **master** database.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
The master database does not handle alerts and jobs. It records all the system-level information for a SQL Server system. This includes instance-wide metadata such as logon accounts, endpoints, linked servers, and system configuration settings.

The msdb database is used by SQL Server Agent for scheduling alerts and jobs and by other features such as SQL Server Management Studio, Service Broker and Database Mail.

References: https://docs.microsoft.com/en-us/sql/relational-databases/databases/msdb-database?view=sql-server-2017

QUESTION 80
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these

questions will not appear in the review screen.

You plan to migrate a Microsoft SQL Server instance between physical servers.

You must migrate the metadata associated with the database instance.

You need to ensure that the new instance retains the existing jobs and alerts.

Solution: You restore the **model** database.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
The model database does not handle alerts and jobs. It is used as the template for all databases created on an instance of SQL Server.

The msdb database is used by SQL Server Agent for scheduling alerts and jobs and by other features such as SQL Server Management Studio, Service Broker and Database Mail.

References: https://docs.microsoft.com/en-us/sql/relational-databases/databases/msdb-database?view=sql-server-2017

QUESTION 81
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You plan to migrate a Microsoft SQL server instance between physical servers.

You must migrate the metadata associated with the database instance.

You need to ensure that the new instance retains the existing jobs and alerts.

Solution: You restore the **msdb** database.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:

The msdb database is used by SQL Server Agent for scheduling alerts and jobs and by other features such as SQL Server Management Studio, Service Broker and Database Mail.

References: https://docs.microsoft.com/en-us/sql/relational-databases/databases/msdb-database?view=sql-server-2017

QUESTION 82
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You deploy a new Microsoft Azure SQL database instance to support a variety of mobile application and public websites. You configure geo-replication with regions in Brazil and Japan.

You need to implement real-time encryption of the database and all backups.

Solution: you enable Dynamic Data Masking on the primary replica.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
SQL Database dynamic data masking does not encrypt the data.
Transparent Data Encryption (TDE) would provide a solution.

Note: SQL Database dynamic data masking limits sensitive data exposure by masking it to non-privileged users.

Dynamic data masking helps prevent unauthorized access to sensitive data by enabling customers to designate how much of the sensitive data to reveal with minimal impact on the application layer.

References: https://azure.microsoft.com/en-us/blog/how-to-configure-azure-sql-database-geo-dr-with-azure-key-vault/

QUESTION 83
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You deploy a new Microsoft Azure SQL database instance to support a variety of mobile application and public websites. You configure geo-replication with regions in Brazil and Japan.

You need to implement real-time encryption of the database and all backups.

Solution: You enable Transparent Data Encryption (TDE) on the primary instance.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Azure SQL Database and Data Warehouse offer encryption-at-rest by providing Transparent Data Encryption (TDE) for all data written to disk, including databases, log files and backups. This protects data in case of unauthorized access to hardware. TDE provides a TDE Protector that is used to encrypt the Database Encryption Key (DEK), which in turn is used to encrypt the data. With the TDE and Bring Your Own Key (BYOK) offering currently in preview, customers can take control of the TDE Protector in Azure Key Vault.

Taking advantage of TDE with BYOK for databases that are geo-replicated to maintain high availability requires to configure and test the scenario carefully.

References: https://azure.microsoft.com/en-us/blog/how-to-configure-azure-sql-database-geo-dr-with-azure-key-vault/

QUESTION 84
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You deploy a new Microsoft Azure SQL database instance to support a variety of mobile application and public websites. You configure geo-replication with regions in Brazil and Japan.

You need to implement real-time encryption of the database and all backups.

Solution: You password protect all azure SQL backups and enable azure active directory authentication for all azure SQL server instances.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Password protection does not encrypt the data.
Transparent Data Encryption (TDE) would provide a solution.

References: https://azure.microsoft.com/en-us/blog/how-to-configure-azure-sql-database-geo-dr-with-azure-key-vault/

QUESTION 85
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You deploy a new Microsoft Azure SQL database instance to support a variety of mobile application and public websites. You configure geo-replication with regions in Brazil and Japan.

You need to implement real-time encryption of the database and all backups.

Solution: You use the always Encrypted wizard to encrypt all possible for the tables in the primary instance.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Always Encrypted does not support geo replication.
Transparent Data Encryption (TDE) would provide a solution.

Note: Use the Always Encrypted Wizard to help protect sensitive data stored in a SQL Server database. Always Encrypted allows clients to encrypt sensitive data inside client applications and never reveal the encryption keys to SQL Server.

References:
https://azure.microsoft.com/en-us/blog/how-to-configure-azure-sql-database-geo-dr-with-azure-key-vault/

http://blog.pragmaticworks.com/sql-server-2016-data-masking-and-always-encrypted

QUESTION 86
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You have Microsoft SQL Server on a Microsoft azure virtual machine that has 12 databases.

All database files are in the same Azure Blob storage account.

You need to receive an email notification if I/O operations to the database files exceed 800 MB/s for more than five minutes.

Solution: You run the **Get-Counter** cmdlet and specify the –**counter '\physicaldisk:disk Transfers/sec'** parameter.

Does this meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Manage databases and instances
Explanation

Explanation/Reference:

QUESTION 87
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You have Microsoft SQL Server on a Microsoft azure virtual machine that has 12 databases.

All database files are in the same Azure Blob storage account.

You need to receive an email notification if I/O operations to the database files exceed 800 MB/s for more than five minutes.

Solution: You run the **Get-Counter** cmdlet and specify the **–counter '\physicaldisk:disk write/sec'** parameter.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:

QUESTION 88
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You have Microsoft SQL Server on a Microsoft azure virtual machine that has 12 databases.

All database files are in the same Azure Blob storage account.

You need to receive an email notification if I/O operations to the database files exceed 800 MB/s for more than five minutes.

Solution: You run the **Add-AzureRmMetricAlertRule** cmdlet and specify the **–MetricName 'Network Out'** parameter.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:

QUESTION 89
DRAG DROP

Background

You are managing a multi-tenant environment hosted within Windows Azure. All changes to the database are pushed to a template database which is stored as a Microsoft Azure SQL database named **ContosoTemplate** which is stored on the virtual SQL Server named SQL1. You also have a virtual SQL Server named SQL2.

You are provisioning an Azure SQL Database instance named DB1. No Azure firewall rules have been created.

You plan to deploy the following databases to an elastic pool: **EDB2, EDB3, EDB4, EDB5**, and **EDB6**. All of the databases in the pool have the same peak usage period.

You migrate a SQL Server instance named SRV1 to an Azure DS-13 series virtual machine (VM). The VM has two premium disks that are allocated as a storage pool.

You plan to deploy a new Azure SQL Database named DB7 to support an application for your Human Resources (HR) department.

You should prevent users that are not administrators from viewing sensitive data that is stored in DB7. You should accomplish this without any code changes to the various applications that will be reading the data.

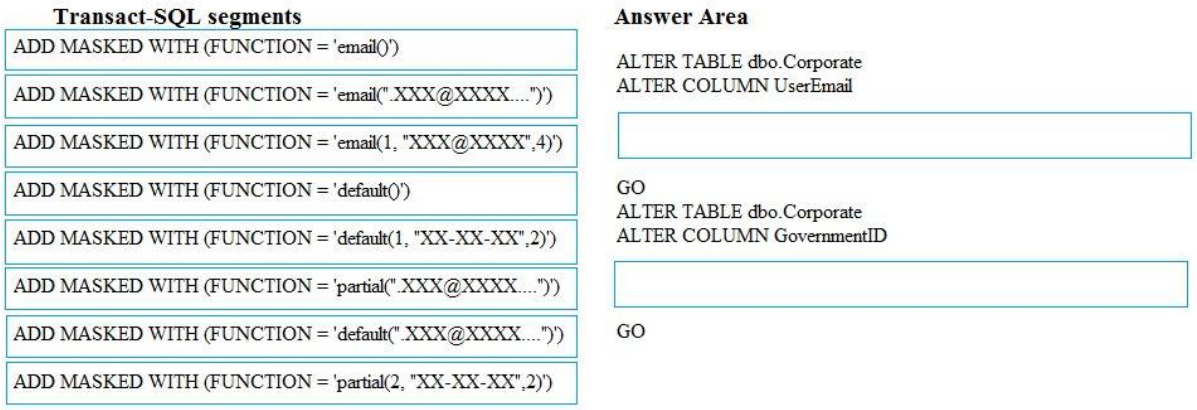
Corporate goals for data masking require the following formats:

Field	Requirement	Example
Email addresses	Must display the first letter of the email address, the @ sign, and the top-level domain specified as .com.	Holly.Holt@contoso.com must be displayed as "HXXX@XXXX.com"
Government identification number	Must display only the first two numbers, the last two numbers, and the dashes must be stored in the database by using the char(11) data type	123-45-6789 must be displayed as 12X-XX-XX89

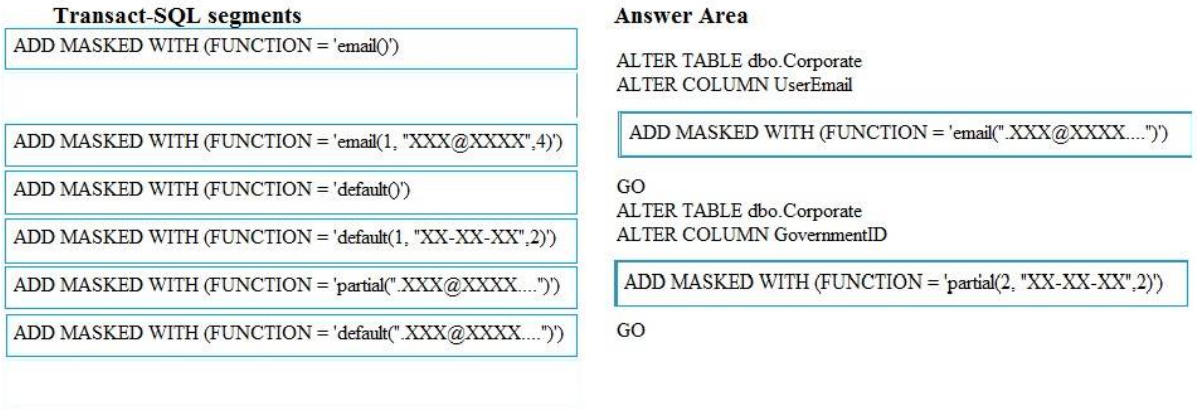
You need to implement dynamic data masking for each field type.

How should you complete the Transact-SQL statement? To answer, drag the appropriate Transact-SQL segments to the correct locations. Each Transact-SQL segment 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.

Select and Place:



Correct Answer:



Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Box 1: ADD MASKED WITH(FUNCTION = 'email()')
The email masking method exposes the first letter of an email address and the constant suffix ".com", in the form of an email address. . aXXX@XXXX.com.
This default behavior is what we want.

Example definition syntax: Email varchar(100) MASKED WITH (FUNCTION = 'email()') NULL

Box 2: ADD MASKED WITH(FUNCTION = 'partial(2,"XX-XX-XX",2)
The custom masking method which exposes the first and last letters and adds a custom padding string in the middle. Syntax: prefix,[padding],suffix

References: https://docs.microsoft.com/en-us/sql/relational-databases/security/dynamic-data-masking?view=sql-server-2017

QUESTION 90
You deploy a Microsoft SQL Server instance to support a new application. The application uses the **tempdb** database to maintain session state data.

Users report performance issues with the application. You observe performance problems immediately and begin troubleshooting. You observe numerous instances of the page PAGELATCH_UP and PAGELATCH_EX wait events in the logs for the server. The resource description for the wait is 2:1:1.

You need to resolve the performance problem.

What should you do?

A. Increase the number of tempdb log files.
B. Use the Read Committed Snapshot Isolation mode.
C. Replace temporary tables with table-valued functions.
D. Increase the value of the Cost Threshold for Parallelism setting.
E. Increase the size of the tempdb.
F. Increase the value of the MAXDOP setting.

Correct Answer: A
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Note: PAGELATCH_EX occurs when a task is waiting on a latch for a buffer that is not in an I/O request. The latch request is in Exclusive mode.
PAGELATCH_UP occurs when a task is waiting on a latch for a buffer that is not in an I/O request. The latch request is in Update mode.

References: https://docs.microsoft.com/en-us/sql/relational-databases/system-dynamic-management-views/sys-dm-os-wait-stats-transact-sql?view=sql-server-2017

QUESTION 91
HOTSPOT

You have a Microsoft SQL server that manages all of your databases.

You must create a database named **MarketingData**. The database will initially consume 400 megabytes (MB) of storage and will grow by one percent per year.

The database file must be stored on the Marketing share of the Lon-SVR1 server. The file must not automatically increase in size. Log files must be stored on the L drive of the SQL Server machine in a folder named Logs.

You need to create the **MarketingData** database.

How should you complete the Transact-SQL statement? To answer, select the appropriate Transact-SQL segments in the answer area.

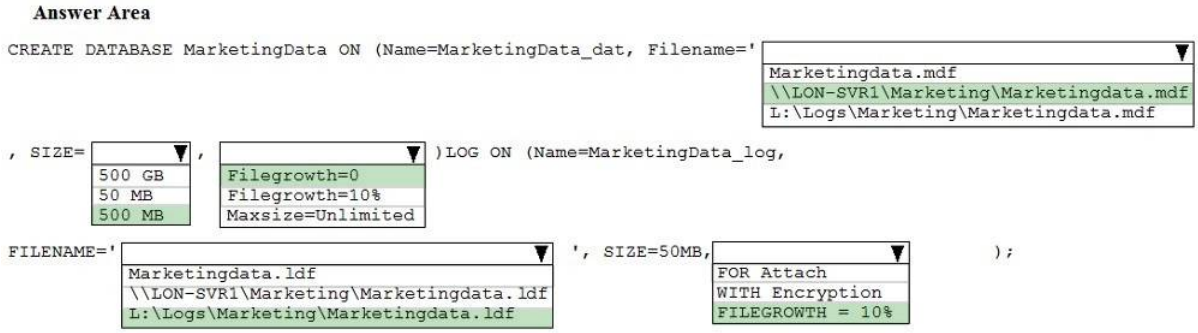
NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

```
CREATE DATABASE MarketingData ON (Name=MarketingData_dat, Filename='[ Marketingdata.mdf | \\LON-SVR1\Marketing\Marketingdata.mdf | L:\Logs\Marketing\Marketingdata.mdf ]
, SIZE=[ 500 GB | 50 MB | 500 MB ], [ Filegrowth=0 | Filegrowth=10% | Maxsize=Unlimited ])LOG ON (Name=MarketingData_log,
FILENAME='[ Marketingdata.ldf | \\LON-SVR1\Marketing\Marketingdata.ldf | L:\Logs\Marketing\Marketingdata.ldf ]', SIZE=50MB,[ FOR Attach | WITH Encryption | FILEGROWTH = 10% ]);
```

Correct Answer:



Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:

Box 1: \\LON-SRV1\Marketing\Marketingdata.mdf
The database file must be stored on the Marketing share of the Lon-SVR1 server.

Box 2: 500 MB
Initial size is 400 MB, with an annual 1% increase in size.

Box 3: Filegrowth=0
The file must not automatically increase in size.

Box 4: L:\Logs\Marketing\Marketingdata.ldf
Log files must be stored on the L drive of the SQL Server machine in a folder named Logs.

Box 5: Filegrowth = 10%
The log file must be able to grow.

References: https://docs.microsoft.com/en-us/sql/t-sql/statements/create-database-transact-sql?view=sql-server-2017

QUESTION 92
You are configuring a table to use the Always Encrypted feature. The table will have the columns configured as shown in the following table.

Column name	Searchable by users	Returned to application
Tax Id	Yes	*Not applicable*
Address	*Not applicable*	Yes
LastName	Yes	Yes
Gender	*Not applicable*	Yes

All the columns will be encrypted by using the AEAD_AES_256_CBC_HMAC_SHA_256 algorithm. Values will be stored in the most secure way possible.

Which two columns should use randomized encryption? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

A. `Address`
B. `Gender`
C. `LastName`
D. `Tax Id`

Correct Answer: AB
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Always Encrypted supports two types of encryption: randomized encryption and deterministic encryption. Randomized encryption uses a method that encrypts data in a less predictable manner. Randomized encryption is more secure, but prevents searching, grouping, indexing, and joining on encrypted columns.

References: https://docs.microsoft.com/en-us/sql/relational-databases/security/encryption/always-encrypted-database-engine?view=sql-server-2017

QUESTION 93
HOTSPOT

A company plans to use a Microsoft Azure Resource Manager template to deploy a SQL Server in Azure. A partition of the Azure Resource Manager template is displayed.

```
"parameters": {
 "transparentDataEncryption": {
 "type": "string",
 "allowedValues": ["Enabled", "Disabled"],
 "defaultValue": "Enabled",
 }
},
"variables": {
 "sqlServerName": "[concat('sqlserver', uniqueString(subscription().id, resourceGroup().id))]",
 "databaseName": "sample-db",
 "databaseEdition": "Basic",
 "databaseCollation":
 "SQL_Latin1_General_CP1_CI_AS",
 "databaseServiceObjectiveName": "Basic"
},
```

Use the drop-down menus to select the answer choice that answers each question.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

In which state will data be encrypted?

at rest
in transit
in computation

Which term will the SQL Server name include?

resource group ID
"sample-db"
database edition

Correct Answer:

Answer Area

In which state will data be encrypted?

- at rest
- in transit
- in computation

Which term will the SQL Server name include?

- resource group ID
- "sample-db"
- database edition

Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:

Box 1: at rest
Transparent Data Encryption (TDE) encrypts SQL Server, Azure SQL Database, and Azure SQL Data Warehouse data files, known as encrypting data at rest.

Box 2: resource group ID

References: https://docs.microsoft.com/en-us/sql/relational-databases/security/encryption/transparent-data-encryption?view=sql-server-2017

QUESTION 94
HOTSPOT

A company has a Microsoft Azure SQL Database instance that uses dynamic data masking.

You observe that numeric fields contain whole integers as masked data.

You need to display a zero value for numeric fields.

What is the current masking function and which masking function should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Masking function	Option
Current	Credit card / Default / Email / Random number
Desired	Credit card / Default / Email / Random number

Correct Answer:

Answer Area

Masking function	Option
Current	Credit card / Default / Email / **Random number**
Desired	Credit card / **Default** / Email / Random number

Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:

Box 1: Random
A random masking function for use on any numeric type to mask the original value with a random value within a specified range.

Box 2: Default
Full masking according to the data types of the designated fields. For numeric data types use a zero value.

References: https://docs.microsoft.com/en-us/sql/relational-databases/security/dynamic-data-masking?view=sql-server-2017

QUESTION 95
A company plans to use a Microsoft Azure SQL Database instance to manage sensitive data.

The solution must allow data to be decrypted while in use but encrypted while at rest.

You need to ensure that the columns are protected.

What should you use?

A. static data masking
B. persistent data masking
C. Transparent Data Encryption
D. Recovery Services vault

Correct Answer: C
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Transparent data encryption (TDE) encrypts your databases, associated backups, and transaction log files at rest without requiring changes to your applications.

References: https://msdn.microsoft.com/en-us/library/dn948096.aspx

QUESTION 96
HOTSPOT

You are database administrator for an international sales application on a Microsoft SQL Server instance.

A large amount of legacy data has been collected in the application database, as shown in the following table.

Data age	Data state
> 7 years old	Read-only
1-7 years old	Read/Write
< 1 year old	Read/Write

You need to choose the correct file and filegroup usage strategy for each set of data.

The strategy should meet the following requirements:
Maximize performance for data older than 7 years.
Minimize lock management overhead when queries access data older than 7 years.
Avoid the need to gain exclusive access to the database for data less than 7 years.

In the table below, identify the strategy that must be used for each set of data.

NOTE: Make only one selection in each column.

Hot Area:

Answer Area

File and filegroup usage strategy	Data older than 7 years	Data 1-7 years old
Tables in Read_Only databases	○	○
Tables in Read_Only file groups	○	○
Partitioned tables	○	○

Correct Answer:

Answer Area

File and filegroup usage strategy	Data older than 7 years	Data 1-7 years old
Tables in Read_Only databases	○	○
Tables in Read_Only file groups	○	○
Partitioned tables	○	○

Section: Manage databases and instances
Explanation

Explanation/Reference:

QUESTION 97
A Microsoft SQL Server instance has a database named **Employees**. The database contains information about employees including their salary.

You must create a custom system message as an alert when an error is raised.

You need to create the custom message in the sys.messages table.

Which argument in **sp_addmessage** should you configure?

A. `@with_log`
B. `@lang`
C. `@severity`
D. `@replace`

Correct Answer: C
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
The following example adds a custom message to sys.messages.

USE master;
GO

```
EXEC sp_addmessage 50001, 16,
   N'Percentage expects a value between 20 and 100.
   Please reexecute with a more appropriate value.';
GO
```

Syntax:

```
sp_addmessage [ @msgnum= ] msg_id , [ @severity= ] severity , [ @msgtext= ] 'msg'
    [ , [ @lang= ] 'language' ]
    [ , [ @with_log= ] { 'TRUE' | 'FALSE' } ]
    [ , [ @replace= ] 'replace' ]
```

References: https://docs.microsoft.com/en-us/sql/relational-databases/system-stored-procedures/sp-addmessage-transact-sql?view=sql-server-2017

QUESTION 98
HOTSPOT

Background

You manage the Microsoft SQL Server environment for a company that manufactures and sells automobile parts.

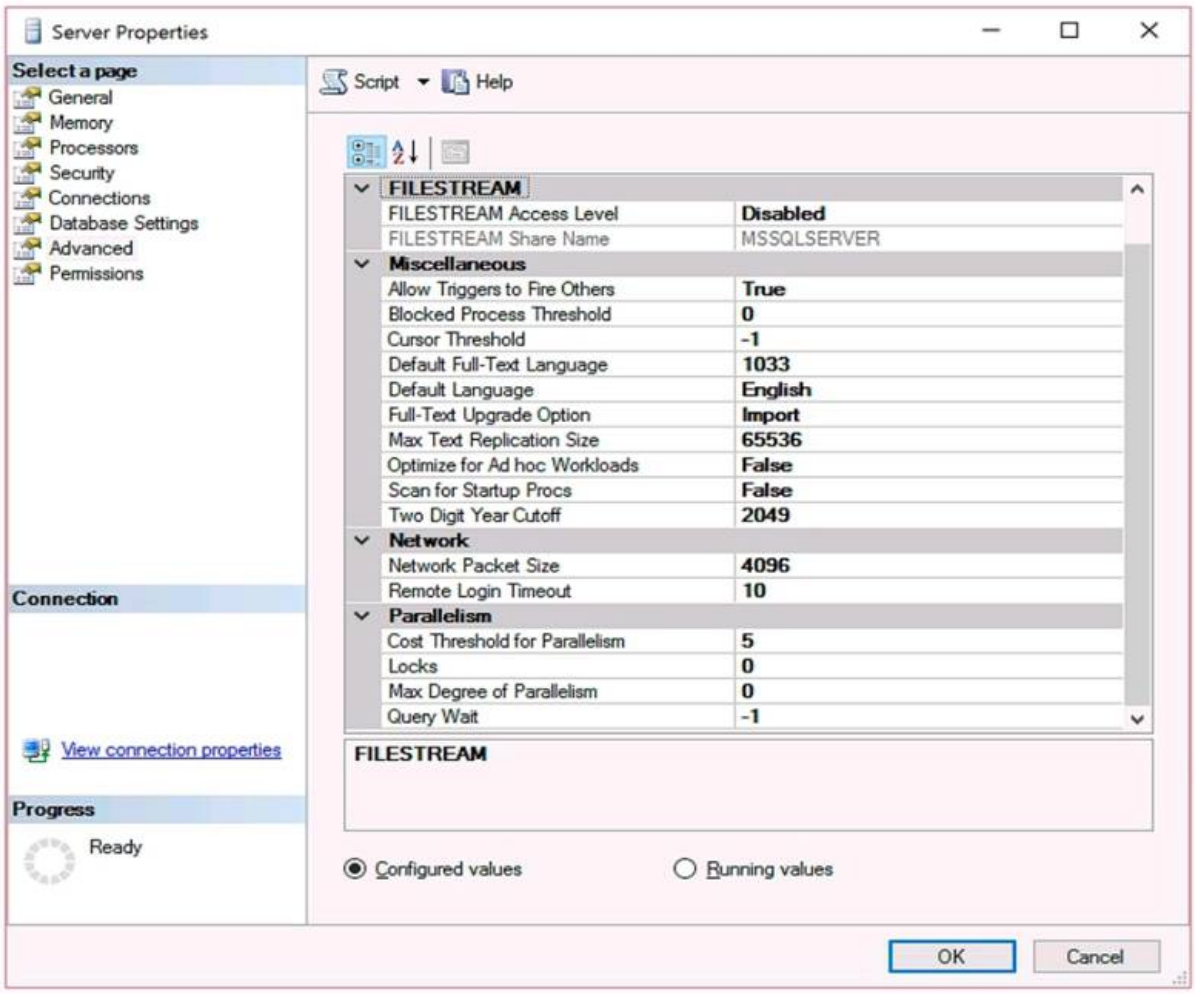
The environment includes the following servers: SRV1 and SRV2. SRV1 has 16 logical cores and hosts a SQL Server instance that supports a mission-critical application. The application has approximately 30,000 concurrent users and relies heavily on the use of temporary tables.

The environment also includes the following databases: DB1, DB2, and Reporting. The Reporting database is protected with Transparent Data Encryption (TDE). You plan to migrate this database to a new server. You detach the database and copy it to the new server.

You are performing tuning on a SQL Server database instance. The application which uses the database was written using an object relationship mapping (ORM) tool which maps tables as objects within the application code. There are 30 stored procedures that are regularly used by the application.

You review the properties of the instance (Click the **Exhibit** button).

Exhibit:

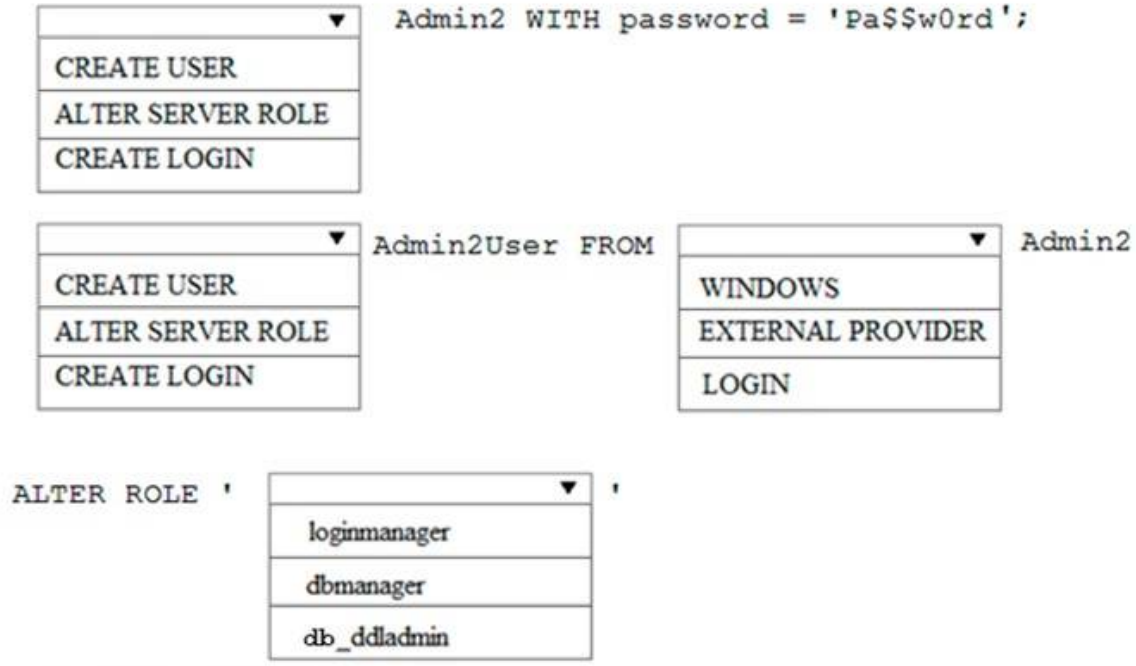


You need to ensure that a user named Admin2 can manage logins.

How should you complete the Transact-SQL statements? To answer, select the appropriate Transact-SQL segments in the answer area.

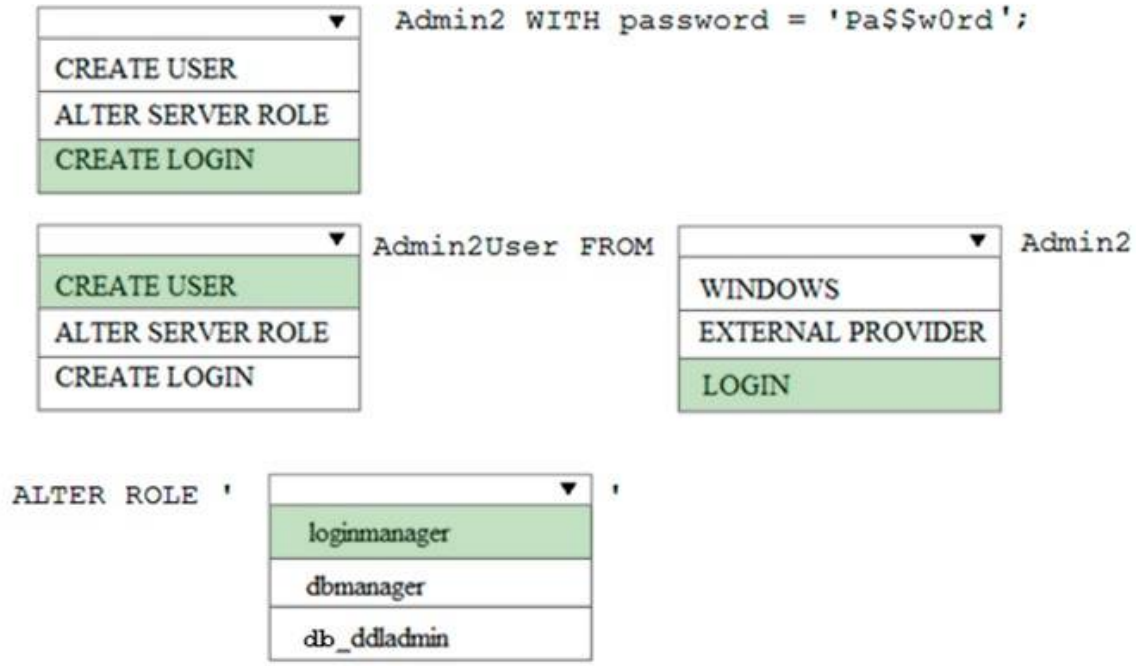
Hot Area:

Answer Area



Correct Answer:

Answer Area



Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:

Step 1: CREATE LOGIN
First you need to create a login for SQL Azure, it's syntax is as follows:

CREATE LOGIN username WITH password='password';

Step 2, CREATE USER

Step 3: LOGIN
Users are created per database and are associated with logins. You must be connected to the database in where you want to create the user. In most cases, this is not the master database. Here is some sample Transact-SQL that creates a user:

CREATE USER readonlyuser FROM LOGIN readonlylogin;

Step 4: loginmanager
Members of the loginmanager role can create new logins in the master database.

References:
https://azure.microsoft.com/en-us/blog/adding-users-to-your-sql-azure-database/

https://docs.microsoft.com/en-us/azure/sql-database/sql-database-manage-logins

QUESTION 99
You manage a Microsoft SQL Server environment in a Microsoft Azure virtual machine.

You must enable Always Encrypted for columns in a database.

You need to configure the key store provider.

What should you do?

A. Manually specify the column master key.
B. Modify the connection string for applications.
C. Auto-generate a column master key.
D. Use the Windows certificate store.

Correct Answer: D
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Always Encrypted supports multiple key stores for storing Always Encrypted column master keys. A column master key can be a certificate stored in Windows Certificate Store.

References: https://msdn.microsoft.com/en-us/library/mt723359.aspx

QUESTION 100
Note: This question is a part of a series of questions that use the same or similar answer choices. An

answer choice may be correct for more than one question in the series. Each question is independent of the other questions in this series. Information and details provided in a question apply only to that question.

You manage on-premises and Microsoft Azure SQL Database instances for a company. Your environment must support the Microsoft SQL Server 2012 ODBS driver.

You need to encrypt only specific columns in the database.

What should you implement?

A. transport-level encryption
B. cell-level encryption
C. Transparent Data Encryption
D. Always Encrypted
E. Encrypting File System
F. BitLocker
G. dynamic data masking

Correct Answer: D
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
To encrypt columns you can configure Always Encrypted.
SQL Server Management Studio (SSMS) provides a wizard that helps you easily configure Always Encrypted by setting up the column master key, column encryption key, and encrypted columns for you.
Always Encrypted allows client applications to encrypt sensitive data and never reveal the data or the encryption keys to SQL Server or Azure SQL Database. An Always Encrypted enabled driver, such as the ODBC Driver 13.1 for SQL Server, achieves this by transparently encrypting and decrypting sensitive data in the client application.

Note: The ODBC driver automatically determines which query parameters correspond to sensitive database columns (protected using Always Encrypted), and encrypts the values of those parameters before passing the data to SQL Server or Azure SQL Database. Similarly, the driver transparently decrypts data retrieved from encrypted database columns in query results.

References:
https://docs.microsoft.com/en-us/azure/sql-database/sql-database-always-encrypted-azure-key-vault#encrypt-columns-configure-always-encrypted

https://msdn.microsoft.com/en-us/library/mt637351(v=sql.110).aspx

QUESTION 101
Note: This question is a part of a series of questions that use the same or similar answer choices. An answer choice may be correct for more than one question in the series. Each question is independent of the other questions in this series. Information and details provided in a question apply only to that question.

Your company has several Microsoft Azure SQL Database instances.

Data encryption should be allowed to be implemented by the client applications that access the data. Encryption keys should not be made available to the database engine.

You need to configure the database.

What should you implement?

A. transport-level encryption
B. cell-level encryption
C. Transparent Data Encryption
D. Always Encrypted
E. Encrypting File System
F. BitLocker
G. dynamic data masking

Correct Answer: A
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Using encryption during transit with Azure File Shares
Azure File Storage supports HTTPS when using the REST API, but is more commonly used as an SMB file share attached to a VM.
HTTPS is a transport-level security protocol.

Incorrect Answers:
C: TDE encrypts the storage of an entire database by using a symmetric key called the database encryption key. In SQL Database the database encryption key is protected by a built-in server certificate.

References: https://docs.microsoft.com/en-us/azure/storage/storage-security-guide#encryption-in-transit

QUESTION 102
Note: This questions is part of a series of questions that use the same or similar answer choices. An answer choice may be correct for more than one question in the series. Each question is independent of the other questions in this series. Information and details provided in a question apply only to that question.

You deploy Microsoft SQL Server to a virtual machine in Azure. You distribute the database files and filegroups across multiple Azure storage disks.

You must be able to manage the databases as individual entities by using SQL Server Management Studio. All data in the databases must be stored encrypted. Backups must be encrypted by using the same key as the live copy of the database.

You need to secure the data.

What should you implement?

A. transport-level encryption
B. cell-level encryption
C. Transparent Data Encryption
D. Always Encrypted
E. Encrypting File System
F. BitLocker
G. dynamic data masking

Correct Answer: C
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Transparent data encryption (TDE) encrypts your databases, associated backups, and transaction log files at rest without requiring changes to your applications.
TDE encrypts the storage of an entire database by using a symmetric key called the database encryption key. In SQL Database the database encryption key is protected by a built-in server certificate. The built-in server certificate is unique for each SQL Database server.

References: https://msdn.microsoft.com/en-us/library/dn948096.aspx

QUESTION 103
You are deploying a Microsoft SQL Server database that will support a mixed OLTP and OLAP workload. The target virtual machine has four CPUs.

You need to ensure that reports do not use all available system resources.

What should you do?

A. Increase the default database file auto growth sizes.
B. Increase the value for the Minimum System Memory setting.
C. Set MAXDOP to half the number of CPUs available.
D. Increase the value for the Minimum Memory per query setting.

Correct Answer: C
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
When an instance of SQL Server runs on a computer that has more than one microprocessor or CPU, it detects the best degree of parallelism, that is, the number of processors employed to run a single statement, for each parallel plan execution. You can use the max degree of parallelism (MAXDOP) option to limit the number of processors to use in parallel plan execution.

Incorrect Answers:
A: The Auto Close property exposes server behavior for databases not accessed by a user. This feature will be removed in a future version of Microsoft SQL Server. Avoid using this feature in new development work, and plan to modify applications that currently use this feature.

References: https://msdn.microsoft.com/en-us/library/ms189094.aspx

QUESTION 104
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You have a mission-critical application that stores data in a Microsoft SQL Server instance. The application runs several financial reports. The reports use a SQL Server-authenticated login named `Reporting_User`. All queries that write data to the database use Windows authentication.

Users report that the queries used to provide data for the financial reports take a long time to complete. The queries consume the majority of CPU and memory resources on the database server. As a result, read-write queries for the application also take a long time to complete.

You need to improve performance of the application while still allowing the report queries to finish.

Solution: You create a snapshot of the database. You configure all report queries to use the database snapshot.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Use a Resource Governor instead.
References: https://msdn.microsoft.com/en-us/library/bb933866.aspx

QUESTION 105
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You have Microsoft SQL Server on a Microsoft azure virtual machine that has 12 databases.

All database files are in the same Azure Blob storage account.

You need to receive an email notification if I/O operations to the database files exceed 800 MB/s for more than five minutes.

Solution: You run the **Add-AzureRmMetricAlertRule** cmdlet and specify the **–MetricName 'Disk Write Operations/Sec'** parameter.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:

QUESTION 106
You have Microsoft SQL Server on a Microsoft Azure Virtual machine. The virtual machine has a database named DB1.

You need to identify the fragmentation percentage for the indexes of DB1.

Which dynamic management view should you query?

A. **sys.dm_db_index_operational_stats**
B. **sys.dm_db_index_physical_stats**
C. **sys.dm_db_xtp_hash_index_stats**
D. **sys.dm_db_index_usage_stats**

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/sql/relational-databases/system-dynamic-management-views/sys-dm-db-index-physical-stats-transact-sql?view=sql-server-2017

QUESTION 107
DRAG DROP

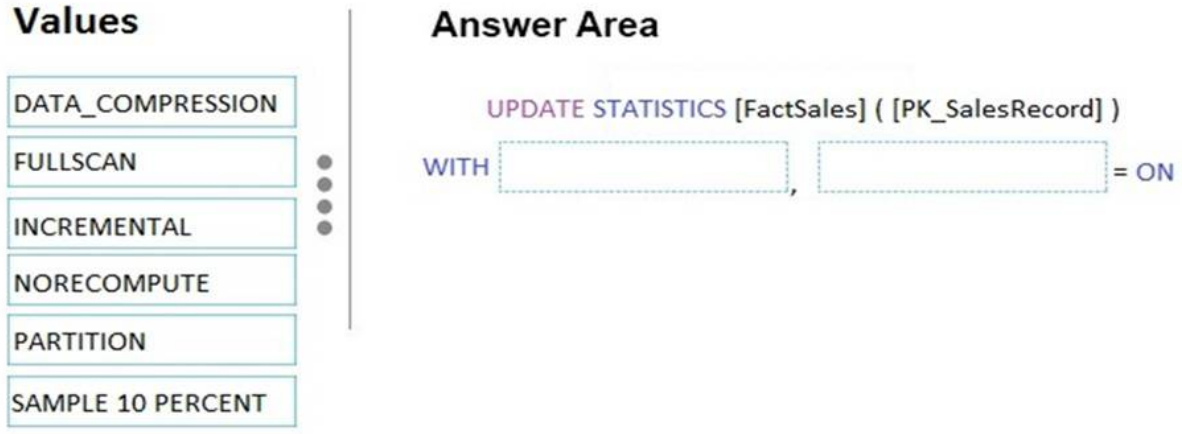
You have a fact table named **FactSales** that is 100 GB. **FactSales** is in a data warehouse that is partitioned by month.

You discover that queries perform index scan operations when the queries should perform index seek operations.

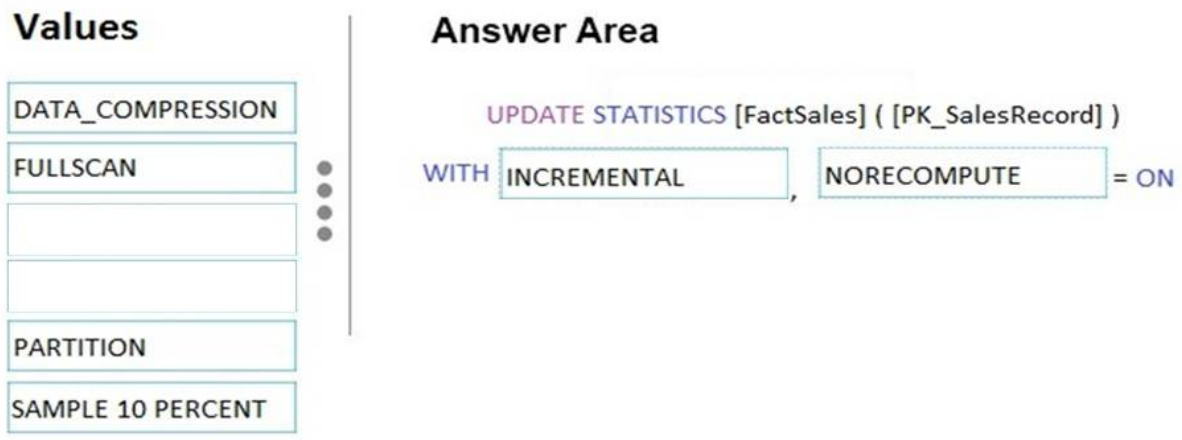
You need to optimize the query plan to reduce the number of scans.

How should you complete the statement? 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.

Select and Place:



Correct Answer:



Section: Manage databases and instances
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/sql/t-sql/statements/update-statistics-transact-sql?view=sql-server-2017

QUESTION 108
You have the databases configured as shown in the following table.

Database name	Location	Platform
DB1	Microsoft Azure	Microsoft Azure SQL Database
DB2	Microsoft Azure	Microsoft SQL Server 2016 on a Microsoft Azure virtual machine
DB3	On-premises	Microsoft SQL Server 2016
DB4	On-premises	Microsoft SQL Server 2014

Which two databases can use the Stretch Database feature? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

A. DB1
B. DB2
C. DB3
D. DB4

Correct Answer: AC
Section: Manage databases and instances
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/sql/sql-server/stretch-database/enable-stretch-database-for-a-database?view=sql-server-2017

QUESTION 109
You have a database named DB1 that is 3 TB. DB1 contains a fact table that is 1.2 TB.

You load 200 GB of new data to the fact table from a line-of-business application.

Users of DB1 notice that reports render more slowly after you loaded the data.

What are two possible causes of the performance issue? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

A. transaction log growth
B. out-of-date statistics
C. page corruption
D. index fragmentation

Correct Answer: BD
Section: Manage databases and instances
Explanation

Explanation/Reference:
References:
https://www.sqlshack.com/gathering-sql-server-indexes-statistics-and-usage-information/

QUESTION 110
HOTSPOT

Your company has a single Microsoft SQL Server instance that hosts all company databases.

The SQL Server has the following configuration requirements:

The SQL Server Agent service is configured to start automatically on the SQL instance.
Autogrowth for databases is not permitted.
The SQL Server instance contains a database named Orders that stores order information from a web site application.
The MaxSize property for the database is set to 1 gigabyte (GB).

The SQL Server must email an administrator when the Orders database falls below 20 percent of available disk space.

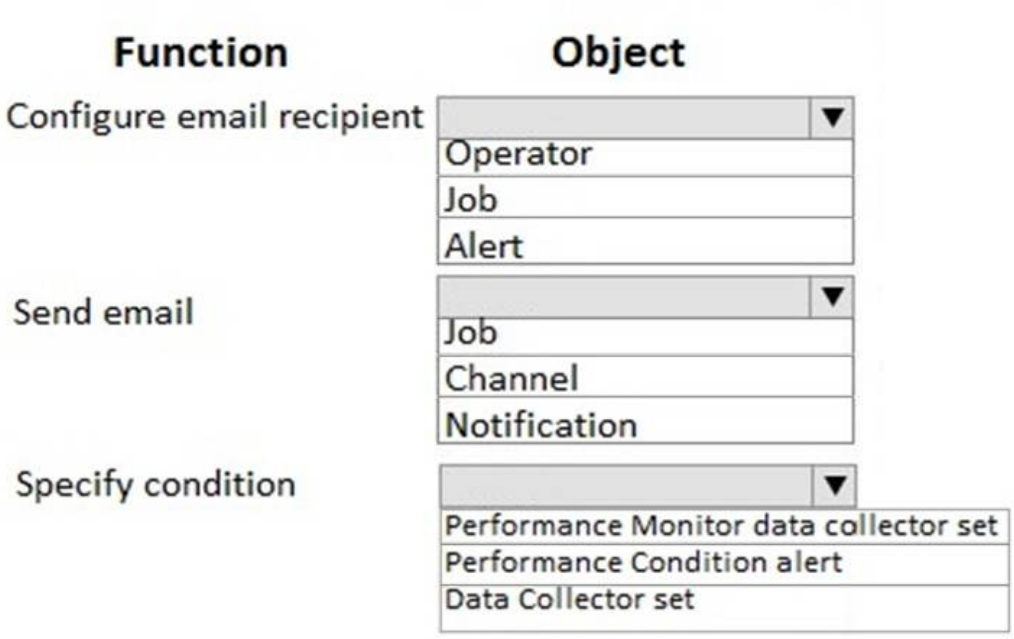
You need to configure SQL Server objects to enable the email alerts.

Which SQL Server objects should you create? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

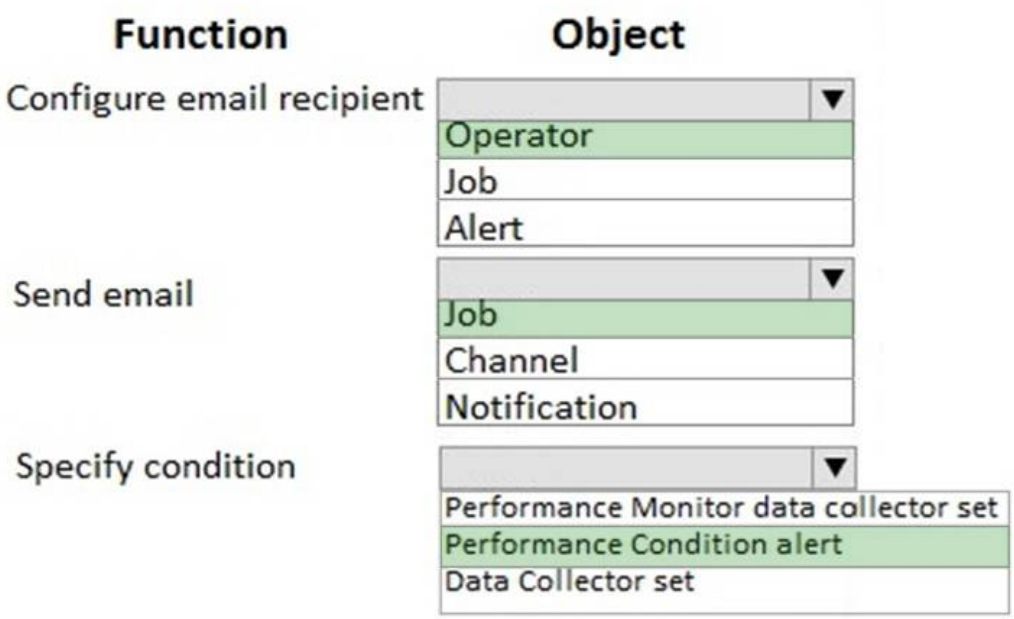
Hot Area:

Answer area



Correct Answer:

Answer area



Section: Manage databases and instances
Explanation

Explanation/Reference:
References:

https://solutioncenter.apexsql.com/how-to-be-proactively-alerted-of-sql-server-performance-problems/

QUESTION 111
You have a Microsoft Azure SQL Database instance named **Sales**. Customer contact data is stored in a table named Customers. The customers table has a field named PhoneNo. This fields stores are code and telephone number in a format that resembles the following: 999-999-9999.

Members of the sales team must be able to see all digits in the PhoneNo field. For all users, the area code must be viewable. All other digits must be hidden.

You need to configure the **Sales** database.

What should you do?

A. Enable Dynamic Data Masking on the column and use the partial function
B. Enable always Encrypted on the column using the Randomized encryption type
C. Enable Dynamic Data Masking on the column and use the default function
D. Enable Transparent Data Encryption (TDE) on the **Sales** database

Correct Answer: C
Section: Manage databases and instances
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/sql/relational-databases/security/dynamic-data-masking?view=sql-server-2017

QUESTION 112
A company hosts a default installation of Microsoft SQL Server 2017 on a Linux-based server.

You observe that the performance of the server has degraded. Process for allocating tables show high latency.

You need to recommend a solution to improve performance when allocating tables.

What should you recommend?

A. Configure additional tempdb data files
B. Reinstall SQL Server on Linux
C. Set a memory limit for the SQL server
D. Increase the Virtual Address Space limit

Correct Answer: C
Section: Manage databases and instances
Explanation

Explanation/Reference:
References:
https://www.itprotoday.com/microsoft-sql-server/top-10-sql-server-performance-tuning-tips

QUESTION 113
You deploy a new Microsoft Azure SQL Database instance to support a variety of mobile applications and public websites.

You have the following requirements:

You must be able to replicate the database to Azure datacenters in other regions by using geo-replication.
Clients must only connect to the Azure SQL Database by using contained database users.
You must be able to move the database to other servers in the future.
Only applications in the 23.96.52.0-23.96.52.255 IP range are permitted to access the database.
The firewall settings for the instance must not provide access to any other Azure services.

You need to configure the firewall settings for the environment.

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

A. In the Azure portal, enable Allow access to Azure services for the Azure SQL Database server
B. Run the following Transact-SQL statement:
EXECUTE sp_set_database_firewall_rule N'Applications', '23.96.52.0', '23.96.52.255'
C. Run the following Transact-SQL statement:
EXECUTE sp_set_firewall_rule N'Allow Windows Azure', '0.0.0.0', '0.0.0.0'
D. Run the following Transact-SQL statement:
EXECUTE sp_set_firewall_rule N'Applications', '23.96.52.0', '23.96.52.255'
E. Run the following Transact-SQL statement:
EXECUTE sp_set_database_firewall_rule N'Allow Windows Azure', '0.0.0.0', '0.0.0.0'
F. In the Azure portal, disable Allow access to Azure services for the Azure SQL Database server

Correct Answer: BCF
Section: Manage databases and instances
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/sql/relational-databases/system-stored-procedures/sp-set-database-firewall-rule-azure-sql-database?view=azuresqldb-current

https://docs.microsoft.com/en-us/sql/relational-databases/system-stored-procedures/sp-set-firewall-rule-azure-sql-database?view=azuresqldb-current

https://docs.microsoft.com/en-us/azure/sql-database/sql-database-vnet-service-endpoint-rule-overview

QUESTION 114
HOTSPOT

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 questions in 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 in 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.

Background

You manage a Microsoft SQL Server environment that includes the following databases: **DB1**, **DB2**, **Reporting**.

The environment also includes SQL Server Reporting Services (SSRS) and SQL Server Analysis Services (SSAS). All SSRS and SSAS servers use named instances. You configure a firewall rule for SSAS.

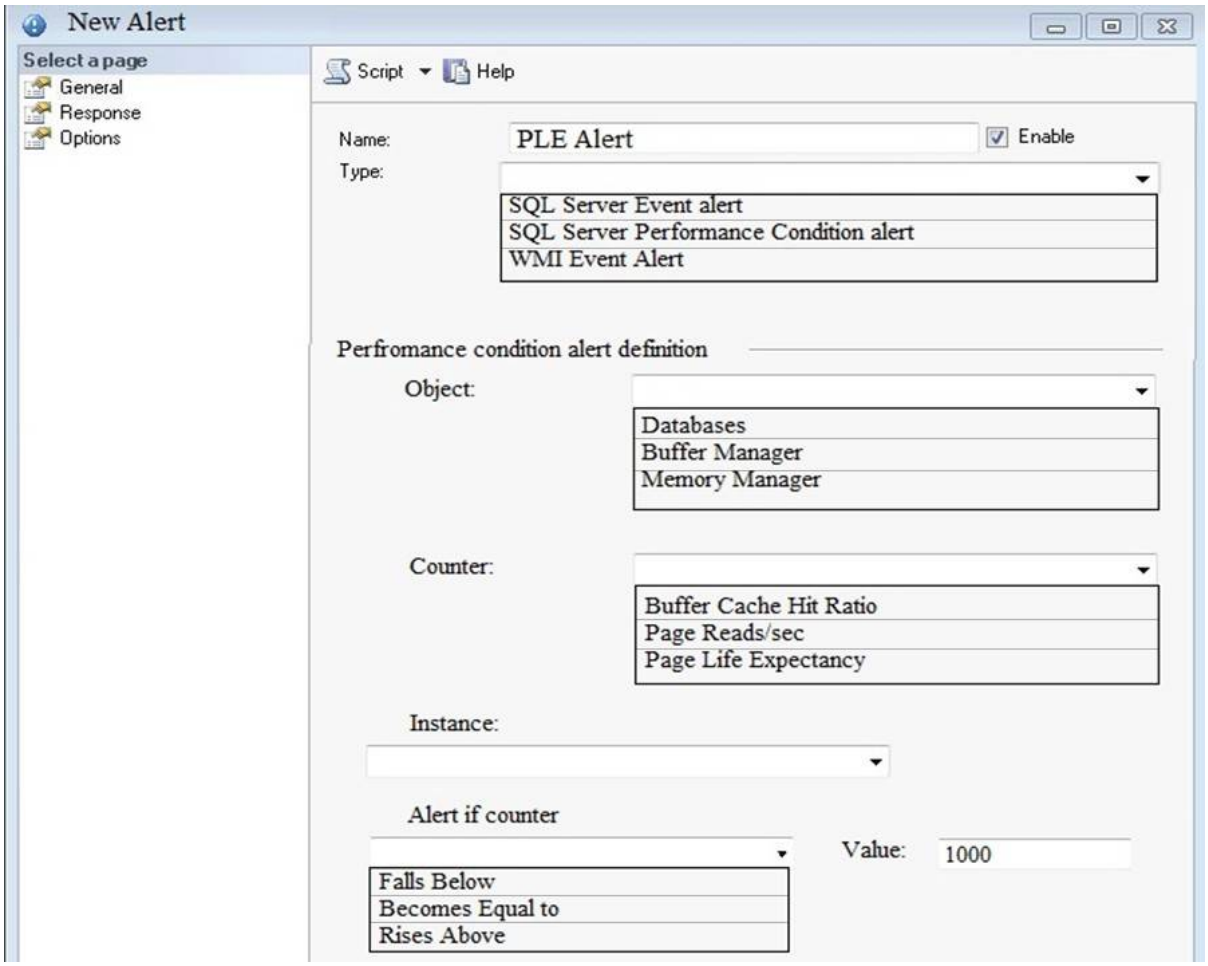
Databases

Database Name	Notes
DB1	This database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are inserted into DB1 or updated each second. Inserts are made by many different external applications that your company's developers do not control. You observe that transaction log write latency is a bottleneck in performance. Because of the transient nature of all data in this database, the business can tolerate some data loss in the event of a server shutdown.
DB2	This database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are updated or inserted per second. You observe that the WRITELOG wait type is the highest aggregated wait type. Most writes must have no tolerance for data loss in the event of a server shutdown. The business has identified certain write queries where data loss is tolerable in the event of a server shutdown.
Reporting	You create a SQL Server-authenticated login named BIAppUser on the SQL server instance to support users of the Reporting database. The BIAppUser login is not a member of the sysadmin role. You plan to configure performance-monitoring alerts for this instance by using SQL Agent Alerts.

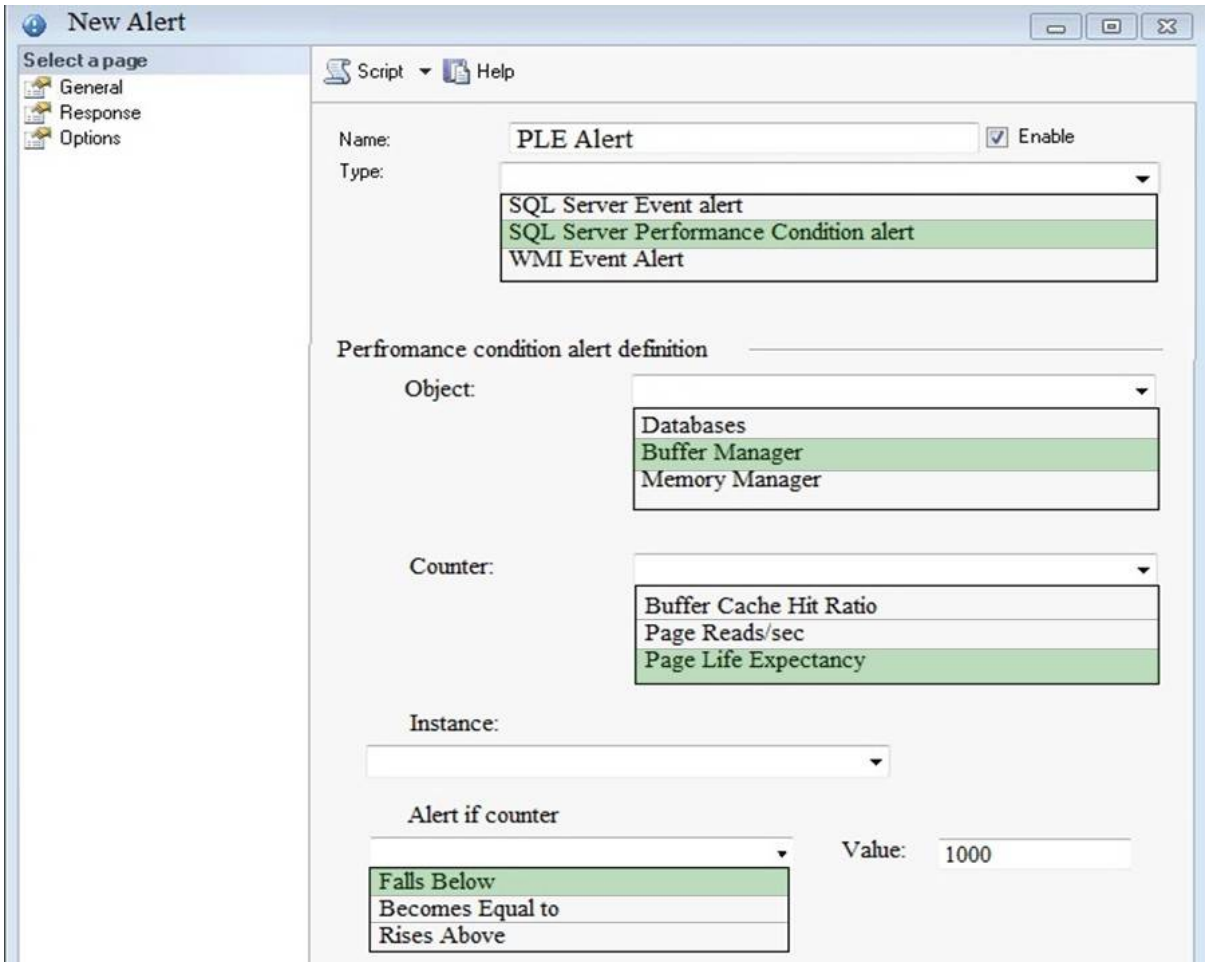
You need to create an alert that is triggered when the number of seconds that a page stays in the buffer pool without references is less than 1,000.

In the New Alert dialog box, how should you configure the alert? To answer, select the appropriate option from each list in the answer area.

Hot Area:



Correct Answer:



Section: Manage databases and instances
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/sql/relational-databases/performance-monitor/sql-server-buffer-manager-object?view=sql-server-2017

QUESTION 115
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You have a mission-critical application that stores data in a Microsoft SQL Server instance. The application runs several financial reports. The reports use a SQL Server-authenticated login named `Reporting_User`. All queries that write data to the database use Windows authentication.

Users report that the queries used to provide data for the financial reports take a long time to complete. The queries consume the majority of CPU and memory resources on the database server. As a result, read-write queries for the application also take a long time to complete.

You need to improve performance of the application while still allowing the report queries to finish.

Solution: You configure the Resource Governor to limit the amount of memory, CPU, and IOPS used for the pool of all queries that the `Reporting_user` login can run concurrently.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
SQL Server Resource Governor is a feature than you can use to manage SQL Server workload and system resource consumption. Resource Governor enables you to specify limits on the amount of CPU, physical IO, and memory that incoming application requests can use.

References: https://msdn.microsoft.com/en-us/library/bb933866.aspx

QUESTION 116
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You have a mission-critical application that stores data in a Microsoft SQL Server instance. The application runs several financial reports. The reports use a SQL Server-authenticated login named `Reporting_User`. All queries that write data to the database use Windows authentication.

Users report that the queries used to provide data for the financial reports take a long time to complete. The queries consume the majority of CPU and memory resources on the database server. As a result, read-write queries for the application also take a long time to complete.

You need to improve performance of the application while still allowing the report queries to finish.

Solution: You configure the Resource Governor to set the MAXDOP parameter to **0** for all queries against the database.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
SQL Server will consider parallel execution plans for queries, index data definition language (DDL) operations, and static and keyset-driven cursor population.
You can override the max degree of parallelism value in queries by specifying the MAXDOP query hint in the query statement.

References: https://technet.microsoft.com/en-us/library/ms181007(v=sql.105).aspx

QUESTION 117
HOTSPOT

Background

You manage the Microsoft SQL Server environment for a company that manufactures and sells automobile parts.

The environment includes the following servers: SRV1 and SRV2. SRV1 has 16 logical cores and hosts a SQL Server instance that supports a mission-critical application. The application has approximately 30,000 concurrent users and relies heavily on the use of temporary tables.

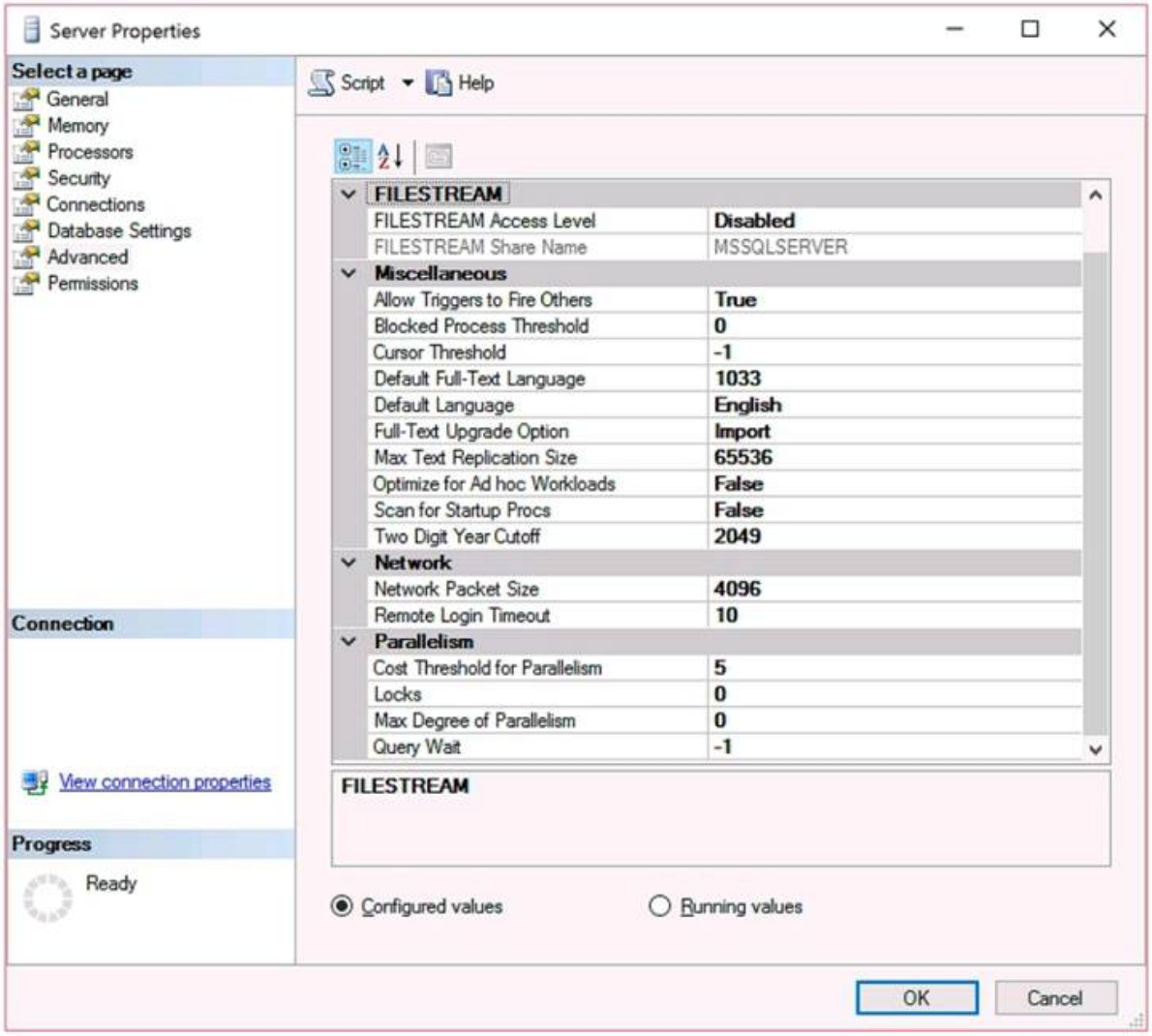
The environment also includes the following databases: DB1, DB2, and Reporting. The Reporting database is protected with Transparent Data Encryption (TDE). You plan to migrate this database to a new server. You detach the database and copy it to the new server.

You are performing tuning on a SQL Server database instance. The application which uses the database was written using an object relationship mapping (ORM) tool which maps tables as objects within the application code. There are 30 stored procedures that are regularly used by the application.

After reviewing the plan cache you have identified that a large number of simple queries are using parallelism, and that execution plans are not being kept in the plan cache for very long.

You review the properties of the instance (Click the **Exhibit** button).

Exhibit



You need to optimize SRV1.

What configuration changes should you implement? To answer, select the appropriate option from each list in the answer area.

Hot Area:

Answer Area

How should you modify the tempdb configuration?

- Change the recovery model of tempdb.
- Change the number of tempdb files.
- Change the size of the tempdb log file.
- Change the MAXDOP property.

How should you reconfigure the tempdb database?

- Add additional tempdb files.
- Remove tempdb files.
- Add tempdb log files.
- Remove tempdb log files.
- Set MAXDOP to 8.

Correct Answer:

Answer Area

How should you modify the tempdb configuration?

- Change the recovery model of tempdb.
- Change the number of tempdb files.
- **Change the size of the tempdb log file.**
- Change the MAXDOP property.

How should you reconfigure the tempdb database?

- **Add additional tempdb files.**
- Remove tempdb files.
- Add tempdb log files.
- Remove tempdb log files.
- Set MAXDOP to 8.

Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:

From the scenario: SRV1 has 16 logical cores and hosts a SQL Server instance that supports a mission-critical application. The application has approximately 30,000 concurrent users and relies heavily on the use of temporary tables.

Box 1: Change the size of the tempdb log file.
The size and physical placement of the tempdb database can affect the performance of a system. For example, if the size that is defined for tempdb is too small, part of the system-processing load may be taken up with autogrowing tempdb to the size required to support the workload every time you restart the instance of SQL Server. You can avoid this overhead by increasing the sizes of the tempdb data and log file.

Box 2: Add additional tempdb files.
Create as many files as needed to maximize disk bandwidth. Using multiple files reduces tempdb storage contention and yields significantly better scalability. However, do not create too many files because this can reduce performance and increase management overhead. As a general guideline, create one data file for each CPU on the server (accounting for any affinity mask settings) and then adjust the number of files up or down as necessary.

Incorrect Answers:
Not MAXDOP:
The MAXDOP setting is fine. From the exhibit we see that MAXDOP is set to 0. This is the default setting, which enables the server to determine the maximum degree of parallelism.

Note: When an instance of SQL Server runs on a computer that has more than one microprocessor or CPU, it detects the best degree of parallelism, that is, the number of processors employed to run a single statement, for each parallel plan execution. You can use the max degree of parallelism option to limit the number of processors to use in parallel plan execution.

References: https://technet.microsoft.com/en-us/library/ms175527(v=sql.105).aspx

QUESTION 118
HOTSPOT

Background

You manage a Microsoft SQL Server environment that includes the following databases: DB1, DB2, Reporting.

The environment also includes SQL Reporting Services (SSRS) and SQL Server Analysis Services (SSAS). All SSRS and SSAS servers use named instances. You configure a firewall rule for SSAS.

Databases

Database Name:
DB1

Notes:
This database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are inserted into DB1 or updated each second. Inserts are made by many different external applications that your company's developers do not control. You observe that transaction log write latency is a bottleneck in performance. Because of the transient nature of all the data in this database, the business can tolerate some data loss in the event of a server shutdown.

Database Name:
DB2

Notes:
This database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are updated or inserted per second. You observe that the WRITELOG wait type is the highest aggregated wait type. Most writes must have no tolerance for data loss in the event of a server shutdown. The business has identified certain write queries where data loss is tolerable in the event of a server shutdown.

Database Name:
Reporting

Notes:
You create a SQL Server-authenticated login named BIAppUser on the SQL Server instance to support users of the Reporting database. The BIAppUser login is not a member of the sysadmin role.

You plan to configure performance-monitoring alerts for this instance by using SQL Agent Alerts.

You need to open the firewall ports for use with SQL Server environment.

In table below, identify the firewall port that you must use for each service.

NOTE: Make only one selection in each column.

Hot Area:

Answer Area

Port number	Report Server	SQL Server Browser service for SSAS
80	○	○
135	○	○
1433	○	○
2382	○	○

Correct Answer:

Answer Area

Port number	Report Server	SQL Server Browser service for SSAS
80	○	○
135	○	○
1433	○	○
2382	○	○

Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:

Report Server: 80
By default, the report server listens for HTTP requests on port 80.

Incorrect Answers:
Not 1433: If you are accessing SQL Server relational databases on external computers, or if the report server database is on an external SQL Server instance, you must open port 1433 and 1434 on the external computer. In this scenario there is no mention of an external server.

SQL Server Browser service for SSAS: 1433
How SQL Server Browser Works
When an instance of SQL Server starts, if the TCP/IP protocol is enabled for SQL Server, the server is assigned a TCP/IP port. If the named pipes protocol is enabled, SQL Server listens on a specific named pipe. This port, or "pipe," is used by that specific instance to exchange data with client applications. During installation, TCP port 1433 and pipe \sql\query are assigned to the default instance,

References:
https://msdn.microsoft.com/en-us/library/bb934283.aspx

https://technet.microsoft.com/en-us/library/ms181087(v=sql.130).aspx

QUESTION 119
HOTSPOT

Background

You manage a Microsoft SQL Server environment that includes the following databases: DB1, DB2, Reporting.

The environment also includes SQL Reporting Services (SSRS) and SQL Server Analysis Services (SSAS). All SSRS and SSAS servers use named instances. You configure a firewall rule for SSAS.

Databases

Database Name:
DB1

Notes:
This database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are inserted into DB1 or updated each second. Inserts are made by many different external applications that your company's developers do not control. You observe that transaction log write latency is a bottleneck in performance. Because of the transient nature of all the data in this database, the business can tolerate some data loss in the event of a server shutdown.

Database Name:
DB2

Notes:
This database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are updated or inserted per second. You observe that the WRITELOG wait type is the highest aggregated wait type. Most writes must have no tolerance for data loss in the event of a server shutdown. The business has identified certain write queries where data loss is tolerable in the event of a server shutdown.

Database Name:
Reporting

Notes:
You create a SQL Server-authenticated login named BIAppUser on the SQL Server instance to support users of the Reporting database. The BIAppUser login is not a member of the sysadmin role.

You plan to configure performance-monitoring alerts for this instance by using SQL Agent Alerts.

You need to maximize performance of writes to each database without requiring changes to existing database tables.

In the table below, identify the database setting that you must configure for each database.

NOTE: Make only one selection in each column. Each correct selection is worth one point.

Hot Area:

Answer Area

Database setting	DB1	DB2
DELAYED_DURABILITY = FORCED	○	○
DELAYED_DURABILITY = ALLOWED	○	○
ALLOW_SNAPSHOT_ISOLATION ON	○	○
ALLOW_SNAPSHOT_ISOLATION ON and READ_COMMITTED_SNAPSHOT ON	○	○
AUTO_UPDATE_STATISTICS_ASYNC ON	○	○

Correct Answer:

Answer Area

Database setting	DB1	DB2
DELAYED_DURABILITY = FORCED	○	○
DELAYED_DURABILITY = ALLOWED	○	○
ALLOW_SNAPSHOT_ISOLATION ON	○	○
ALLOW_SNAPSHOT_ISOLATION ON and READ_COMMITTED_SNAPSHOT ON	○	○
AUTO_UPDATE_STATISTICS_ASYNC ON	○	○

Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
DB1: DELAYED_DURABILITY=FORCED
From scenario: Thousands of records are inserted into DB1 or updated each second. Inserts are made by many different external applications that your company's developers do not control. You observe that transaction log write latency is a bottleneck in performance. Because of the transient nature of all the data in this database, the business can tolerate some data loss in the event of a server shutdown.

With the DELAYED_DURABILITY=FORCED setting, every transaction that commits on the database is delayed durable.

With the DELAYED_DURABILITY= ALLOWED setting, each transaction's durability is determined at the transaction level.

Note: Delayed transaction durability reduces both latency and contention within the system because:
The transaction commit processing does not wait for log IO to finish and return control to the client.
Concurrent transactions are less likely to contend for log IO; instead, the log buffer can be flushed to disk in larger chunks, reducing contention, and increasing throughput.

DB2: ALLOW_SNAPSHOT_ISOLATION ON and READ_COMMITTED_SNAPSHOT ON
Snapshot isolation enhances concurrency for OLTP applications.
Snapshot isolation must be enabled by setting the ALLOW_SNAPSHOT_ISOLATION ON database option before it is used in transactions.

The following statements activate snapshot isolation and replace the default READ COMMITTED behavior with SNAPSHOT:
ALTER DATABASE MyDatabase
SET ALLOW_SNAPSHOT_ISOLATION ON

ALTER DATABASE MyDatabase
SET READ_COMMITTED_SNAPSHOT ON

Setting the READ_COMMITTED_SNAPSHOT ON option allows access to versioned rows under the default READ COMMITTED isolation level.

From scenario: The DB2 database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are updated or inserted per second. You observe that the WRITELOG wait type is the highest aggregated wait type. Most writes must have no tolerance for data loss in the event of a server shutdown. The business has identified certain write queries where data loss is tolerable in the event of a server shutdown.

References:
https://msdn.microsoft.com/en-us/library/dn449490.aspx
https://msdn.microsoft.com/en-us/library/tcbchxcb(v=vs.110).aspx

QUESTION 120
You administer a Microsoft SQL Server 2012 server. One of the databases on the server supports a highly active OLTP application.

Users report abnormally long wait times when they submit data into the application.

You need to identify which queries are taking longer than 1 second to run over an extended period of time.

What should you do?

A. Use SQL Profiler to trace all queries that are processing on the server. Filter queries that have a Duration value of more than 1,000.
B. Use **sp_configure** to set a value for blocked process threshold. Create an extended event session.

C. Use the Job Activity monitor to review all processes that are actively running. Review the Job History to find out the duration of each step.
D. Run the **sp_who** command from a query window.
E. Run the `DBCC TRACEON 1222` command from a query window and review the SQL Server event log.

Correct Answer: A
Section: Manage databases and instances
Explanation

Explanation/Reference:
Incorrect Answers:
E: DBCC TRACEON 1222 is used to detect deadlocks, not to detect long running queries.

References:
http://www.mssqltips.com/sqlservertip/2130/finding-sql-server-deadlocks-using-trace-flag-1222/
http://msdn.microsoft.com/en-us/library/ms188396.aspx

QUESTION 121
You administer a Microsoft SQL Server database.

You need to ensure that the size of the transaction log file does not exceed 2 GB.

What should you do?

A. Execute sp_configure 'max log size', 2G.
B. Use the `ALTER DATABASE...SET LOGFILE` command along with the maxsize parameter.
C. In SQL Server Management Studio, right-click the instance and select **Database Settings**. Set the maximum size of the file for the transaction log.
D. in SQL Server Management Studio, right-click the database, select **Properties**, and then click **Files**. Open the Transaction log Autogrowth window and set the maximum size of the file.

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
You can use the ALTER DATABASE (Transact-SQL) statement to manage the growth of a transaction log file To control the maximum the size of a log file in KB, MB, GB, and TB units or to set growth to UNLIMITED, use the MAXSIZE option. However, there is no SET LOGFILE subcommand.

References:
https://technet.microsoft.com/en-us/library/ms365418(v=sql.110).aspx#ControlGrowth

QUESTION 122
You plan to deploy a Microsoft SQL Server database engine instance to an existing server. The server is in a remote location that is not physically secure. It is the only server in that location. The server runs a read-only domain controller (RODC), read-only DNS server, and read-only global catalog server.

You are not permitted to add other Windows roles and features. You must not remove the RODC feature from the server. The SQL Server installation process fails.

You need to modify the environment to allow the installation of SQL Server while minimizing costs.

What should you do?

A. Promote the RODC to PDC emulator.
B. Install the Hyper-V role and create a virtual machine (VM) for the SQL Server instance.
C. Disable the RODC role.
D. Add a new server and install the SQL Server instance on the server.

Correct Answer: D
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
We must add a new stand-alone server as we are unable to remove the RODC role and we are not allowed to add other Windows roles and features.

Note: To install SQL Server on a RODC, you must create the appropriate users and groups on a writeable DC and ensure that they are replicated to the RODC before installing SQL Server.

Incorrect Answers:
A, B: PDC Emulator and Hyper-V role are additional roles, and we are not allowed to add other Windows roles and features.
C: We must not remove the RODC feature from the server.

QUESTION 123
DRAG DROP

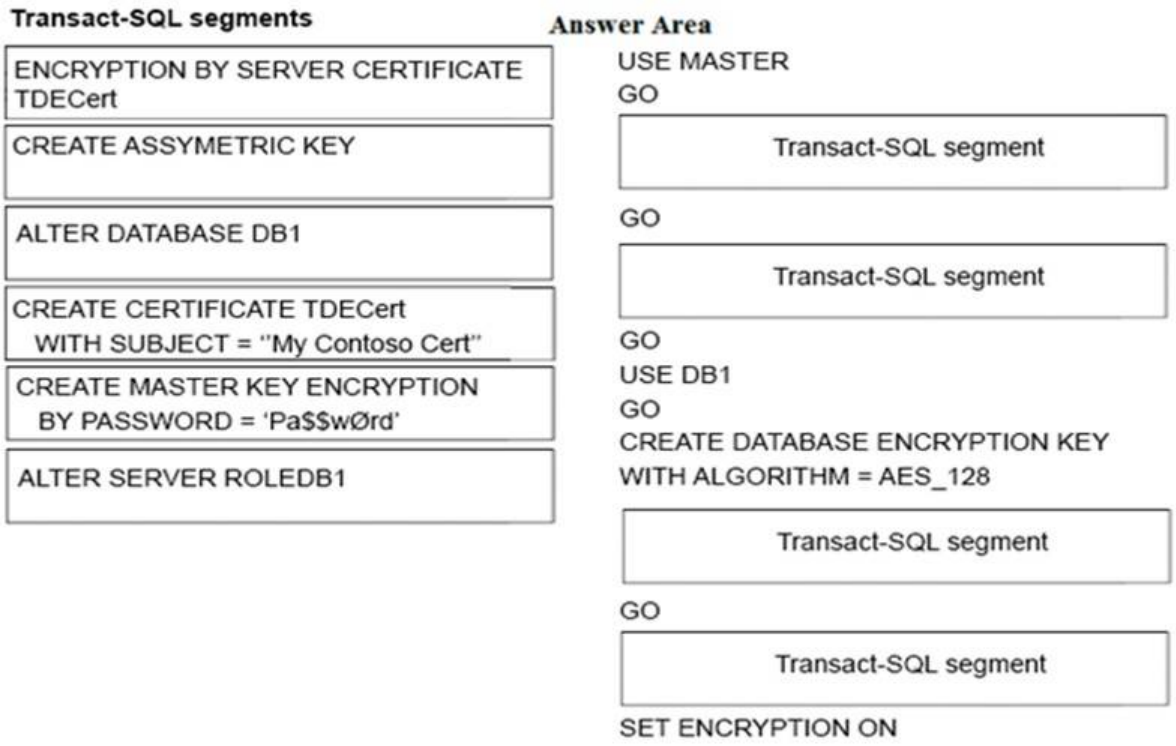
You have a database named DB1 in a Microsoft Azure virtual machine (VM). You install a certificate named TDECert on the server.

You must encrypt all data at rest and provide real-time encryption and decryption for transmitted and received data.

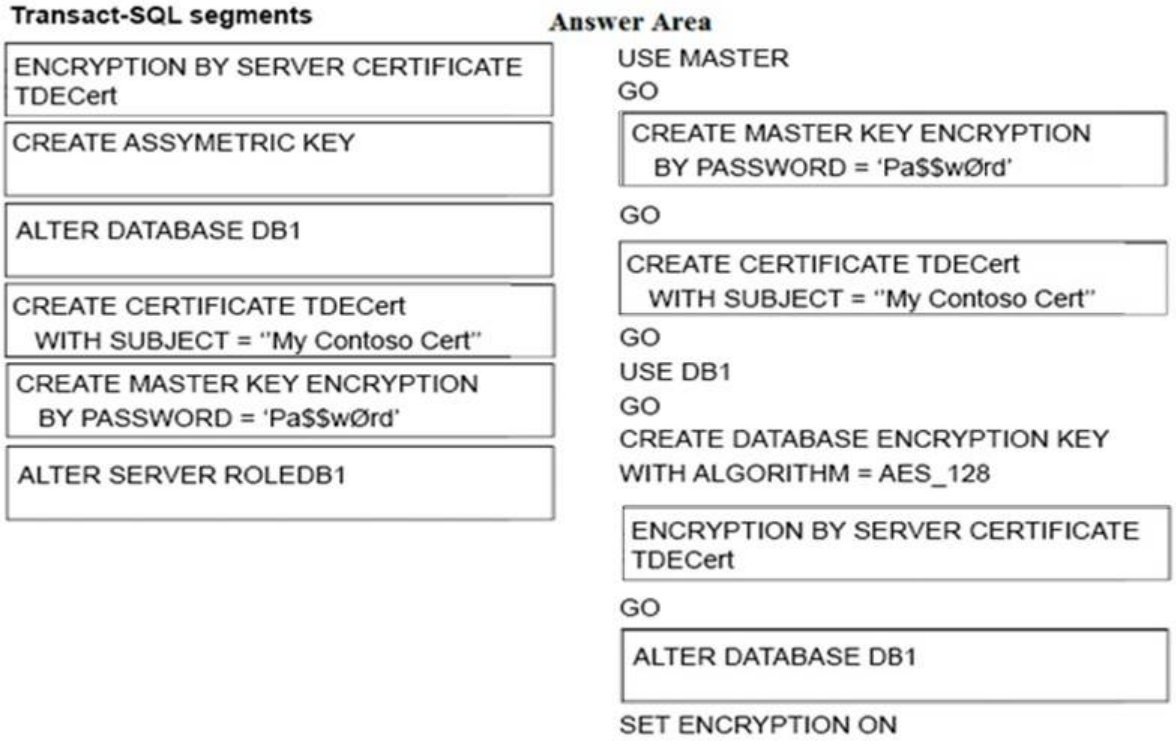
You need to implement Transparent Data Encryption for DB1.

How should you complete the Transact-SQL statements? To answer, drag the appropriate Transact-SQL segments to the correct locations. Each Transact-SQL segment 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.

Select and Place:



Correct Answer:



Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:

To use TDE, follow these steps.
- Create a master key
- Create or obtain a certificate protected by the master key
- Create a database encryption key and protect it by the certificate
- Set the database to use encryption

Example:

```
USE master;
GO

CREATE MASTER KEY ENCRYPTION BY PASSWORD = '<UseStrongPasswordHere>';
GO

CREATE CERTIFICATE MyServerCert WITH SUBJECT = 'My Certificate';
GO

USE AdventureWorks2012;
GO

CREATE DATABASE ENCRYPTION KEY
WITH ALGORITHM = AES_128
ENCRYPTION BY SERVER CERTIFICATE MyServerCert;
GO

ALTER DATABASE AdventureWorks2012
SET ENCRYPTION ON;
GO
```

References:
https://docs.microsoft.com/en-us/sql/relational-databases/security/encryption/transparent-data-encryption?view=sql-server-2017

QUESTION 124
DRAG DROP

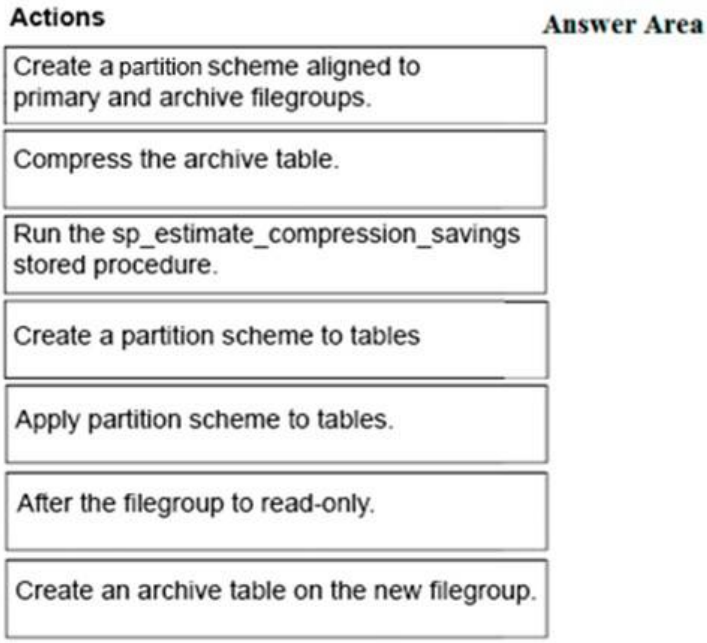
You manage a large data warehouse.

You must archive data that is more than two years old. The data must all be accessible without code changes. You create a new volume for the data archive and create a new file group named Archive.

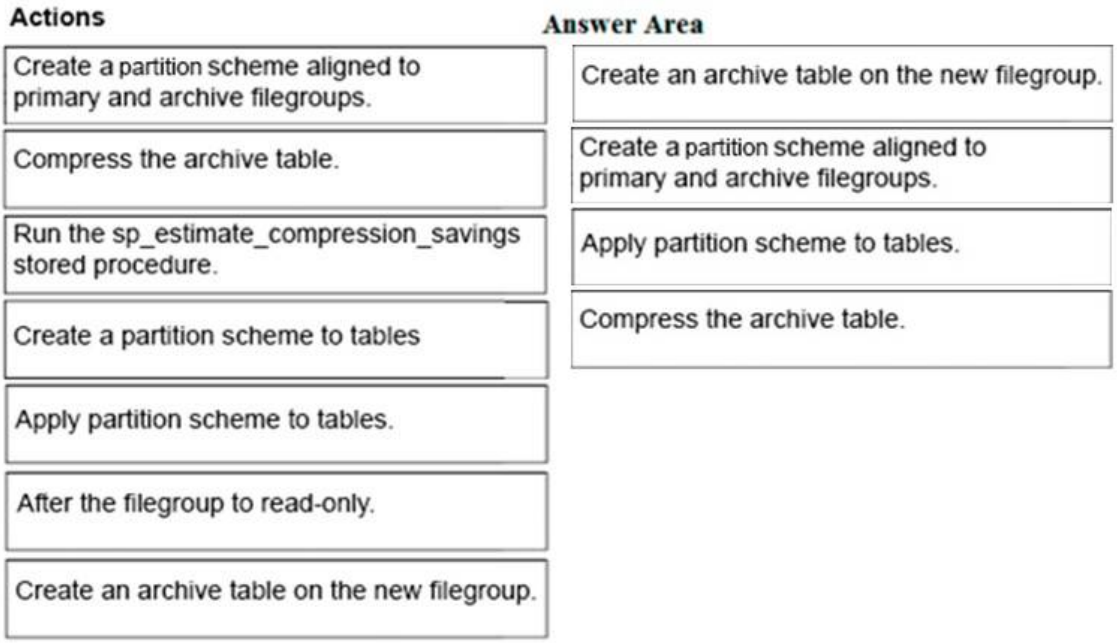
You need to develop a storage that will minimize space utilization and protect data from accidental deletion.

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: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Step 1: Create an archive table on the new filegroup

Step 2: Create a partition scheme aligned to primary and archive filegroups
Creates a scheme in the current database that maps the partitions of a partitioned table or index to filegroups.

Step 3: Apply partition scheme to tables

Step 4: Compress the archive table

References:
https://www.sqlshack.com/archiving-sql-server-data-using-partitions/

QUESTION 125
DRAG DROP

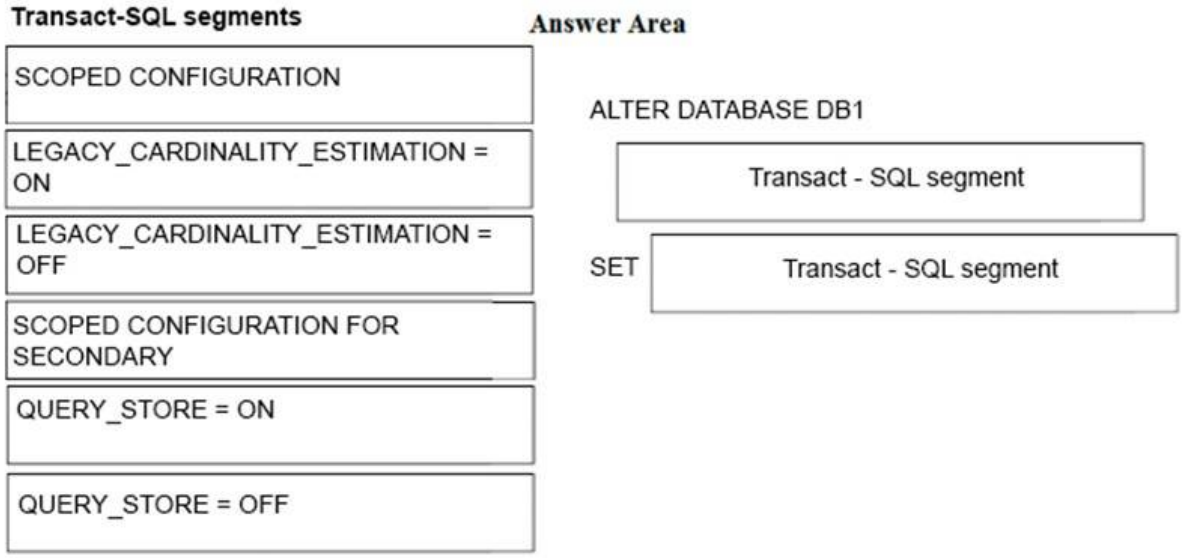
You upgrade a database named DB1 to Microsoft SQL Server 2016.

Users report that performance for several queries is degraded. You determine that the query optimizer is incorrectly estimating the number of rows that the queries will return.

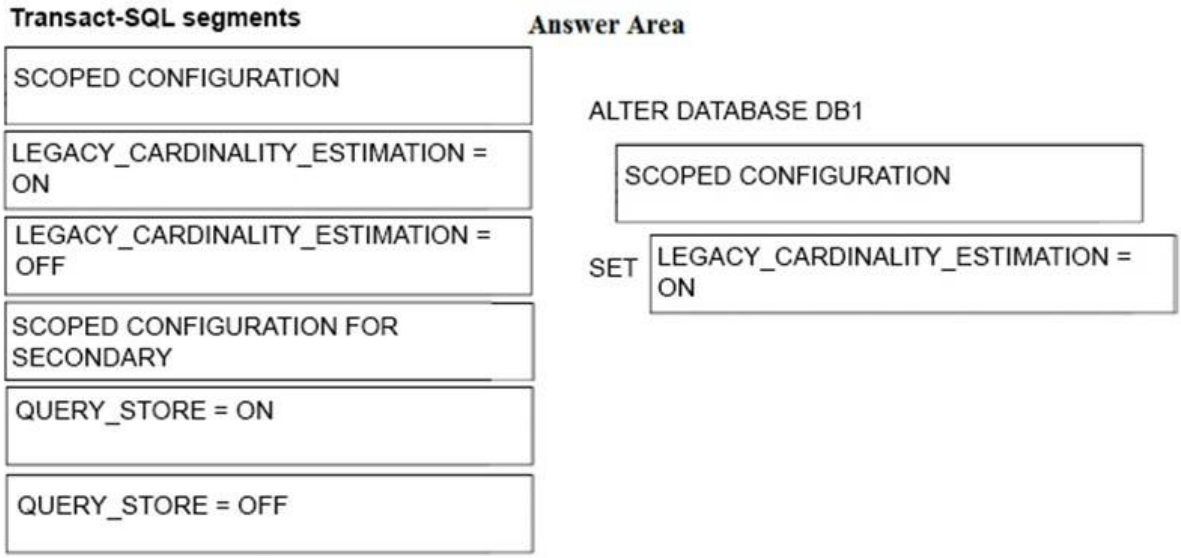
You need to resolve the performance issues.

How should you complete the Transact-SQL statement? To answer, drag the Transact-SQL segments to the correct locations. Each Transact-SQL segment 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.

Select and Place:



Correct Answer:



Section: Manage databases and instances
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/sql/t-sql/statements/alter-database-scoped-configuration-transact-sql?view=sql-server-2017

QUESTION 126
HOTSPOT

A company has an on-premises Microsoft SQL Server 2016 environment.

All futures databases must meet the following requirements:

- The recovery model must be set to simple.
- The compatibility level must be set to SQL server 2014 (120).

Your need to configure the SQL Server 2016 environment.

In the table below, identify the database you must modify for each requirement.

NOTE: Make only one selection in each column.

Hot Area:

Answer Area

System database	Recovery model	Compatibility level
Master	○	○
Msdb	○	○
Model	○	○
Resource	○	○
Tempdb	○	○

Correct Answer:

Answer Area

System database	Recovery model	Compatibility level
Master	○	○
Msdb	○	○
Model	○	○
Resource	○	○
Tempdb	○	○

Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:

The model database sets the default recovery model of new databases.

The default compatibility level of new databases is set to the version of the Database Engine unless the model database has a lower compatibility level.

References:
https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/view-or-change-the-recovery-model-of-a-database-sql-server?view=sql-server-2017

https://docs.microsoft.com/en-us/sql/t-sql/statements/alter-database-transact-sql-compatibility-level?view=sql-server-2017

QUESTION 127
You manage a Microsoft SQL Server instance named SQL1 that has 32 gigabytes (GB) of total memory. The instance supports an app named App1 that only uses a single thread. App1 frequently queries the database using the same index. The operating system and App1 combined require 8 GB of memory to function.

You need to ensure that the SQL Server does not limit the performance of App1.

What configuration option should you set?

A. min worker threads to 1
B. max server memory to 24 GB
C. max worker threads to 1
D. min server memory to 16 GB

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:
Explanation:
Before you set the amount of memory for SQL Server, determine the appropriate memory setting by subtracting, from the total physical memory, the memory required for the OS, memory allocations not controlled by the max_server_memory setting, and any other instances of SQL Server (and other system uses, if the computer is not wholly dedicated to SQL Server). This difference is the maximum amount of memory you can assign to the current SQL Server instance.

References:
https://docs.microsoft.com/en-us/sql/database-engine/configure-windows/server-memory-server-configuration-

options?view=sql-server-2017

QUESTION 128
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 section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are tuning the performance of a virtual machine that hosts a Microsoft SQL Server instance.

The virtual machine originally had four CPU cores and now has 32 CPU cores.

The SQL Server instance uses the default settings and has an OLTP database named db1. The largest table in db1 is a key value store table named table1.

Several reports use the PIVOT statement and access more than 100 million rows in table1.

You discover that when the reports run, there are PAGELATCH_IO waits on PFS pages 2:1:1, 2:2:1, 2:3:1, and 2:4:1 within the tempdb database.

You need to prevent the PAGELATCH_IO waits from occurring.

Solution: You add more files to tempdb.

Does this solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage databases and instances
Explanation

Explanation/Reference:

QUESTION 129
You are developing customized Microsoft Azure Resource Group templates to automate the process of deploying Microsoft SQL Server in Azure to enforce consistency during future deployments.

You need to deploy the customized templates to the Azure environment and to external endpoints.

Which resource value should you populate?

A. resources
B. name
C. tags
D. properties

Correct Answer: A
Section: Manage databases and instances
Explanation

Explanation/Reference:

QUESTION 130
You need to ensure that the columns are protected.

What should you use?

A. Azure Key Vault
B. cell-level encryption
C. Always Encrypted
D. persistent data masking

Correct Answer: A
Section: Manage databases and instances
Explanation

Explanation/Reference:

QUESTION 131
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 sections, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You have Microsoft SQL Server on a Microsoft Azure virtual machine that has a database named DB1.

You discover that DB1 experiences WRITE_LOG waits that are longer than 50 ms.

You need to reduce the WRITE_LOG wait time.

Solution: Add additional data files to DB1.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
In SQL Server, if we have a transactional based system and find a high WRITELOG wait type this is a performance bottleneck and can cause the transaction log file to grow rapidly and frequently.
It is being recommended to SQL server users that they must archive the log files on a separate disk for getting better performance.

References: https://atdhebuja.wordpress.com/2016/06/20/resolving-sql-server-transaction-log-waits/

QUESTION 132
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 sections, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You have Microsoft SQL Server on a Microsoft Azure virtual machine that has a database named DB1.

You discover that DB1 experiences WRITE_LOG waits that are longer than 50 ms.

You need to reduce the WRITE_LOG wait time.

Solution: Add additional log files to tempdb.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
In SQL Server, if we have a transactional based system and find a high WRITELOG wait type this is a performance bottleneck and can cause the transaction log file to grow rapidly and frequently.
It is being recommended to SQL server users that they must archive the log files on a separate disk for getting better performance.

References: https://atdhebuja.wordpress.com/2016/06/20/resolving-sql-server-transaction-log-waits/

QUESTION 133
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 sections, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are tuning the performance of a virtual machine that hosts a Microsoft SQL Server instance.

The virtual machine originally had four CPU cores and now has 32 CPU cores.

The SQL Server instance uses the default settings and has an OLTP database named db1. The largest table in db1 is a key value store table named table1.

Several reports use the PIVOT statement and access more than 100 million rows in table1.

You discover that when the reports run, there are PAGELATCH_IO waits on PFS pages 2:1:1, 2:2:1, 2:3:1, and 2:4:1 within the tempdb database.

You need to prevent the PAGELATCH_IO waits from occurring.

Solution: You add more tempdb databases.

Does this meet the goal?

A. Yes

B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
From SQL Server's perspective, you can measure the I/O latency from sys.dm_os_wait_stats. If you consistently see high waiting for PAGELATCH_IO, you can benefit from a faster I/O subsystem for SQL Server.

A cause can be poor design of your database - you may wish to split out data located on 'hot pages', which are accessed frequently and which you might identify as the causes of your latch contention. For example, if you have a currency table with a data page containing 100 rows, of which 1 is updated per transaction and you have a transaction rate of 200/sec, you could see page latch queues of 100 or more. If each page latch wait costs just 5ms before clearing, this represents a full half-second delay for each update. In this case, splitting out the currency rows into different tables might prove more performant (if less normalized and logically structured).

References: https://www.mssqltips.com/sqlservertip/3088/explanation-of-sql-server-io-and-latches/

QUESTION 134
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 sections, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are tuning the performance of a virtual machine that hosts a Microsoft SQL Server instance.

The virtual machine originally had four CPU cores and now has 32 CPU cores.

The SQL Server instance uses the default settings and has an OLTP database named db1. The largest table in db1 is a key value store table named table1.

Several reports use the PIVOT statement and access more than 100 million rows in table1.

You discover that when the reports run, there are PAGELATCH_IO waits on PFS pages 2:1:1, 2:2:1, 2:3:1, and 2:4:1 within the tempdb database.

You need to prevent the PAGELATCH_IO waits from occurring.

Solution: You add more files to db1.

Does this meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:

From SQL Server's perspective, you can measure the I/O latency from sys.dm_os_wait_stats. If you consistently see high waiting for PAGELATCH_IO, you can benefit from a faster I/O subsystem for SQL Server.

A cause can be poor design of your database - you may wish to split out data located on 'hot pages', which are accessed frequently and which you might identify as the causes of your latch contention. For example, if you have a currency table with a data page containing 100 rows, of which 1 is updated per transaction and you have a transaction rate of 200/sec, you could see page latch queues of 100 or more. If each page latch wait costs just 5ms before clearing, this represents a full half-second delay for each update. In this case, splitting out the currency rows into different tables might prove more performant (if less normalized and logically structured).

References: https://www.mssqltips.com/sqlservertip/3088/explanation-of-sql-server-io-and-latches/

QUESTION 135
You are the administrator for a SQL Server 2016 instance that stores the data for an online transaction processing sales system. The company takes full backups every week; differential backups on the days with no full backups; and hourly transaction backups.

These backups are stored on a backup server in the company's data center.

Every week, the company places the full backup on a tape and sends it to a third-party backup storage system.

The company is worried that a disaster might occur that could destroy their computer center and cause them to lose orders.

You need to determine the best method for providing the smallest amount of data loss and downtime without leasing or purchasing additional physical locations.

What should you do? More than one answer choice may achieve the goal. Select the BEST answer.

A. Set up SQL Server Always On with a SQL Azure database as a replica.
B. Set up SQL Server Always On by using a SQL Server on a Windows Azure Virtual Machine.
C. Put the differential backup on tape and send it to the third-party backup storage system.
D. Use the Microsoft SQL Server Backup to Microsoft Windows Azure Tool to direct all backups to a different geographical location.

Correct Answer: D
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Microsoft SQL Server Backup to Microsoft Azure Tool enables backup to Azure Blob Storage and encrypts and compresses SQL Server backups stored locally or in the cloud.

References: https://www.microsoft.com/en-us/download/details.aspx?id=40740

QUESTION 136
You have a SQL Server 2016 database named DB1.

You plan to import a large number of records from a SQL Azure database to DB1.

You need to recommend a solution to minimize the amount of space used in the transaction log during the import operation.

What should you include in the recommendation?

A. The bulk-logged recovery model
B. The full recovery model
C. A new partitioned table
D. A new log file
E. A new file group

Correct Answer: A
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Compared to the full recovery model, which fully logs all transactions, the bulk-logged recovery model minimally logs bulk operations, although fully logging other transactions. The bulk-logged recovery model protects against media failure and, for bulk operations, provides the best performance and least log space usage.

Note: The bulk-logged recovery model is a special-purpose recovery model that should be used only intermittently to improve the performance of certain large-scale bulk operations, such as bulk imports of large amounts of data.

References:
https://technet.microsoft.com/en-us/library/ms190692(v=sql.105).aspx

QUESTION 137
You have Microsoft SQL Server on a DS-series Microsoft Azure virtual machine. The virtual machine has 28 GB of memory.

You discover the following performance statistics on the server:
The average Page life expectancy is 30.
The server has excessive PAGELATCH_IO waits.

You need to decrease the PAGELATCH_IO waits.

What should you do?

A. Enable large-page support.
B. Enable lock pages in memory.
C. Configure buffer pool extensions.
D. Add more tempdb files.

Correct Answer: D
Section: Manage Storage
Explanation

Explanation/Reference:
Reference: https://www.brentozar.com/archive/2014/05/tell-need-tempdb-files/

QUESTION 138
You have Microsoft SQL server on a Microsoft Azure virtual machine. The virtual machine has 200 GB of data.

User report a slow response time when querying the database.

You need to identify whether the storage subsystem causes the performance issue.

Which performance monitor counter should you view?

A. Data sec/Write
B. Avg.disk Read Queue Length
C. % Disk Read Time
D. Disk sec/Read

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:

QUESTION 139
You have Microsoft SQL Server on a Microsoft Azure Virtual machine that has a 4-TB database.

You plan to configure daily backups for the database. A single full backup will be approximately 1.5 TB of compressed data.

You need to ensure that the last 45 backups are retained.

Where should you store the daily backups?

A. Local storage
B. Page blob storage
C. Virtual disks
D. Block blob storage.

Correct Answer: D
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
When backing up to Microsoft Azure blob storage, SQL Server 2016 supports backing up to multiple blobs to enable backing up large databases, up to a maximum of 12.8 TB. This is done through Block Blobs.

Incorrect Answers:
A: Local storage is not guaranteed to be retained.

Reference: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sql/virtual-machines-windows-sql-backup-recovery

QUESTION 140
DRAG DROP

You have a Microsoft SQL Server that has a database named `DB1`. `DB1` has a data files on drive E and transaction logs on drive L.

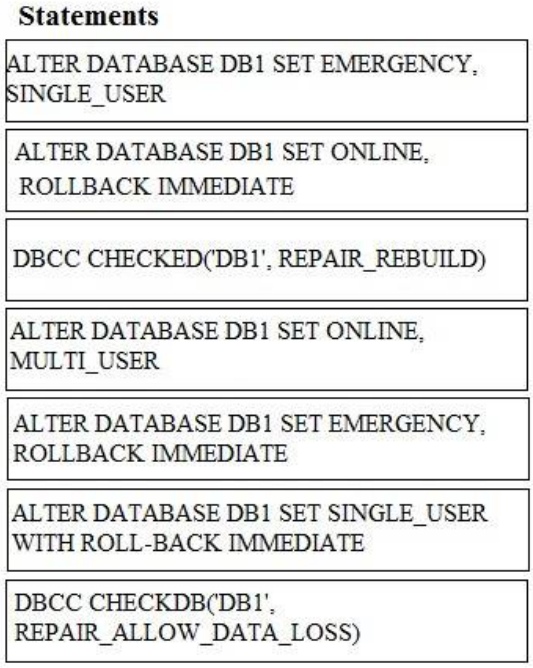
Drive L fails and is replaced.

You need to recover `DB1`. The solution must minimize data loss.

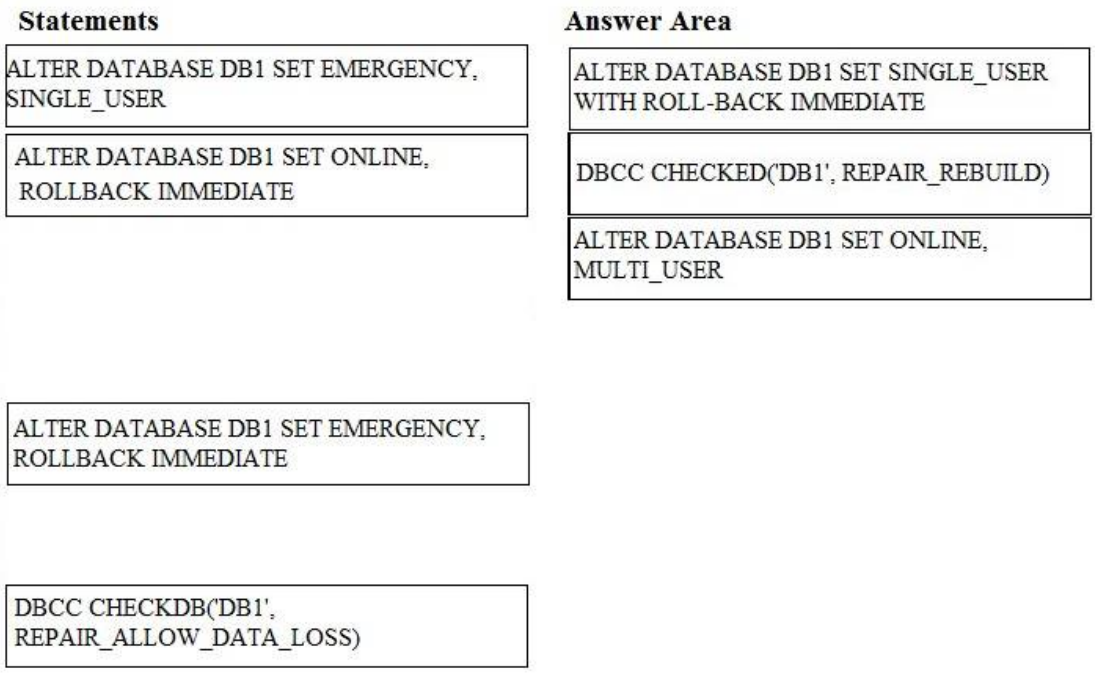
Which three statements should you execute in sequence? To answer, move the appropriate statements from

the list of statements to the answer area and arrange them in the correct order.

Select and Place:



Correct Answer:



Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
ALTER DATABASE '<your_database>' SET SINGLE_USER WITH ROLLBACK IMMEDIATE
GO

```
DBCC CHECKDB ('<your_database>', REPAIR_REBUILD)
GO

ALTER DATABASE '<your_database>' SET MULTI_USER
GO
```

Reference: https://social.msdn.microsoft.com/Forums/sqlserver/en-US/b56aee10-d74d-4bd5-b19d-a352ce3464a0/corruption-in-database-how-to-repair-rebuild?forum=transactsql

QUESTION 141
DRAG DROP

You have an on-premises database that runs several maintenance jobs.

You move the database to a Microsoft Azure SQL database.

You need to ensure that the maintenance jobs on indexes continue to run after the move.

In which order should you perform the actions? To answer, move all actions from the list of actions to the answer area and arrange them in the correct order.

Select and Place:

Actions, Select from these	Answer Area, Place here
Create a runbook	1.
Create an Automation Account	2.
Configure a schedule	3.
Create a credential	4.
Publish a runbook	5.

Correct Answer:

Actions, Select from these	Answer Area, Place here
	1. Create an Automation Account
	2. Create a credential
	3. Create a runbook
	4. Publish a runbook
	5. Configure a schedule

Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
General steps for a solution to automate the maintenance you Azure SQL DB statistics:
Create Azure automation account
Import SQLServer module
Add Credentials to access SQL DB
Add a runbook to run the maintenance

Schedule task

References: https://blogs.msdn.microsoft.com/azuresqldbsupport/2018/01/15/automating-azure-sql-db-index-and-statistic-maintenance-using-azure-automation/

QUESTION 142
You need to create an Elastic Database job to rebuild indexes across 10 Microsoft Azure SQL databases.

Which powershell cmdlet should you run?

A. **New-AzureSqlJob**
B. **New-AzureWebsiteJob**
C. **New-AzureBatchJob**
D. **New-ScheduledJobOption**
E. **New-JobTrigger**

Correct Answer: A
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
The New-AzureSqlJob cmdlet, in the ElasticDatabaseJobs module, creates a job definition to be used for subsequent job runs.

References: https://docs.microsoft.com/en-us/powershell/module/elasticdatabasejobs/new-azuresqljob?view=azureelasticdbjobsps-0.8.33

QUESTION 143
You have Microsoft SQL Server on a Microsoft Azure virtual machine.

You have two Windows accounts named `ServiceAccount1` and `ServiceAccount2`. The SQL Server Agent runs as `ServiceAccount1`.

You need to run SQL Server Agent job steps by using `ServiceAccount2`.

Which cmdlet should you run first?

A. **Set-ADServiceAccount**
B. **Set-SqlCredential**
C. **New-ADServiceAccount**
D. **New-SqlCredential**

Correct Answer: C
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
The New-ADServiceAccount command creates a new Active Directory managed service account or group managed service account object.

Incorrect Answers:
A: The Set-ADServiceAccount cmdlet modifies the properties of an Active Directory managed service account (MSA). You can modify commonly used property values by using the cmdlet parameters.

B: The Set-SqlCredential cmdlet sets the Identity and password properties for a SQL Credential object using this cmdlet.
D: The New-SqlCredential cmdlet creates a new SQL Server credential object. A SQL Server credential object is used to store authentication information. The SQL Server credential is required when backing up to or restoring from the Windows Azure storage service, and is used to store the Windows Azure storage account name and access key information.

References: https://docs.microsoft.com/en-us/powershell/module/addsadministration/new-adserviceaccount?view=win10-ps

QUESTION 144
DRAG DROP

You have an on-premises Microsoft SQL Server named Server1.

You provision a Microsoft Azure SQL Database server named Server2.

On Server1, you create a database named DB1.

You need to enable the Stretch Database feature for DB1.

Which five 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:

Actions	Answer Area
-Create a master key in the master database	1.
-Create a firewall rule in Azure	2.
-Create a master key in DB1	3.
-Enable the remote data archive option in DB1	4.
-Create a database scoped credential for authentication to Azure.	5.
-Create a server-level credential for authentication to Azure.	

Correct Answer:

Actions	Answer Area
-Create a master key in DB1	1. -Enable the remote data archive option in DB1
	2. -Create a firewall rule in Azure
	3. -Create a master key in the master database
	4. -Create a database scoped credential for authentication to Azure.
	5. -Create a server-level credential for authentication to Azure.

Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Step 1: Enable the remote data archive option in DB1
Prerequisite: Enable Stretch Database on the server
Before you can enable Stretch Database on a database or a table, you have to enable it on the local server.
To enable Stretch Database on the server manually, run sp_configure and turn on the remote data archive option.

Step 2: Create a firewall rule in Azure
On the Azure server, create a firewall rule with the IP address range of the SQL Server that lets SQL Server communicate with the remote server.

Step 3: Create a master key in the master database
To configure a SQL Server database for Stretch Database, the database has to have a database master key.

The database master key secures the credentials that Stretch Database uses to connect to the remote database.

Step 4: Create a database scoped credential for authentication to Azure
When you configure a database for Stretch Database, you have to provide a credential for Stretch Database to use for communication between the on premises SQL Server and the remote Azure server. You have two options.

You can provide an administrator credential.
You can use a federated service account for the SQL Server to communicate with the remote Azure server.

Step 5: Create a server-level credential for authentication to Azure.
To configure a database for Stretch Database, run the ALTER DATABASE command.

For the SERVER argument, provide the name of an existing Azure server, including the .database.windows.net portion of the name - for example, MyStretchDatabaseServer.database.windows.net.

Provide an existing administrator credential with the CREDENTIAL argument, or specify FEDERATED_SERVICE_ACCOUNT = ON. The following example provides an existing credential.

```
ALTER DATABASE <database name>
   SET REMOTE_DATA_ARCHIVE = ON
      (
         SERVER = '<server_name>' ,
         CREDENTIAL = <db_scoped_credential_name>
      ) ;
GO
```

References: https://docs.microsoft.com/en-us/sql/sql-server/stretch-database/enable-stretch-database-for-a-database?view=sql-server-2017

QUESTION 145
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You manage a Microsoft SQL Server environment with several databases.

You need to ensure that queries use statistical data and do not initialize values for local variables.

Solution: You set the value of the MAXDOP parameter to 2.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
When an instance of SQL Server runs on a computer that has more than one microprocessor or CPU, it detects the best degree of parallelism, that is, the number of processors employed to run a single statement,

for each parallel plan execution. You can use the max degree of parallelism (MAXDOP) option to limit the number of processors to use in parallel plan execution.

References: https://docs.microsoft.com/en-us/sql/database-engine/configure-windows/configure-the-max-degree-of-parallelism-server-configuration-option?view=sql-server-2017

QUESTION 146
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You have Microsoft SQL Server on a Microsoft Azure virtual machine that has a database named DB1.

You discover that DB1 experiences WRITE_LOG waits that are longer than 50 ms.

You need to reduce the WRITE_LOG wait time.

Solution: Add additional log files to DB1.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
This problem is related to the disk response time, not to the number of log files.

References: https://www.mssqltips.com/sqlservertip/4131/troubleshooting-sql-server-transaction-log-related-wait-types/

QUESTION 147
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You use a Microsoft Azure SQL database as a data warehouse. The database is in the Standard service tier and has 400 elastic database throughput units (eDTUs).

You load data to the database by using Azure Data Factory.

You need to reduce the amount of time it takes to load the data.

Solution: You move the database to a Premium database pool that has 125 eDTUs.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
We need at least 400 eDTUs.

References:
https://docs.microsoft.com/en-us/azure/sql-database/sql-database-dtu-resource-limits

QUESTION 148
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You use a Microsoft Azure SQL database as a data warehouse. The database is in the Standard service tier and has 400 elastic database throughput units (eDTUs).

You load data to the database by using Azure Data Factory.

You need to reduce the amount of time it takes to load the data.

Solution: You move the database to a Basic database pool that has 1,600 eDTUs.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
We need the use of a Standard database pool.

References:
https://docs.microsoft.com/en-us/azure/sql-database/sql-database-dtu-resource-limits

QUESTION 149
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You use a Microsoft Azure SQL database as a data warehouse. The database is in the Standard service tier and has 400 elastic database throughput units (eDTUs).

You load data to the database by using Azure Data Factory.

You need to reduce the amount of time it takes to load the data.

Solution: You move the database to a Standard elastic pool that has 800 eDTUs.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
We need at least 400 eDTUs and the use of a Standard database pool.

References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-dtu-resource-limits

QUESTION 150
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You are tuning the performance of a virtual machine that hosts a Microsoft SQL Server instance.

The virtual machine originally had four CPU cores and now has 32 CPU cores.

The SQL Server instance uses the default settings and has an OLTP database named db1. The largest table in db1 is a key value store table named table1.

Several reports use the PIVOT statement and access more than 100 million rows in table1. You discover that when the reports run, there are PAGELATCH_IO waits on PFS pages 2:1:1, 2:2:1, 2:3:1, and 2:4:1 within the tempdb database.

You need to prevent the PAGELATCH_IO waits from occurring.

Solution: You rewrite the queries to use aggregates instead of PIVOT statements.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Instead you can add more files to the database.

References: https://www.mssqltips.com/sqlservertip/3088/explanation-of-sql-server-io-and-latches/

QUESTION 151
You are migrating an on-premises Microsoft SQL Server instance to SQL Server on a Microsoft Azure virtual machine. The instance has 30 databased that consume a total of 2 TB of disk space. The instance sustains more than 30,000 transactions per second.

You need to provision storage for the virtual machine. The storage must be able to support the same load as the on-premises deployment.

Solution: You use drive D on the virtual machine to store the database files.

Does this meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
The D drive should only be used for temporary data.

QUESTION 152
You have a database named DB1 that contains a table named Table1. Tabe1 has a non-clustered index named index1.

You discover that index1 is corrupt.

You need to repair index1.

Which statement should you execute?

A. `DBCC CHECKDB ('db1', REPAIR_FAST)`
B. `ALTER INDEX indx1 ON table1 REBUILD WITH (ONLINE-ON)`
C. `ALTER INDEX index1 ON table1 REORGANIZE`
D. `DBCC CHECKDB ('db1', DATA_PURITY)`

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
If REBUILD is performed online (ON) the data in this table is available for queries and data modification during the index operation.

Incorrect Answers:
A: REPAIR_FAST maintains syntax for backward compatibility only. No repair actions are performed.
D: DATA_PURITY causes DBCC CHECKDB to check the database for column values that are not valid or out-of-range.

References:
https://docs.microsoft.com/en-us/sql/t-sql/statements/alter-index-transact-sql?view=sql-server-2017

https://docs.microsoft.com/en-us/sql/t-sql/database-console-commands/dbcc-checkdb-transact-sql?view=sql-server-2017

QUESTION 153
DRAG DROP

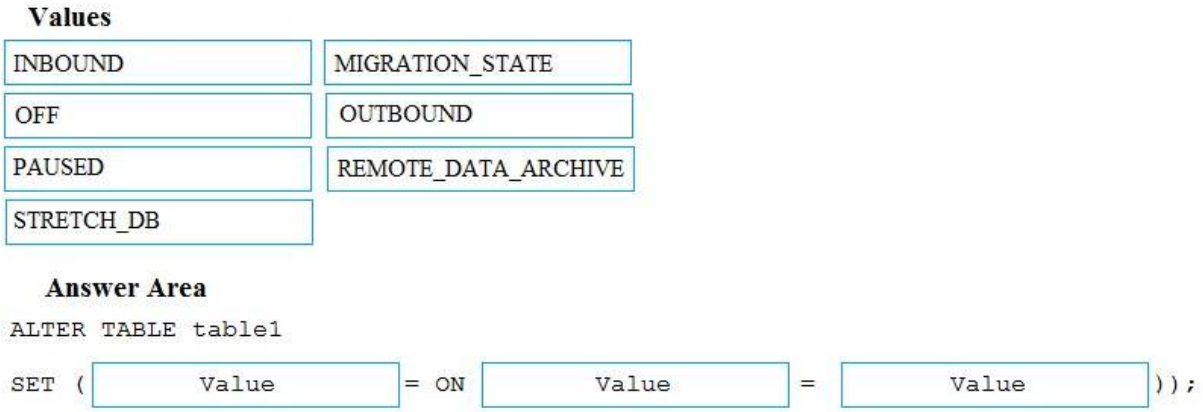
You plan to enable Stretch Database for a table named `Table1`.

You need to configure `Table1` to move the data to Microsoft Azure. The data must be moved at a later time.

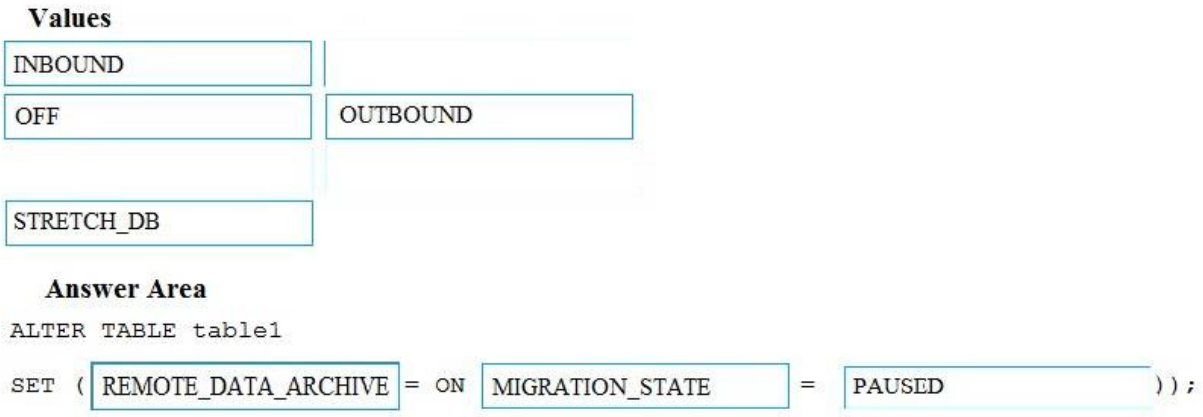
How should you complete the statement? To answer, drag the appropriate values to the correct targets. Each value may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:

When you enable Stretch for a table by specifying ON, you also have to specify MIGRATION_STATE = OUTBOUND to begin migrating data immediately, or MIGRATION_STATE = PAUSED to postpone data

migration.

Syntax:
<stretch_configuration> ::=
{
SET (
REMOTE_DATA_ARCHIVE
{
= ON (<table_stretch_options>)
| = OFF_WITHOUT_DATA_RECOVERY (MIGRATION_STATE = PAUSED)
| (<table_stretch_options> [, ...n])
}
)
}

References: https://docs.microsoft.com/en-us/sql/t-sql/statements/alter-table-transact-sql?view=sql-server-2017

QUESTION 154
You have Microsoft SQL Server on a Microsoft Azure virtual machine.

You create a SQL Server Agent job by using the following statement.

```
EXEC msdb.sp_add_jobstep @job_name=N'Look for issues', @step_name=N'First check',
     @step_id=1,
     @cmdexec_success_code=0,
     @on_success_action=1,
     @on_fail_action=2,
     @retry_attempts=0,
     @retry_interval=0,
     @os_run_priority=0, @subsystem=N'TSQL',
     @command=N'BEGIN TRY
DBCC CheckDB
END TRY
BEGIN CATCH
RAISERROR(51000, ''Consistency error in DB1'', 18, 1) WITH LOG
END CATCH',
     @database_name=N 'DB1',
     @flags=0
GO
```

You need to send an email message if the job fails.

Which stored procedure should you use?

A. `msdb.dbo.sp_update_alert`
B. `msdb.dbo.sp_add_jobstep`
C. `msdb.dbo.sp_add_notification`
D. `msdb.dbo.sp_help_alert`
E. `msdb.dbo.sp_help_jobactivity`

Correct Answer: C
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
To notify an operator of job status through Transact-SQL.
In Object Explorer, connect to an instance of Database Engine.

On the Standard bar, click New Query.

```
-- adds an e-mail notification for the specified alert (Test Alert).
-- This example assumes that Test Alert already exists
--  and that François Ajenstat is a valid operator name.
USE msdb ;
GO
EXEC dbo.sp_add_notification
@alert_name = N'Test Alert',
@operator_name = N'François Ajenstat',
@notification_method = 1 ;
GO
```

References: https://docs.microsoft.com/en-us/sql/ssms/agent/notify-an-operator-of-job-status?view=sql-server-2017

QUESTION 155
You have an on-premises SQL Server database named DB1 that contains a table named TB1. TB1 is stretched to Microsoft Azure.

A catastrophic hardware failure occurs on the on-premises SQL server.

You deploy a new on-premises server and restore all databases to the new server.

You need to resume Stretch Database operations to Azure.

Which statements should you execute?

A.
```
ALTER TABLE tb1
     SET (REMOTE_DATA_ARCHIVE ( MIGRATION_STATE = PAUSE ) ) ;
GO
sp_rda_get_rpo_duration
```

B.
```
EXEC sp_rda_reauthorize_db @credential = <credential>;
GO
ALTER TABLE tb1
     SET ( REMOTE_DATA_ARCHIVE = ON (
          FILTER_PREDICATE = dbo.fn_stretchpredicae(),
          MIGRATION_STATE = OUTBOUND) );
```

C.
```
sp_rda_deauthorize_db
GO
ALTER TABLE tb1
     SET ( REMOTE_DATA_ARCHIVE( MIGRATION_STATE = PAUSE ) ) ;
          FILTER PREDICATE = db
GO
EXEC sp_rda_reauthorize_db @credential = <credential>;
GO
```

D.
```
GO
EXEC sp_rda_reauthorize_db @credential = <credential>;
GO
CREATE TABLE tb1
    ...
    WITH ( REMOTE_DATA_ARCHIVE = ON ( MIGRATION_STATE = OUTBOUND) );
```

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Use ALTER TABLE, not CREATE TABLE.
When you enable Stretch for a table by specifying ON, you also have to specify MIGRATION_STATE = OUTBOUND to begin migrating data immediately, or MIGRATION_STATE = PAUSED to postpone data migration.

Syntax:
<stretch_configuration> ::=
```
  {
    SET (
      REMOTE_DATA_ARCHIVE
      {
          = ON (  <table_stretch_options>  )
        | = OFF_WITHOUT_DATA_RECOVERY ( MIGRATION_STATE = PAUSED )
        | ( <table_stretch_options> [, ...n] )
      }
          )
  }
```

References: https://docs.microsoft.com/en-us/sql/t-sql/statements/alter-table-transact-sql?view=sql-server-2017

QUESTION 156
HOTSPOT

You have a Microsoft Azure SQL Database server named server1-contoso.database.windows.net in a resource group named RG1.

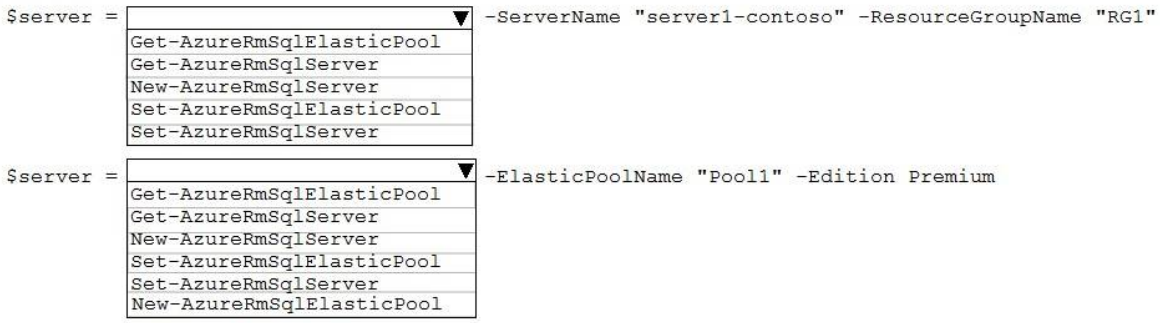
You need to create an elastic pool.

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

NOTE: Each correct selection is worth one point.

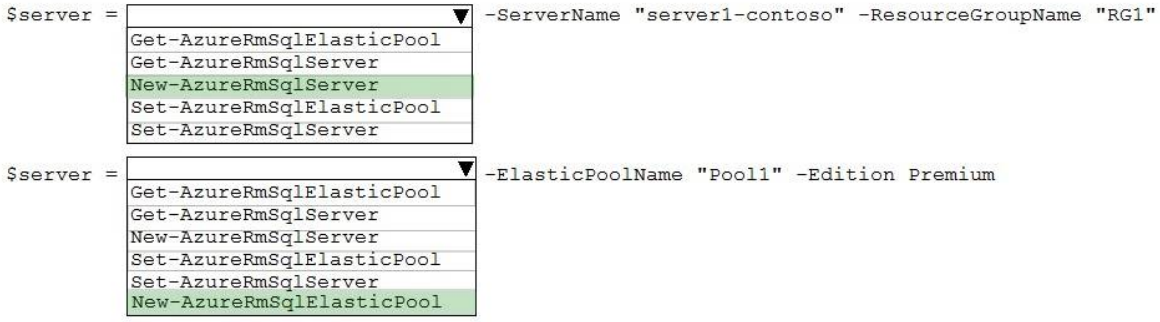
Hot Area:

Answer Area



Correct Answer:

Answer Area



Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:

Box 1: New-AzureRmSqlServer
Create an Azure SQL Database logical server using the New-AzureRmSqlServer command. A logical server contains a group of databases managed as a group.
Example:
New-AzureRmSqlServer -ResourceGroupName $resourcegroupname `
-ServerName $servername `
-Location $location `etc.

Box 2: New-AzureRmSqlElasticPool
The New-AzureRmSqlElasticPool cmdlet creates an elastic database pool for an Azure SQL Database.
Example:
New-AzureRmSqlElasticPool -ResourceGroupName "ResourceGroup01" -ServerName "Server01" -ElasticPoolName "ElasticPool01" -Edition "Standard"

References:

https://docs.microsoft.com/en-us/azure/sql-database/sql-database-get-started-powershell

https://docs.microsoft.com/en-us/powershell/module/azurerm.sql/new-azurermsqlelasticpool?view=azurermps-6.8.0

QUESTION 157
A company has an on-premises Microsoft SQL Server 2017 infrastructure. The storage area network (SAN) that supports the SQL infrastructure has reached maximum capacity.

You need to recommend a solution to reduce on-premises storage use without changing the application.

What should you do?

A. Configure an Express Route connection to Microsoft Azure.
B. Configure a Microsoft Azure Key Vault.
C. Configure geo-replication on the SAN.
D. Configure SQL Server Stretch Database in Microsoft Azure.

Correct Answer: D
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Stretch warm and cold transactional data dynamically from SQL Server to Microsoft Azure with SQL Server Stretch Database. Unlike typical cold data storage, your data is always online and available to query. Benefit from the low cost of Azure rather than scaling expensive, on-premises storage.

References: https://docs.microsoft.com/en-us/sql/sql-server/stretch-database/stretch-database?view=sql-server-2017

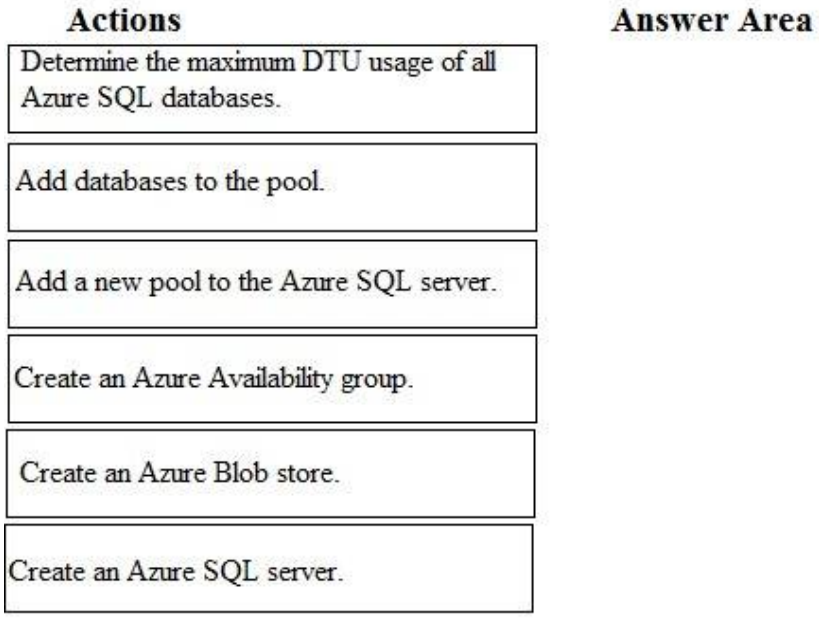
QUESTION 158
DRAG DROP

Your company has many Microsoft SQL Server instances hosted in a data center. You also manage five Microsoft Azure SQL Database instances that are hosted on a single server in Azure.

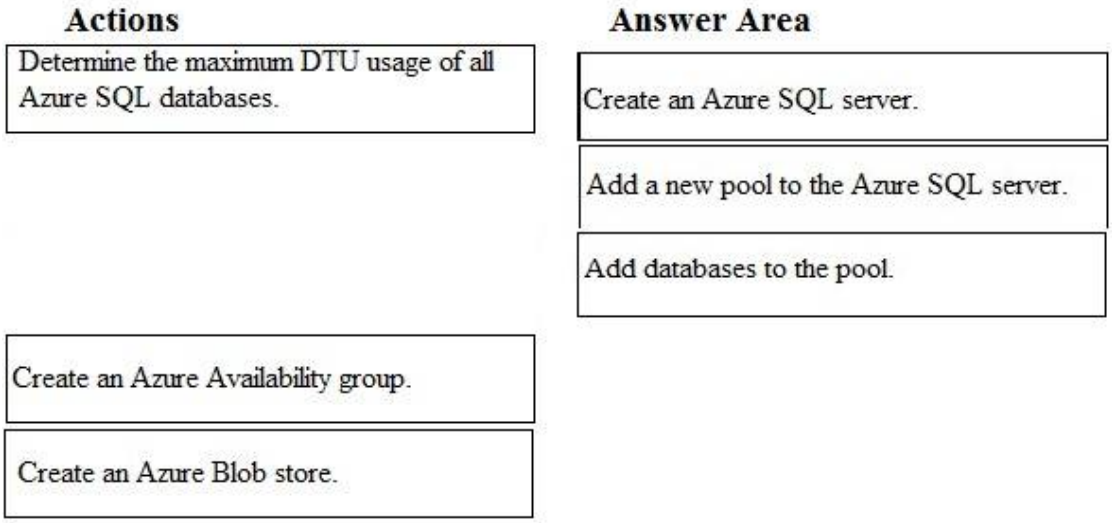
You need to minimize costs associated with Azure resources while maintaining the current performance levels of each Azure SQL Database instance.

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: Manage Storage
Explanation

Explanation/Reference:
Explanation:

SQL Database elastic pools are a simple, cost-effective solution for managing and scaling multiple databases that have varying and unpredictable usage demands. The databases in an elastic pool are on a single Azure SQL Database server and share a set number of resources at a set price.

References: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-elastic-pool

QUESTION 159
A company runs Microsoft SQL Server 2017 in an on-premises environment. The databases are memory-optimized.

An integrity check of a database has failed.

You need to ensure that the data is healthy and passes an integrity check.

What should you do?

A. Run the CHECKTABLE Transact-SQL statement.
B. Clear the buffer of the database.
C. Restore from a verified backup.
D. Run the CLEANTABLE Transact-SQL statement.

Correct Answer: C
Section: Manage Storage
Explanation

Explanation/Reference:

Explanation:
To verify the integrity of the on-disk checkpoint files, perform a backup of the MEMORY_OPTIMIZED_DATA filegroup.

Incorrect Answers:
A: DBCC CHECKTABLE will fail for memory-optimized tables.
D: DBCC CLEANTABLE reclaims space after a variable-length column is dropped.

References: https://docs.microsoft.com/en-us/sql/relational-databases/in-memory-oltp/transact-sql-constructs-not-supported-by-in-memory-oltp?view=sql-server-2017

QUESTION 160
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You manage a Microsoft SQL Server environment with several databases.

You need to ensure that queries use statistical data and do not initialize values for local variables.

Solution: You enable the **QUERY_OPTIMIZER_HOTFIXES** option for the databases.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
QUERY_OPTIMIZER_HOTFIXES = { ON | OFF | PRIMARY } enables or disables query optimization hotfixes regardless of the compatibility level of the database. This is equivalent to Trace Flag 4199.

References: https://msdn.microsoft.com/en-us/library/mt629158.aspx

QUESTION 161
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You manage a Microsoft SQL Server environment with several databases.

You need to ensure that queries use statistical data and do not initialize values for local variables.

Solution: You enable the **LEGACY_CARDINALITY_ESTIMATION** option for the databases.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
LEGACY_CARDINALITY_ESTIMATION = { ON | OFF | PRIMARY }
Enables you to set the query optimizer cardinality estimation model to the SQL Server 2012 and earlier version independent of the compatibility level of the database. This is equivalent to Trace Flag 9481.

References: https://msdn.microsoft.com/en-us/library/mt629158.aspx

QUESTION 162
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 stated goals. Some questions sets might have more than one correct solution, while others might not have a correct solution.

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

You manage a Microsoft SQL Server environment with several databases.

You need to ensure that queries use statistical data and do not initialize values for local variables.

Solution: You enable the **PARAMETER_SNIFFING** option for the databases.

Does the solution meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
PARAMETER_SNIFFING = { ON | OFF | PRIMARY} enables or disables parameter sniffing. This is equivalent to Trace Flag 4136.

SQL server uses a process called parameter sniffing when executing queries or stored procedures that use parameters. During compilation, the value passed into the parameter is evaluated and used to create an execution plan. That value is also stored with the execution plan in the plan cache. Future executions of the plan will re-use the plan that was compiled with that reference value.

References: https://msdn.microsoft.com/en-us/library/mt629158.aspx

QUESTION 163
HOTSPOT

Background

You manage the Microsoft SQL Server environment for a company that manufactures and sells automobile parts.

The environment includes the following servers: SRV1 and SRV2. SRV1 has 16 logical cores and hosts a SQL Server instance that supports a mission-critical application. The application has approximately 30,000 concurrent users and relies heavily on the use of temporary tables.

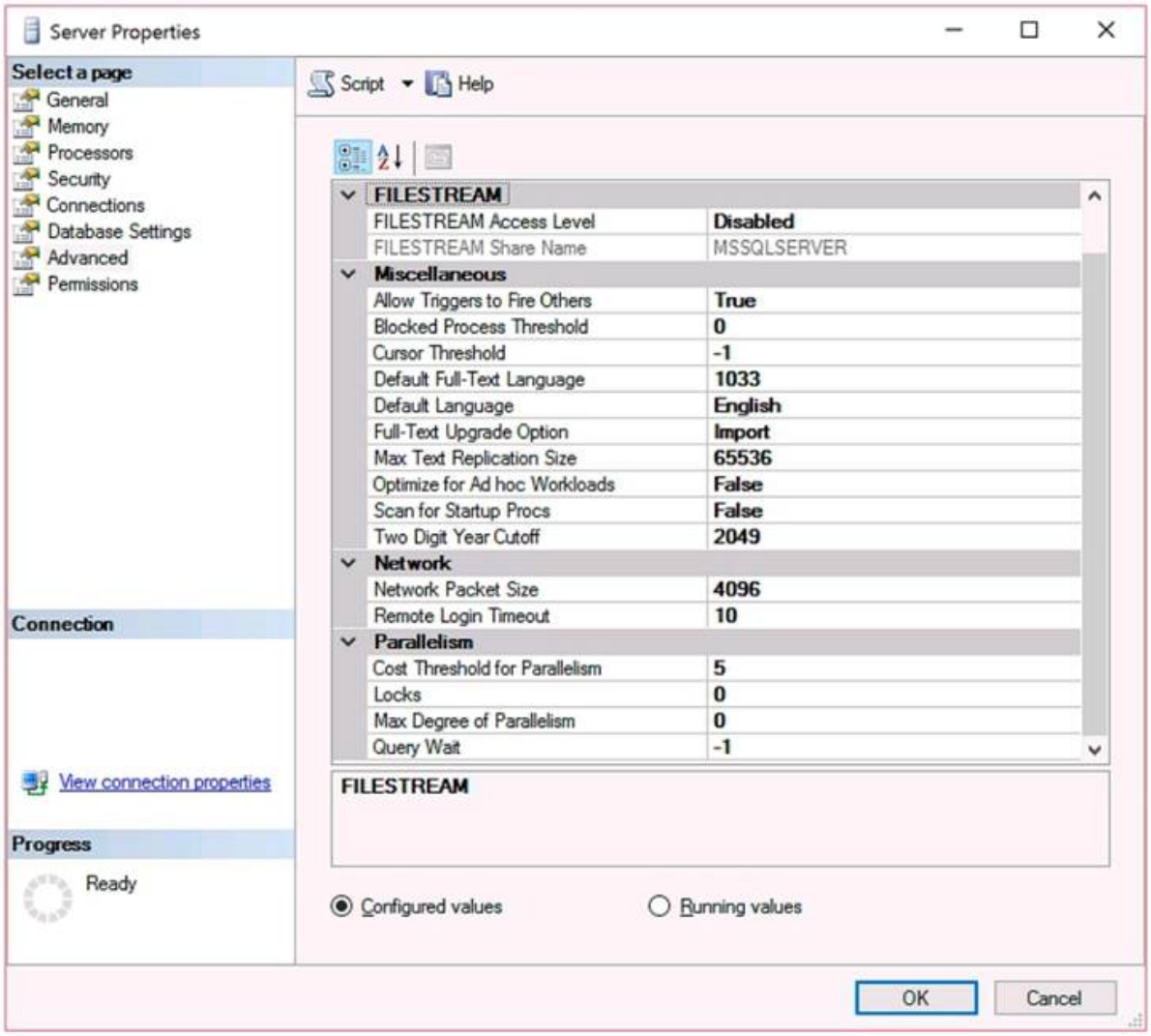
The environment also includes the following databases: DB1, DB2, and Reporting. The Reporting database is protected with Transparent Data Encryption (TDE). You plan to migrate this database to a new server. You detach the database and copy it to the new server.

You are performing tuning on a SQL Server database instance. The application which uses the database was written using an object relationship mapping (ORM) tool which maps tables as objects within the application code. There are 30 stored procedures that are regularly used by the application.

After reviewing the plan cache you have identified that a large number of simple queries are using parallelism, and that execution plans are not being kept in the plan cache for very long.

You review the properties of the instance (Click the Exhibit button).

Exhibit:



You need to resolve the identified issues.

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

Hot Area:

Answer Area

What setting would you change to reduce the number of execution plans in the plan cache?	Optimize for Ad Hoc workload Max Degree of Parallelism Query Wait
What setting would you change to which value to reduce the number of queries which are using parallelism?	Max Degree of Parallelism to 4 Cost Threshold for Parallelism to 50 Locks to 100

Correct Answer:

Answer Area

What setting would you change to reduce the number of execution plans in the plan cache?	Optimize for Ad Hoc workload Max Degree of Parallelism Query Wait
What setting would you change to which value to reduce the number of queries which are using parallelism?	Max Degree of Parallelism to 4 Cost Threshold for Parallelism to 50 Locks to 100

Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:

From exhibit we see:
Cost Threshold of Parallelism: 5
Optimize for Ad Hoc Workloads: false
Max Degree of Parallelism: 0 (This is the default setting, which enables the server to determine the maximum degree of parallelism. It is fine.)
Locks: 0
Query Wait: -1

Box 1: Optimize for Ad Hoc Workload
Change the Optimize for Ad Hoc Workload setting from false to 1/True.
The optimize for ad hoc workloads option is used to improve the efficiency of the plan cache for workloads that contain many single use ad hoc batches. When this option is set to 1, the Database Engine stores a small compiled plan stub in the plan cache when a batch is compiled for the first time, instead of the full compiled plan. This helps to relieve memory pressure by not allowing the plan cache to become filled with compiled plans that are not reused.

Incorrect Answers:
Not Query Wait: Use the query wait option to specify the time in seconds (from 0 through 2147483647) that a

query waits for resources before timing out.

Box 2: Cost Threshold for Parallelism to 50
Increase the Cost Threshold for Parallelism from 5 to 50.
Use the cost threshold for parallelism option to specify the threshold at which Microsoft SQL Server creates and runs parallel plans for queries. SQL Server creates and runs a parallel plan for a query only when the estimated cost to run a serial plan for the same query is higher than the value set in cost threshold for parallelism.

Note: Longer queries usually benefit from parallel plans; the performance advantage negates the additional time required to initialize, synchronize, and terminate parallel plans. The cost threshold for parallelism option is actively used when a mix of short and longer queries is run. The short queries run serial plans, whereas the longer queries use parallel plans. The value of cost threshold for parallelism determines which queries are considered short, and they should therefore be run using serial plans.

References:

https://technet.microsoft.com/en-us/library/ms188603(v=sql.105).aspx

https://msdn.microsoft.com/en-us/library/cc645587.aspx

QUESTION 164
DRAG DROP

Background

You manage a Microsoft SQL Server environment that includes the following databases: DB1, DB2, Reporting.

The environment also includes SQL Reporting Services (SSRS) and SQL Server Analysis Services (SSAS). All SSRS and SSAS servers use named instances. You configure a firewall rule for SSAS.

Databases

Database Name:
DB1

Notes:
This database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are inserted into DB1 or updated each second. Inserts are made by many different external applications that your company's developers do not control. You observe that transaction log write latency is a bottleneck in performance. Because of the transient nature of all the data in this database, the business can tolerate some data loss in the event of a server shutdown.

Database Name:
DB2

Notes:
This database was migrated from SQL Server 2012 to SQL Server 2016. Thousands of records are updated or inserted per second. You observe that the WRITELOG wait type is the highest aggregated wait type. Most writes must have no tolerance for data loss in the event of a server shutdown. The business has identified certain write queries where data loss is tolerable in the event of a server shutdown.

Database Name:
Reporting

Notes:
You create a SQL Server-authenticated login named BIAppUser on the SQL Server instance to support users of the Reporting database. The BIAppUser login is not a member of the sysadmin role.

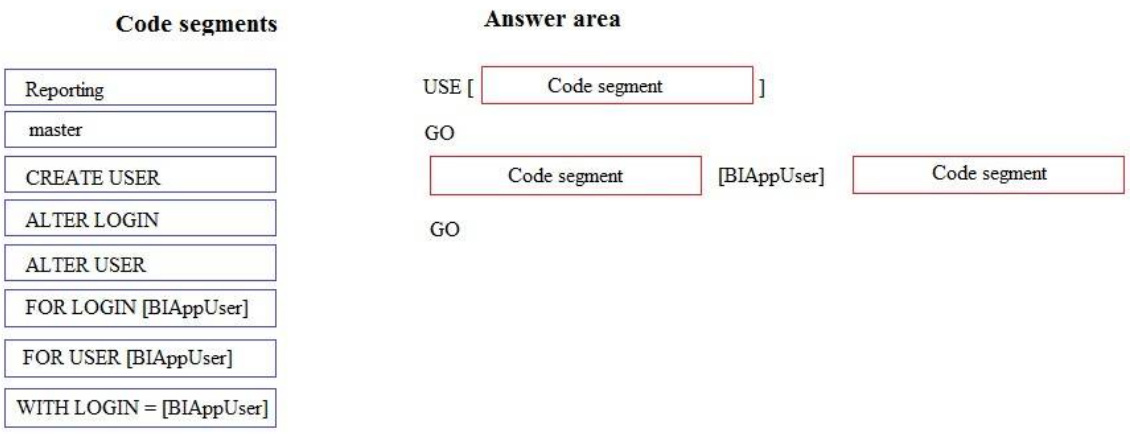
You plan to configure performance-monitoring alerts for this instance by using SQL Agent Alerts.

You create a login named BIAppUser. The login must be able to access the Reporting database.

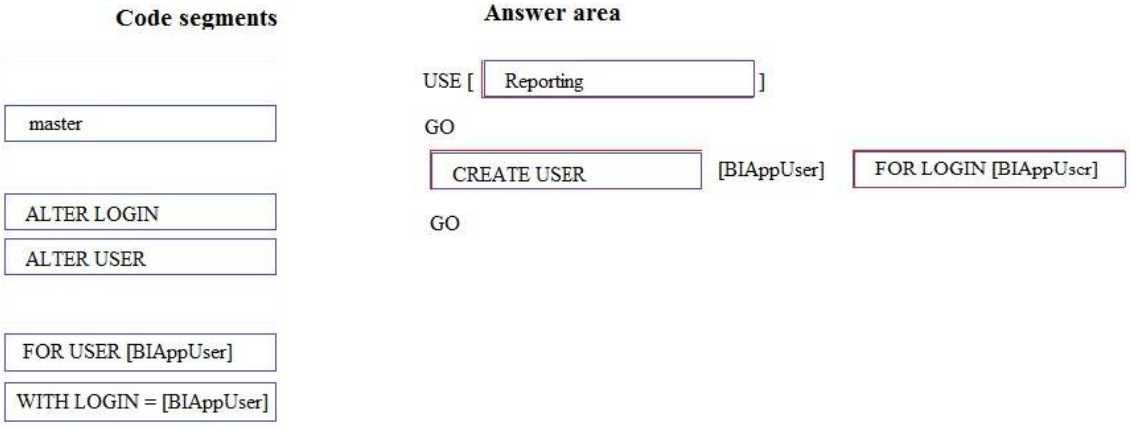
You need to grant access to the BIAppUser login in the database.

How should you complete the Transact-SQL statements? To answer, drag the appropriate Transact-SQL segments to the correct locations. Each Transact-SQL segment 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.

Select and Place:



Correct Answer:



Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:

Box 1: Reporting
The user is to be created in the Reporting database.

Box 2: CREATE USER

Box 3: FOR LOGIN [BIAppUser]

Users are created per database and are associated with logins. You must be connected to the database in where you want to create the user. Here is some sample Transact-SQL that creates a user:

CREATE USER readonlyuser FROM LOGIN readonlylogin;

References: https://azure.microsoft.com/en-us/blog/adding-users-to-your-sql-azure-database/

QUESTION 165
You administer a Microsoft SQL Server 2012 instance named SQL2012 that hosts an OLTP database of 1 terabyte in size.

The database is modified by users only from Monday through Friday from 09:00 hours to 17:00 hours. Users modify more than 30 percent of the data in the database during the week.

Backups are performed as shown in the following schedule:

Type	Frequency
Full	Sunday at 20:00 hours
Differential	Monday through Friday at 20:00 hours
Log	Monday through Friday between 08:00 hours and 18:00 hours

The Finance department plans to execute a batch process every Saturday at 09:00 hours. This batch process will take a maximum of 8 hours to complete.

The batch process will update three tables that are 10 GB in size. The batch process will update these tables multiple times.

When the batch process completes, the Finance department runs a report to find out whether the batch process has completed correctly.

You need to ensure that if the Finance department disapproves the batch process, the batch operation can be rolled back in the minimum amount of time.

What should you do on Saturday?

A. Perform a differential backup at 08:59 hours.
B. Record the LSN of the transaction log at 08:59 hours. Perform a transaction log backup at17:01 hours.
C. Create a database snapshot at 08:59 hours.
D. Record the LSN of the transaction log at 08:59 hours. Perform a transaction log backup at08:59 hours.
E. Create a marked transaction in the transaction log at 08:59 hours. Perform a transaction log backup at 17:01 hours.
F. Create a marked transaction in the transaction log at 08:59 hours. Perform a transaction log backup at 08:59 hours.

Correct Answer: C
Section: Manage Storage
Explanation

Explanation/Reference:

References: https://docs.microsoft.com/en-us/sql/relational-databases/databases/database-snapshots-sql-server

QUESTION 166
You administer a Microsoft SQL Server 2012 instance.

The instance contains a database that supports a retail sales application. The application generates hundreds of transactions per second and is online 24 hours per day and 7 days per week.

You plan to define a backup strategy for the database. You need to ensure that the following requirements are met:
No more than 5 minutes worth of transactions are lost.
Data can be recovered by using the minimum amount of administrative effort.

What should you do? Choose all that apply.

A. Configure the database to use the SIMPLE recovery model.
B. Create a DIFFERENTIAL database backup every 4 hours.
C. Create a LOG backup every 5 minutes.
D. Configure the database to use the FULL recovery model.
E. Create a FULL database backup every 24 hours.
F. Create a DIFFERENTIAL database backup every 24 hours.

Correct Answer: BCDE
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
The full recovery model uses log backups to prevent data loss in the broadest range of failure scenarios, and backing and restoring the transaction log (log backups) is required. The advantage of using log backups is that they let you restore a database to any point of time that is contained within a log backup (point-in-time recovery). You can use a series of log backups to roll a database forward to any point in time that is contained in one of the log backups. Be aware that to minimize your restore time, you can supplement each full backup with a series of differential backups of the same data.

References:
https://technet.microsoft.com/en-us/library/ms190217(v=sql.105).aspx

QUESTION 167
You administer a Microsoft SQL Server 2012 database that contains a table named OrderDetail.

You discover that the NCI_OrderDetail_CustomerID non-clustered index is fragmented. You need to reduce fragmentation. You need to achieve this goal without taking the index offline.

Which Transact-SQL batch should you use?

A. `CREATE INDEX NCI_OrderDetail_CustomerID ON OrderDetail.CustomerID WITH DROP EXISTING`
B. `ALTER INDEX NCI_OrderDetail_CustomerID ON OrderDetail.CustomerID REORGANIZE`
C. `ALTER INDEX ALL ON OrderDetail REBUILD`
D. `ALTER INDEX NCI_OrderDetail_CustomerID ON OrderDetail.CustomerID REBUILD`

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
REORGANIZE specifies to reorganize the index leaf level. The REORGANIZE operation is always performed online. This means long-term blocking table locks are not held and queries or updates to the underlying table can continue during the ALTER INDEX REORGANIZE transaction.

References: https://docs.microsoft.com/en-us/sql/t-sql/statements/alter-index-transact-sql

QUESTION 168
You administer a Microsoft SQL Server database named Sales. The database is 3 terabytes in size.

The Sales database is configured as shown in the following table.

Filegroup	File
PRIMARY	• Sales.mdf
XACTIONS	• Sales_1.ndf • Sales_2.ndf • Sales_3.ndf
ARCHIVES	• SalesArch_1.ndf • SalesArch_2.ndf

You discover that all files except Sales_2.ndf are corrupt.

You need to recover the corrupted data in the minimum amount of time.

What should you do?

A. Perform a file restore.
B. Perform a transaction log restore.
C. Perform a restore from a full backup.
D. Perform a filegroup restore.

Correct Answer: A
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
In a file restore, the goal is to restore one or more damaged files without restoring the whole database.

References: https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/file-restores-simple-recovery-model

QUESTION 169

You administer a Microsoft SQL Server 2012 server. You plan to deploy new features to an application.

You need to evaluate existing and potential clustered and non-clustered indexes that will improve performance.

What should you do?

A. Query the **sys.dm_db_index_usage_stats** DMV.
B. Query the **sys.dm_db_missing_index_details** DMV.
C. Use the Database Engine Tuning Advisor.
D. Query the **sys.dm_db_missing_index_columns** DMV.

Correct Answer: C
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
The Microsoft Database Engine Tuning Advisor (DTA) analyzes databases and makes recommendations that you can use to optimize query performance. You can use the Database Engine Tuning Advisor to select and create an optimal set of indexes, indexed views, or table partitions without having an expert understanding of the database structure or the internals of SQL Server.

Incorrect Answers:
A: sys.dm_db_index_usage_stats returns counts of different types of index operations and the time each type of operation was last performed in SQL Server.
B: sys.dm_db_missing_index_details returns detailed information about missing indexes, excluding spatial indexes.
D: sys.dm_db_missing_index_columns returns information about database table columns that are missing an index, excluding spatial indexes.

References: https://docs.microsoft.com/en-us/sql/relational-databases/performance/database-engine-tuning-advisor

QUESTION 170
You administer a Microsoft SQL Server 2012 instance that has several SQL Server Agent jobs configured.

When SQL Server Agent jobs fail, the error messages returned by the job steps do not provide the required detail.

The following error message is an example error message:
```
"The job failed. The Job was invoked by User CONTOSO\ServiceAccount. The last step to run was step 1 (Subplan_1)."
```

You need to ensure that all available details of the job step failures for SQL Server Agent jobs are retained.

What should you do?

A. Configure output files.
B. Expand agent logging to include information from all events.
C. Disable the Limit size of job history log feature.
D. Configure event forwarding.

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
References: http://msdn.microsoft.com/en-us/library/ms175488.aspx

QUESTION 171
You administer a Microsoft SQL Server 2012 database that contains a table named AccountTransaction.

You discover that query performance on the table is poor due to fragmentation on the IDX_AccountTransaction_AccountCode non-clustered index.

You need to defragment the index. You also need to ensure that user queries are able to use the index during the defragmenting process.

Which Transact-SQL batch should you use?

A. `ALTER INDEX IDX_AccountTransaction_AccountCode ON AccountTransaction.AccountCode REORGANIZE`
B. `ALTER INDEX ALL ON AccountTransaction REBUILD`
C. `ALTER INDEX IDX_AccountTransaction_AccountCode ON AccountTransaction.AccountCode REBUILD`
D. `CREATE INDEX IDXAccountTransactionAccountCode ON AccountTransaction.AccountCode WITH DROP EXISTING`

Correct Answer: A
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Reorganize: This option is more lightweight compared to rebuild. It runs through the leaf level of the index, and as it goes it fixes physical ordering of pages and also compacts pages to apply any previously set fillfactor settings. This operation is always online, and if you cancel it then it's able to just stop where it is (it doesn't have a giant operation to rollback).

References: https://www.brentozar.com/archive/2013/09/index-maintenance-sql-server-rebuild-reorganize/

QUESTION 172
You administer a Windows 2008 server hosting an instance of Microsoft SQL Server 2012 Standard Edition. The server hosts a database named Orders.

Users report that a query that filters on OrderDate is taking an exceptionally long time. You discover that an index named IX_OrderDate on the CustomerOrder table is heavily fragmented.

You need to improve the performance of the IX_OrderDate index. The index should remain online during the operation.

Which Transact-SQL command should you use?

A. `ALTER INDEX IX_OrderDateON CustomerOrder DISABLE`
B. `ALTER INDEX IX_OrderDateON CustomerOrder ENABLE`
C. `ALTER INDEX IX_OrderDateON CustomerOrder REORGANIZE`
D. `ALTER INDEX IX OrderDateON CustomerOrder REBUILD`

Correct Answer: C
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Reorganize: This option is more lightweight compared to rebuild. It runs through the leaf level of the index, and as it goes it fixes physical ordering of pages and also compacts pages to apply any previously set fillfactor settings. This operation is always online, and if you cancel it then it's able to just stop where it is (it doesn't have a giant operation to rollback).

References: https://www.brentozar.com/archive/2013/09/index-maintenance-sql-server-rebuild-reorganize/

QUESTION 173
You administer a Windows Azure SQL Database database named Orders.

You need to create a copy of Orders named Orders_Reporting.

Which Transact-SQL command should you use?

A. `BACKUP DATABASE Orders TO DISK = 'D:\Orders.bak'RESTORE DATABASE Orders_ReportingFROM DISK = 'D:\Orders.bak`
B. `BACKUP DATABASE Orders TO DISK = 'D:\Orders.bak'CREATE DATABASE Orders_ReportingFROM DISK = 'D:\Orders.bak`
C. `CREATE DATABASE Orders_Reporting AS COPY OF Orders`
D. `BACKUP DATABASE Orders TO DISK = 'D:\Orders.bak'MIRROR TO DISK = 'Orders_Reporting`

Correct Answer: C
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
BACKUP DATABASE …AS COPY OF [source_server_name.]source_database_name
Is used for copying a database to the same or a different SQL Database server.

References: https://docs.microsoft.com/en-us/sql/t-sql/statements/create-database-azure-sql-database

QUESTION 174
You administer a Microsoft SQL Server 2012 database named Orders.

Orders contains a table named OrderShip that is defined as follows:

```
CREATE TABLE OrderShip
(OrderID bigint NOT NULL PRIMARY KEY,
 CustomerID int NOT NULL,
 ShipAddress nvarchar(500) NOT NULL,
 CountryCode tinyint NULL)
```

A NULL value represents a domestic order. Ninety percent of the values in CountryCode are NULL.

Customers require a procedure that will return orders for all customers from a specified country.

You create a new procedure:

```
CREATE PROCEDURE p_GetIntlOrders
 (@countrycode tinyint)
AS
SELECT DISTINCT CustomerID, ShipAddress
FROM OrderShip
WHERE CountryCode = @countrycode
GO
```

Performance on this procedure is slow.

You need to alter the schema to optimize this query. Objects created must use a minimum amount of resources.

Which Transact-SQL statement should you use?

A. `CREATE NONCLUSTERED INDEX IX_CountryCode ON Ordership (CountryCode) WHERE CountryCode IS NOT NULL`
B. `CREATE STATISTICS ST_CountryCode ON OrderShip (CountryCode) WHERE CountryCodeIS NOT NULL`
C. `CREATE CLUSTERED INDEX IX_CountryCode ON OrderShip (CountryCode)`
D. `CREATE INDEX IX_CountryCode ON OrderShip (CustomerID) WHERE CountryCode IS NOT NULL`

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Here creating statistics is relevant. The CREATE STATISTICS command creates query optimization statistics on one or more columns of a table, an indexed view, or an external table. For most queries, the query optimizer already generates the necessary statistics for a high-quality query plan; in a few cases, you need to create additional statistics with CREATE STATISTICS or modify the query design to improve query performance.

References: https://docs.microsoft.com/en-us/sql/t-sql/statements/create-statistics-transact-sql

QUESTION 175
You administer a Microsoft SQL Server 2012 database. The database is currently configured to log ship to a secondary server.

You are preparing to cut over to the secondary server by stopping log-shipping and bringing the secondary database online. You want to perform a tail-log backup.

You need to leave the primary database in a restoring state.

Which option of the `BACKUP LOG` command should you use?

A. `NO_TRUNCATE`
B. `NORECOVERY`
C. `STANDBY`
D. `FORMAT`

Correct Answer: B

Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
It is recommended that you take a tail-log backup in the following scenarios:
If the database is online and you plan to perform a restore operation on the database, begin by backing up the tail of the log. To avoid an error for an online database, you must use the … WITH NORECOVERY option of the BACKUP Transact-SQL statement.

Note: A tail-log backup captures any log records that have not yet been backed up (the tail of the log) to prevent work loss and to keep the log chain intact. Before you can recover a SQL Server database to its latest point in time, you must back up the tail of its transaction log. The tail-log backup will be the last backup of interest in the recovery plan for the database.

References: https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/tail-log-backups-sql-server

QUESTION 176
DRAG DROP

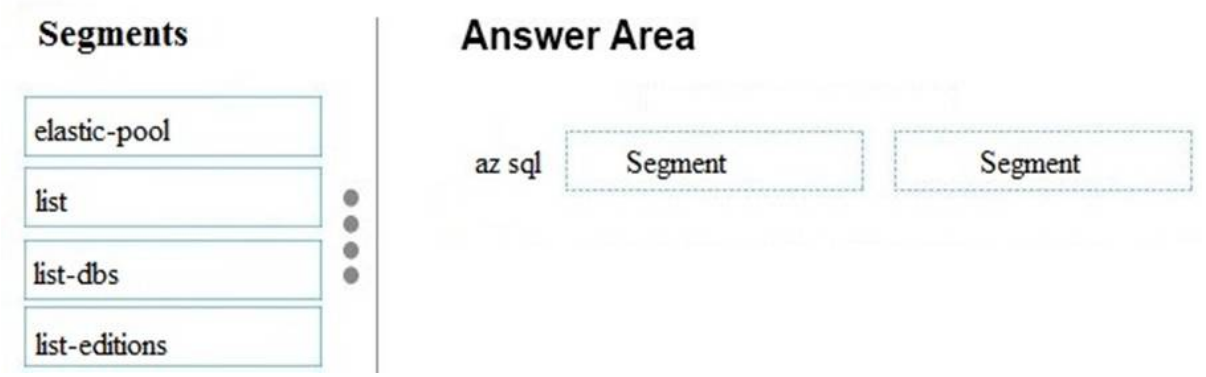
Your company has several Microsoft Azure SQL Database instances used within an elastic pool.

You need to obtain a list of databases in the pool.

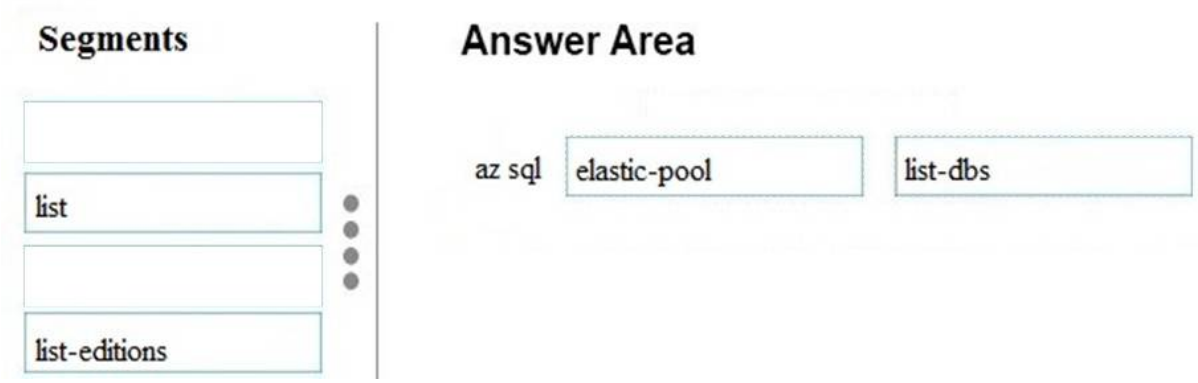
How should you complete the commands? To answer, drag the appropriate segments to the correct targets. Each segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section: Manage Storage
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/cli/azure/sql/elastic-pool?view=azure-cli-latest#az-sql-elastic-pool-list-dbs

QUESTION 177
HOTSPOT

A company uses several Microsoft Azure elastic pools with Azure SQL Database instances.

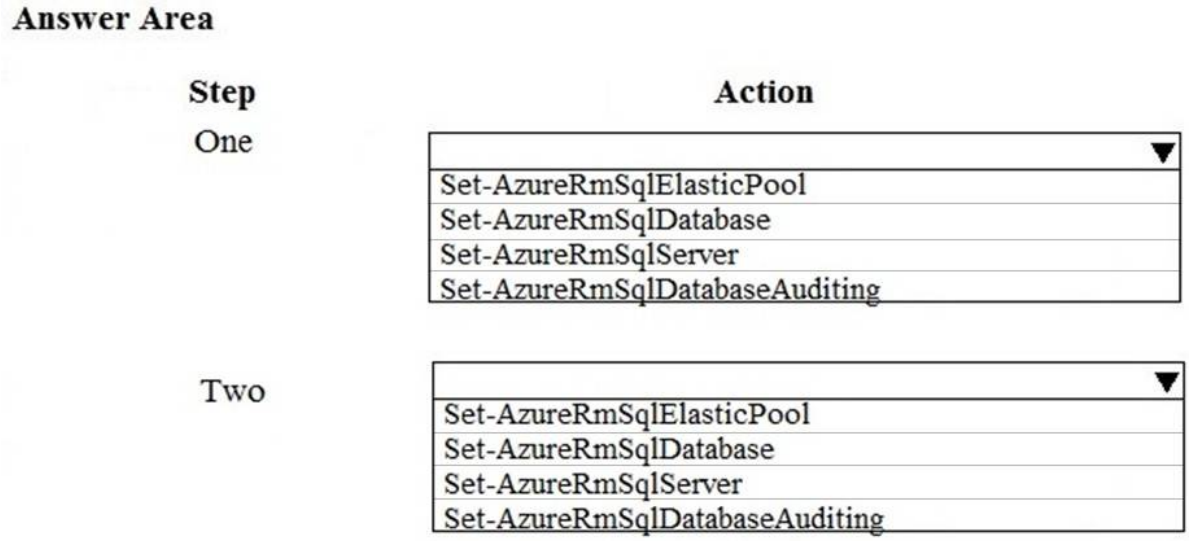
You have two pools named Pool1 and Pool2. Pool2 is near maximum capacity and cannot accommodate the database move.

You need to move the database from Pool1 to Pool2.

Which PowerShell cmdlets should you run? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:



Correct Answer:

Answer Area

Step	Action
One	Set-AzureRmSqlElasticPool Set-AzureRmSqlDatabase Set-AzureRmSqlServer Set-AzureRmSqlDatabaseAuditing
Two	Set-AzureRmSqlElasticPool Set-AzureRmSqlDatabase Set-AzureRmSqlServer Set-AzureRmSqlDatabaseAuditing

Section: Manage Storage
Explanation

Explanation/Reference:
References:
https://docs.microsoft.com/en-us/powershell/module/azurerm.sql/set-azurermsqlelasticpool?view=azurermps-6.12.0

https://docs.microsoft.com/en-us/powershell/module/azurerm.sql/set-azurermsqldatabase?view=azurermps-6.12.0

QUESTION 178
HOTSPOT

Background

You are managing a multi-tenant environment hosted within Windows Azure. All changes to the database are pushed to a template database which is stored as a Microsoft Azure SQL database named **ContosoTemplate** which is stored on the virtual SQL Server named SQL1. You also have a virtual SQL Server named SQL2.

You are provisioning an Azure SQL Database instance named DB1. No Azure firewall rules have been created.

You plan to deploy the following databases to an elastic pool: **EDB2, EDB3, EDB4, EDB5**, and **EDB6**. All of the databases in the pool have the same peak usage period.

You migrate a SQL Server instance named SRV1 to an Azure DS-13 series virtual machine (VM). The VM has two premium disks that are allocated as a storage pool.

You plan to deploy a new Azure SQL Database named DB7 to support an application for your Human Resources (HR) department.

You need to create a server-level firewall rule for DB1.

Which Azure PowerShell cmdlet should you run? To answer, select the appropriate Azure PowerShell cmdlet in the answer area.

Hot Area:

Answer area

Step	Azure PowerShell cmdlet
1	Add-AzureRmAccount Add-AzureEnvironment Import-Module -ModuleName SQLPS
2	Set-AzureRmApiManagementApi Set-AzureRmAppServicePlan Set-AzureRmContext
3	New-AzureRmSqlServerFirewallRule Set-AzureRmSqlServerFirewallRule New-SqlCredential

Correct Answer:

Answer area

Step	Azure PowerShell cmdlet
1	Add-AzureRmAccount **Add-AzureEnvironment** Import-Module -ModuleName SQLPS
2	Set-AzureRmApiManagementApi Set-AzureRmAppServicePlan **Set-AzureRmContext**
3	New-AzureRmSqlServerFirewallRule **Set-AzureRmSqlServerFirewallRule** New-SqlCredential

Section: Manage Storage
Explanation

Explanation/Reference:
Reference: https://docs.microsoft.com/en-us/powershell/module/azurerm.sql/?view=azurermps-6.12.0

QUESTION 179
You have an on-premises SQL Server database named DB1 that contains a table named TB1. TB1 is stretched to Microsoft Azure.

A catastrophic hardware failure occurs on the on-premises SQL server.

You deploy a new on-premises server and restore all databases to the new server.

You need to resume Stretch Database operations to Azure.

Which statements should you execute?

A.
```
EXEC sp_rda_reauthorize_db @credential = <credential>;
GO
ALTER TABLE tb1
    SET ( REMOTE_DATA_ARCHIVE ( MIGRATION_STATE = INBOUND ) ) ;
```

B.
```
sp_rda_deauthorize_db
GO
ALTER TABLE tb1
    SET ( REMOTE_DATA_ARCHIVE = ON (
        FILTER_PREDICATE = dbo.fn_stretchpredicate(),
        MIGRATION_STATE = OUTBOUND) ) ;
```

C.
```
USE master
RESTORE DATABASE DB1-Stretched
  FROM URL = <URL>
( REMOTE_DATA_ARCHIVE = ON ( MIGRATION_STATE = OUTBOUND ) ) ;
GO
Use DB1-Stretched
EXEC sp_rda_reauthorize_db @credential = <credential>;
GO
```

D.
```
EXEC sp_rda_reauthorize_db @credential = <credential>;
GO
ALTER TABLE tb1
    SET ( REMOTE_DATA_ARCHIVE = ON (
        FILTER_PREDICATE = dbo.fn_stretchpredicate(),
        MIGRATION_STATE = OUTBOUND) ) ;
```

Correct Answer: D
Section: Manage Storage
Explanation

Explanation/Reference:

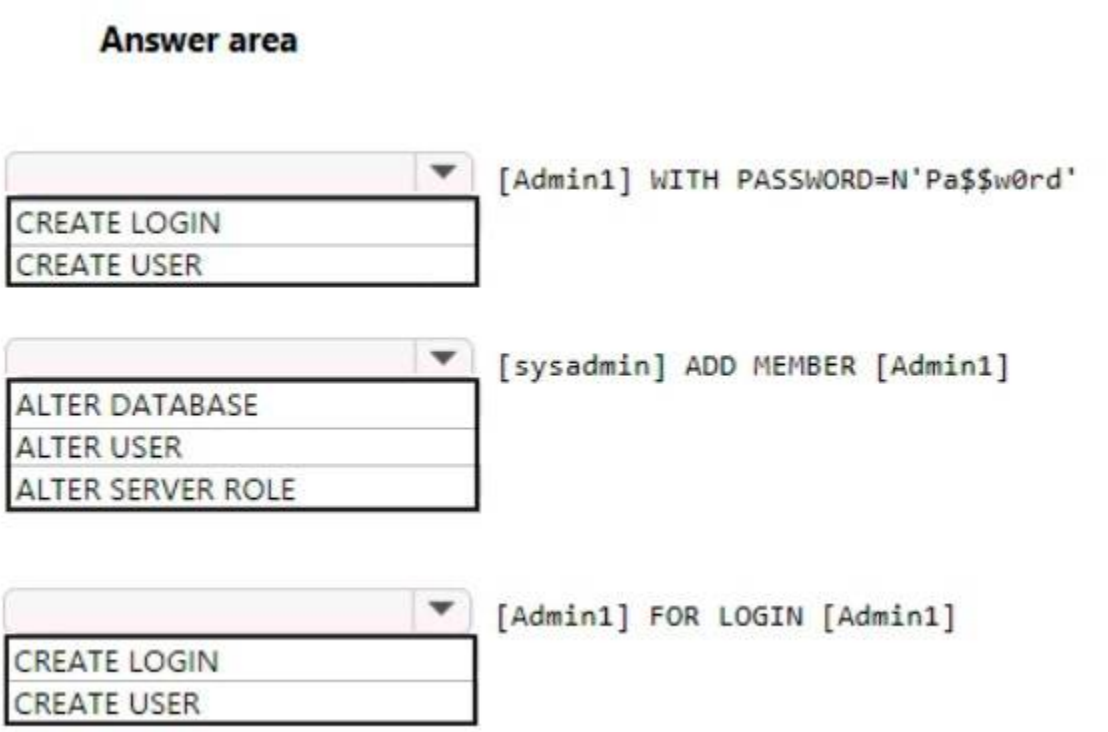
QUESTION 180
HOTSPOT

A company has an on-premises Microsoft SQL Server environment with a SQL Server named SQL01.

You need to create a local sysadmin account on SQL01 NAMED Admin1.

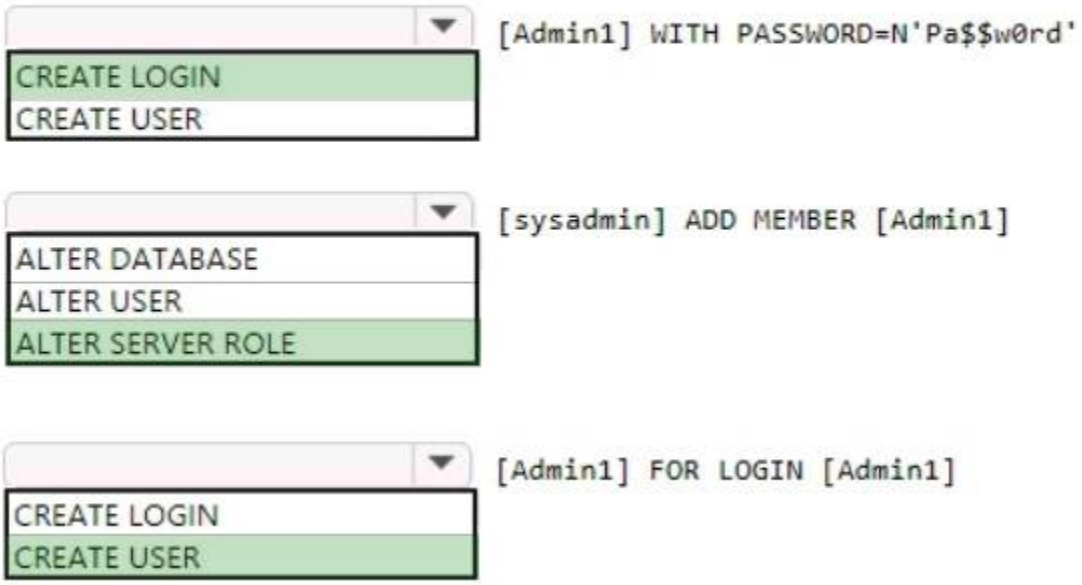
How should you complete the Transact-SQL statements? To answer, select the appropriate Transact-SQL statements? To answer, select the appropriate Transact-SQL segments in the answer area.

Hot Area:



Correct Answer:

Answer area



Section: Manage Storage
Explanation

Explanation/Reference:
Reference: https://docs.microsoft.com/en-us/sql/database-engine/configure-windows/connect-to-sql-server-when-system-administrators-are-locked-out?view=sql-server-2017

QUESTION 181
HOTSPOT

You have an on-premises database.

You plan to migrate the database to Microsoft SQL Server on a Microsoft Azure virtual machine.

You move the database files to Azure.

You need to attach the database files to the SQL Server instance on the virtual machine. The solution must ensure that you can run file snapshot backups.

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

NOTE: Each correct selection is worth one point.

Hot Area:

Answer Area

Correct Answer:

Answer Area

Section: Manage Storage
Explanation

Explanation/Reference:
Reference: https://docs.microsoft.com/en-us/sql/t-sql/statements/create-database-sql-server-transact-sql

QUESTION 182
DRAG DROP

You have a Microsoft SQL Server instance which hosts all of your corporate databases. A database named Sales stores information about customers and their contact information.

You use the following processes for backing up the database:

All databases are configured for full recovery model.
Full backups are performed every morning at 2:00 AM.

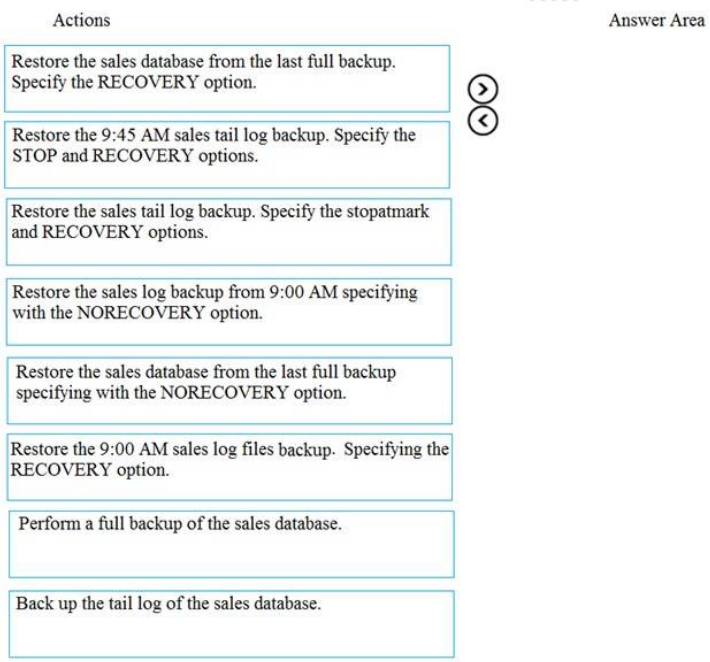
Log backups are performed every hour starting at 9:00 AM.

At 9:35 AM, a member of the sales team mistakenly updates all customer records.

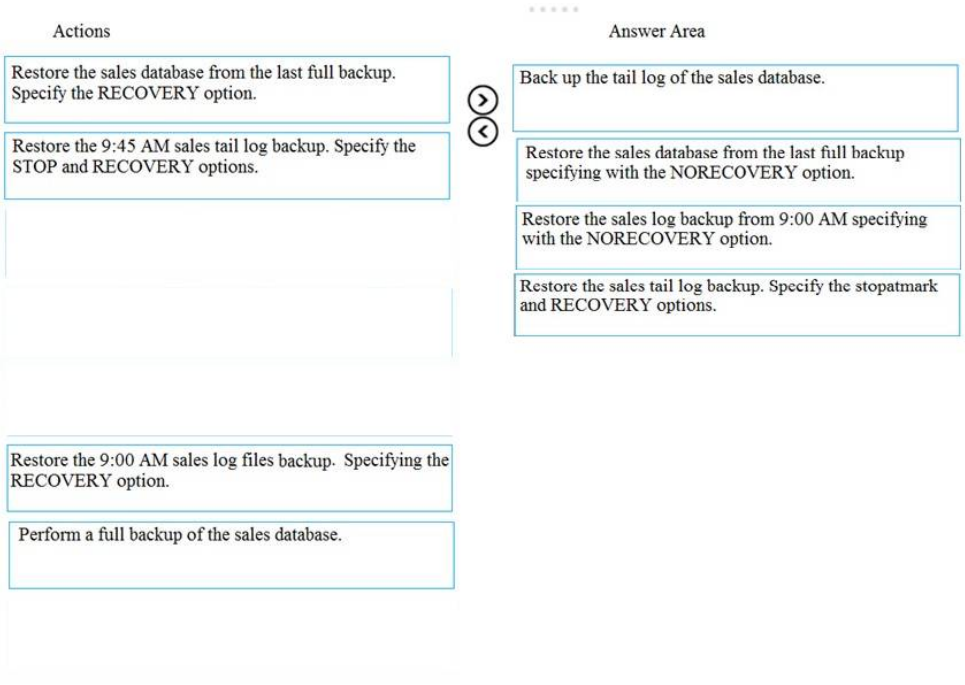
You need to recover the database to a stable state and recover as much data as possible without recovering the changes that the sales team member made.

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:



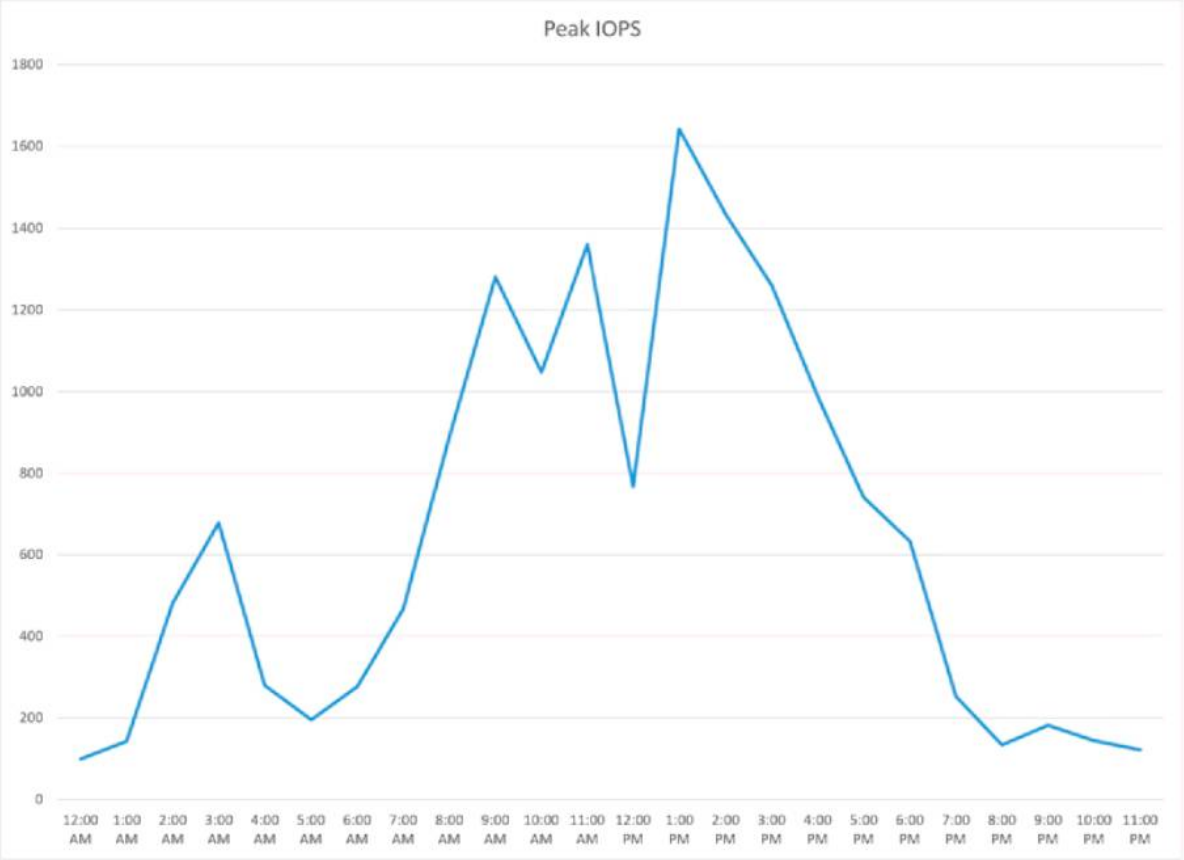
Section: Manage Storage
Explanation

Explanation/Reference:

QUESTION 183
HOTSPOT

You are migrating an on-premises Microsoft SQL Server virtual machine (VM) to an Azure IaaS VM.

The following chart shows current peak IOPS per hour over the course of a day:



The number of IOPS per hour is expected to peak at 20 times the current value in the future.

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

Hot Area:

Answer area

What is the most cost-effective storage option to use?

- Premium Storage disks
- Cool Blob storage
- Standard Storage disks using Storage Spaces

Which series of VM should you use in order to provide for a future upgrade of the storage system?

- A
- G
- GS

Correct Answer:

Answer area

What is the most cost-effective storage option to use?

- Premium Storage disks
- Cool Blob storage
- Standard Storage disks using Storage Spaces

Which series of VM should you use in order to provide for a future upgrade of the storage system?

- A
- G
- GS

Section: Manage Storage
Explanation

Explanation/Reference:
Reference: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sizes-storage

QUESTION 184
You are developing customized Microsoft Azure Resource Group templates to automate the process of deploying Microsoft SQL Server in Azure to enforce consistency during future deployments.

You need to deploy the customized templates to the Azure environment and to external endpoints.

Which resource value should you populate?

A. properties
B. name
C. resources
D. dbType
E. apiVersion

Correct Answer: E
Section: Manage Storage
Explanation

Explanation/Reference:

QUESTION 185
DRAG DROP

You have a Microsoft Azure SQL Database instance named Marketing. The instance is hosted on an Azure SQL Server named mycompanyazure. The server uses a storage account named mycompanyblob.

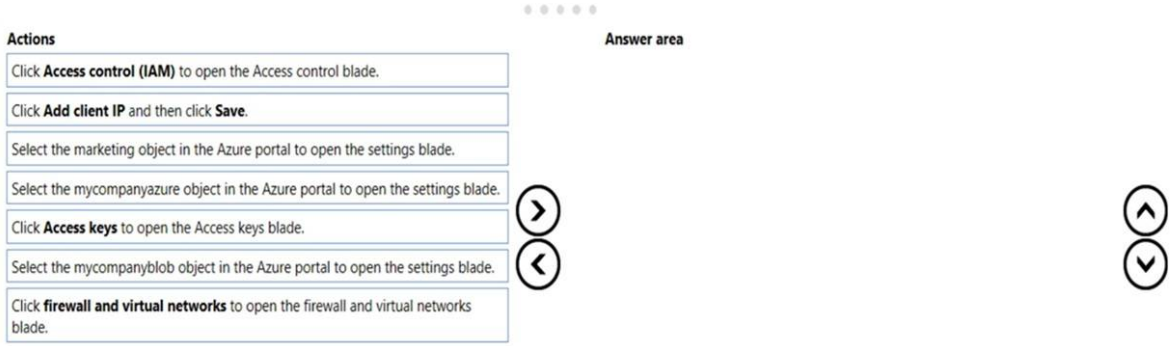
You attempt to connect to the Azure SQL Database instance by using SQL Management Studio on your Windows device. You are unable to connect.

You need to resolve the issue.

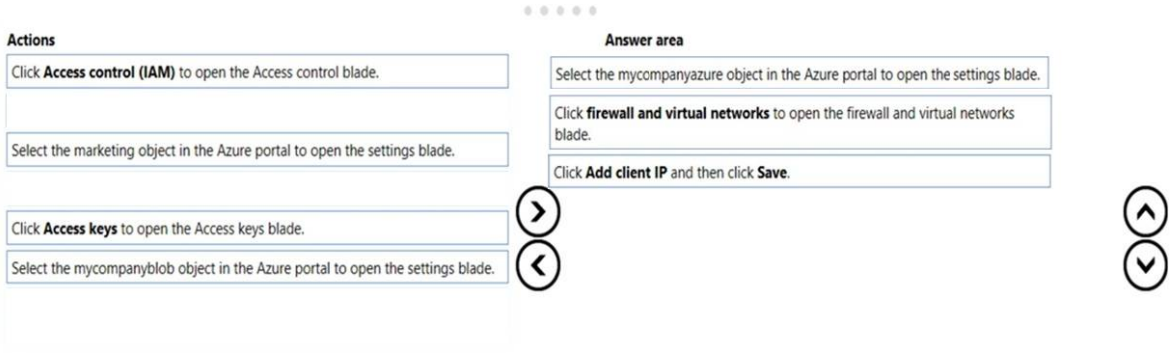
Which three actions should you perform in sequence? (Choose three.)

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: Manage Storage
Explanation

Explanation/Reference:
Reference: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-connect-query-ssms

QUESTION 186
You have just completed a new Microsoft SQL Server installation.

You need to configure a new SQL Server Agent alert to send an email to the DBA team for severity 20 errors.

Which three actions should you perform? Each correct answer presents part of the solution. (Choose three.)

A. Set up SQL Mail.
B. Define an operator.
C. Configure a credential object.
D. Define the alert settings.
E. Configure a proxy.
F. Set up an External Events collector.
G. Set up Database Mail.

Correct Answer: BDG
Section: Manage Storage

Explanation

Explanation/Reference:
Reference: https://docs.microsoft.com/en-us/sql/relational-databases/database-mail/configure-sql-server-agent-mail-to-use-database-mail?view=sql-server-2017

QUESTION 187
HOTSPOT

A company plans to deploy Microsoft SQL Server databases in Azure. The following requirements must be met:

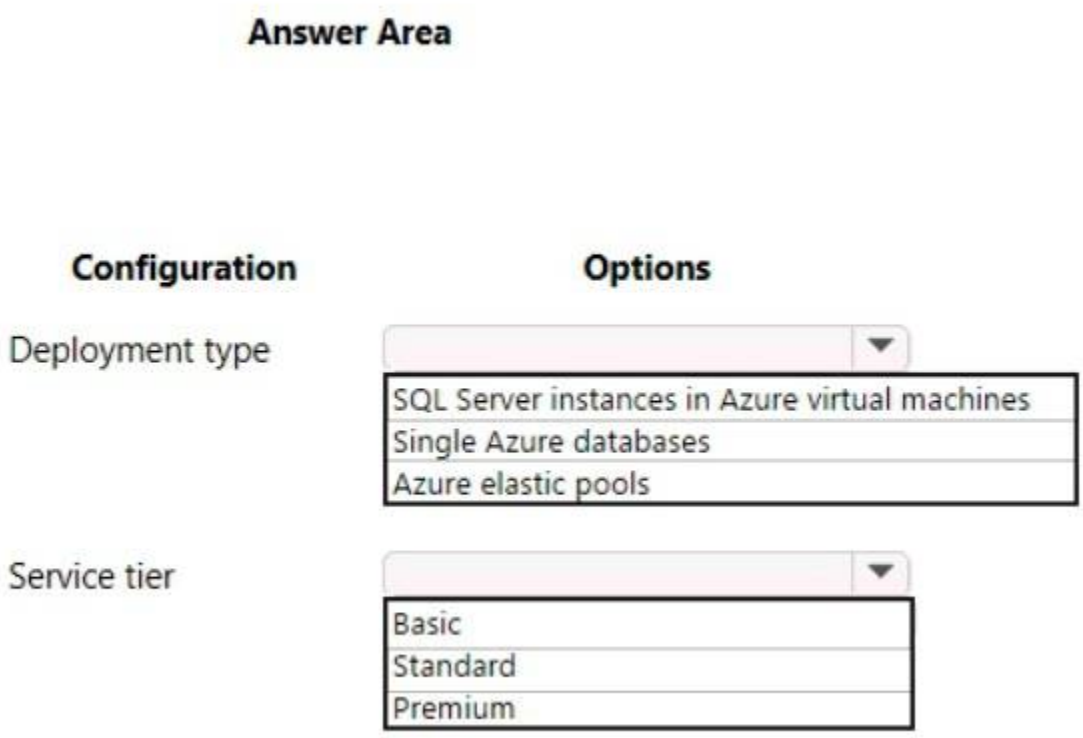
Resources must be shared across 200 databases.
Total pool storage must support at least two terabytes (TB)

You need to configure the Azure environment and minimize costs.

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

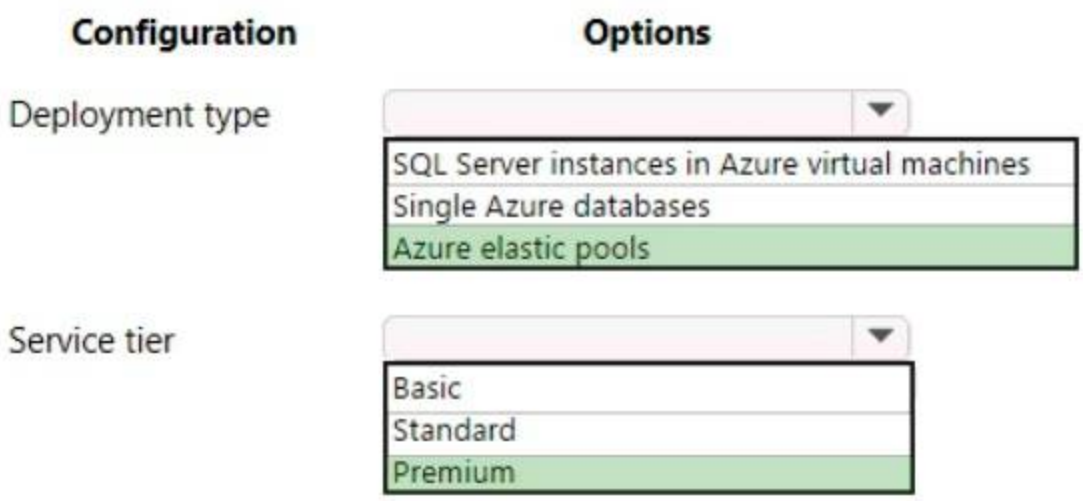
NOTE: Each correct answer is worth one point.

Hot Area:



Correct Answer:

Answer Area



Section: Manage Storage
Explanation

Explanation/Reference:
Reference: https://docs.microsoft.com/en-us/azure/sql-database/sql-database-service-tiers

QUESTION 188
You administer a Microsoft SQL Server 2012 database named Contoso on a server named Server01.

You need to collect data for a long period of time to troubleshoot wait statistics when querying Contoso. You also need to ensure minimum impact to the server.

What should you create?

A. An Alert
B. A Resource Pool
C. An Extended Event session
D. A Server Audit Specification
E. A SQL Profiler Trace
F. A Database Audit Specification
G. A Policy
H. A Data Collector Set

Correct Answer: C
Section: Manage Storage
Explanation

Explanation/Reference:

Explanation:
SQL Server Extended Events has a highly scalable and highly configurable architecture that allows users to collect as much or as little information as is necessary to troubleshoot or identify a performance problem. Extended Events is a light weight performance monitoring system that uses very few performance resources. A SQL Server Extended Events session is created in the SQL Server process hosting the Extended Events engine.

References: https://docs.microsoft.com/en-us/sql/relational-databases/extended-events/extended-events

QUESTION 189
You administer a Microsoft SQL Server 2012 database.

You have a SQL Server Agent job instance that runs using the service account. You have a job step within the job that requires elevated privileges.

You need to ensure that the job step can run using a different user account.

What should you use?

A. a schedule
B. an alert
C. an operator
D. a proxy

Correct Answer: D
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
A SQL Server Agent proxy defines the security context for a job step. A proxy provides SQL Server Agent with access to the security credentials for a Microsoft Windows user. Each proxy can be associated with one or more subsystems. A job step that uses the proxy can access the specified subsystems by using the security context of the Windows user. Before SQL Server Agent runs a job step that uses a proxy, SQL Server Agent impersonates the credentials defined in the proxy, and then runs the job step by using that security context.

References:
https://technet.microsoft.com/en-us/library/ms189064(v=sql.105).aspx

QUESTION 190
You use a Microsoft SQL Server 2012 database that contains two tables named SalesOrderHeader and SalesOrderDetail. The indexes on the tables are as shown in the exhibit.
(Click the Exhibit button.)

You write the following Transact-SQL query:

```
SELECT h.SalesOrderID, h.TotalDue, d.OrderQty
FROM Sales.SalesOrderHeader AS h
  INNER JOIN Sales.SalesOrderDetail AS d
  ON h.SalesOrderID = d.SalesOrderID
WHERE h.TotalDue > 100
AND (d.OrderQty > 5 OR d.LineTotal < 1000.00);
```

You discover that the performance of the query is slow. Analysis of the query plan shows table scans where the estimated rows do not match the actual rows for SalesOrderHeader by using an unexpected index on SalesOrderDetail.

You need to improve the performance of the query.

What should you do?

A. Use a FORCESCAN hint in the query.
B. Add a clustered index on SalesOrderId in SalesOrderHeader.
C. Use a FORCESEEK hint in the query.
D. Update statistics on SalesOrderId on both tables.

Correct Answer: D
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
New statistics would be useful.
The UPDATE STATISTICS command updates query optimization statistics on a table or indexed view. By default, the query optimizer already updates statistics as necessary to improve the query plan; in some cases you can improve query performance by using UPDATE STATISTICS or the stored procedure sp_updatestats to update statistics more frequently than the default updates.

References: http://msdn.microsoft.com/en-us/library/ms187348.aspx

QUESTION 191
You have Microsoft SQL Server on a Microsoft Azure virtual machine.

You suspect that the current SQL Server indexes cause queries to execute slowly.

You need to identify which indexes must be created to reduce the query execution time.

Which three dynamic management views should you use? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

A. sys.dm_db_index_physical_stats
B. sys.dm_db_missing_index_group_stats
C. sys.indexes
D. sys.dm_db_index_usage_stats
E. sys.dm_db_missing_index_groups
F. sys.dm_db_index_operational_stats
G. sys.dm_db_missing_index_details
H. sys.sysindexkeys

Correct Answer: BEG
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
The missing indexes feature consists of the following components:
A set of dynamic management objects that can be queried to return information about missing indexes.
The MissingIndexes element in XML Showplans, which correlate indexes that the query optimizer considers missing with the queries for which they are missing.

Dynamic Management Objects

After running a typical workload on SQL Server, you can retrieve information about missing indexes by querying the dynamic management objects listed in the following table. These dynamic management objects are stored in the master database.
sys.dm_db_missing_index_group_stats
Returns summary information about missing index groups, for example, the performance improvements that could be gained by implementing a specific group of missing indexes.
sys.dm_db_missing_index_groups
Returns information about a specific group of missing indexes, such as the group identifier and the identifiers of all missing indexes that are contained in that group.
sys.dm_db_missing_index_details
Returns detailed information about a missing index; for example, it returns the name and identifier of the table where the index is missing, and the columns and column types that should make up the missing index.
sys.dm_db_missing_index_columns
Returns information about the database table columns that are missing an index.

References:
https://technet.microsoft.com/en-us/library/ms345524(v=sql.105).aspx

QUESTION 192
You manage a Microsoft SQL Server instance named SQL1 that has 32 gigabytes (GB) of total memory. The instance supports an app named App1 that only uses a single thread. App1 frequently queries the database using the same index. The operating system and App1 combined require 8 GB of memory to function.

You need to ensure that the SQL Server does not limit the performance of App1.

What configuration option should you set?

A. min memory per query to 4 GB
B. index create memory to 16 GB
C. max worker threads to 1
D. max server memory to 16 GB

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
The index creates memory option controls the maximum amount of memory initially allocated for sort operations when creating indexes. The default value for this option is 0 (self-configuring). If more memory is later needed for index creation and the memory is available, the server will use it; thereby, exceeding the setting of this option. If additional memory is not available, the index creation will continue using the memory already allocated.

References: https://docs.microsoft.com/en-us/sql/database-engine/configure-windows/configure-the-index-create-memory-server-configuration-option

QUESTION 193
You plan to create an AlwaysOn availability group that will have two replicas in Microsoft Azure and two on-premises replicas.

You need to configure the network to support the availability group listener.

Which cmdlet should you run first?

A. **New-AzureRmAvailabilitySet**
B. **New-AzureRmLoadBalancer**

C. **New-AzureRmSqlDatabaseSecondary**
D. **New-AzureRmSqlElasticPool**
E. **New-AzureRmVM**
F. **New-AzureRmSqlServer**
G. **New-AzureRmSqlDatabaseCopy**
H. **New-AzureRmSqlServerCommunicationLink**

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
An availability group listener is a virtual network name that clients connect to for database access. On Azure virtual machines, a load balancer holds the IP address for the listener. The load balancer routes traffic to the instance of SQL Server that is listening on the probe port. Usually, an availability group uses an internal load balancer.

References: https://docs.microsoft.com/en-us/azure/virtual-machines/windows/sql/virtual-machines-windows-portal-sql-ps-alwayson-int-listener

QUESTION 194
HOTSPOT

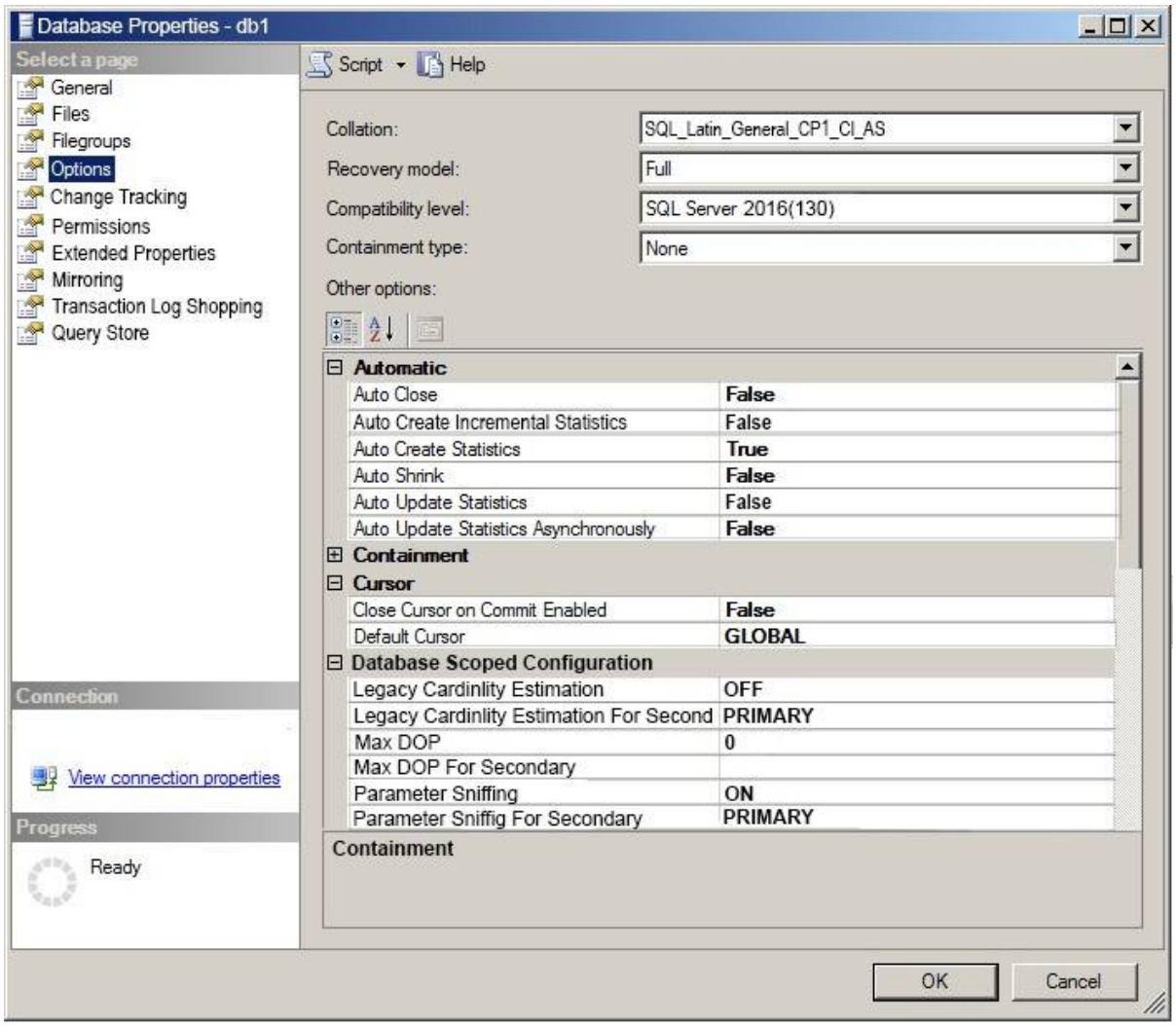
You have Microsoft SQL Server on a Microsoft Azure virtual machine. The virtual machine has a database named DB1. DB1 contains a table named Table1 that has 4 billion rows.

Users report that a query using Table1 takes longer than expected to execute.

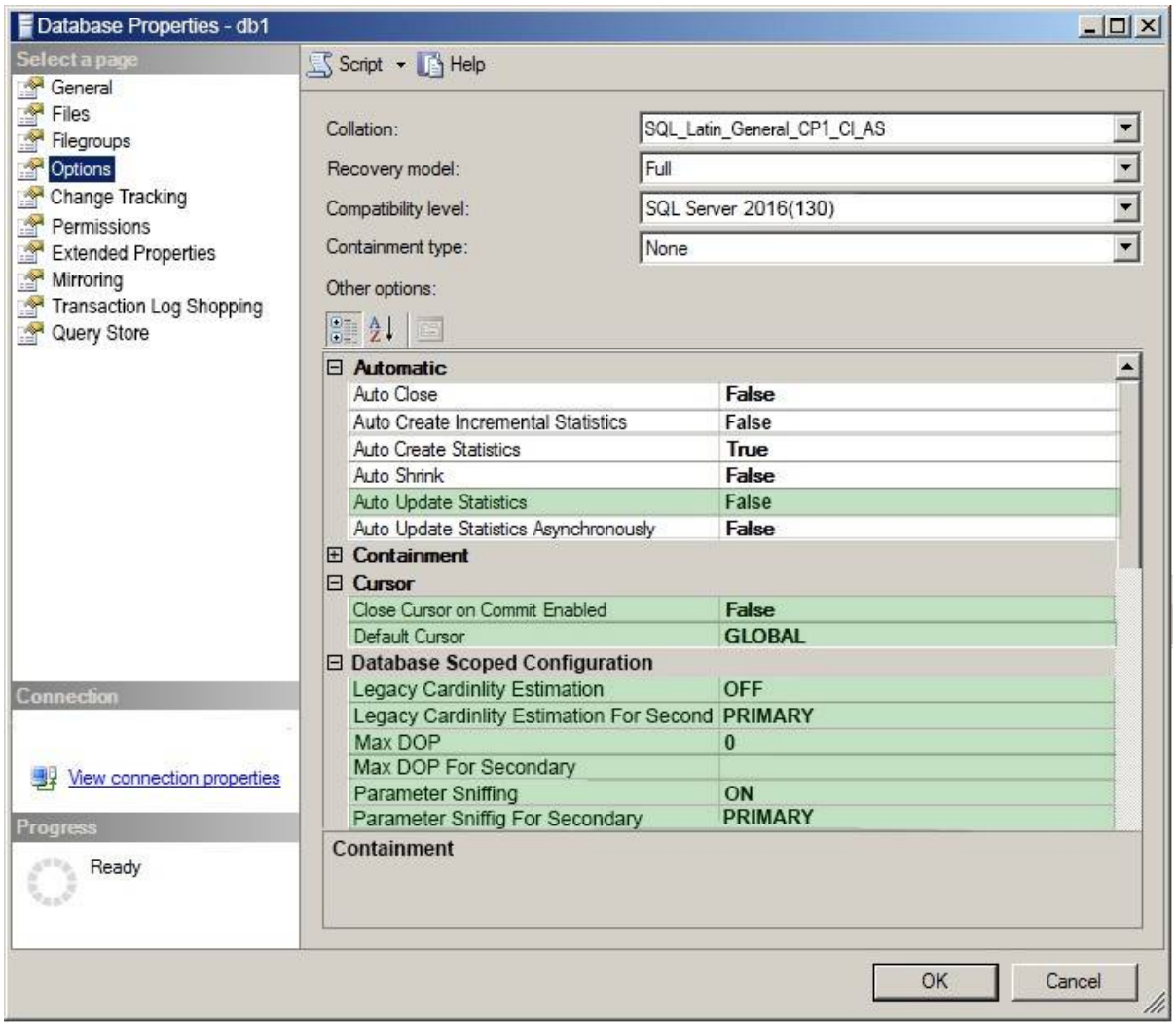
You review the execution plan for the query and discover that the expected number of returned rows is one, while the actual number of returned rows is 1 million.

You need to reduce the amount of time it takes for the query to execute. The solution must prevent additional performance issues from being introduced.

Hot Area:



Correct Answer:



Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
When you set the AUTO_CREATE_STATISTICS option on, the Query Optimizer creates statistics on individual columns used in a predicate, if these statistics are not already available. These statistics are necessary to generate the query plan.

References: https://www.mssqltips.com/sqlservertip/2766/sql-server-auto-update-and-auto-create-statistics-options/

QUESTION 195
You have a database named DB1 that uses simple recovery mode.

Full backups of DB1 are taken daily and DB1 is checked for corruption before each backup.

There was no corruption when the last backup was complete.

You run the sys.columns catalog view and discover corrupt pages.

You need to recover the database. The solution must minimize data loss.

What should you do?

A. Run `RESTORE DATABASE WITH RECOVERY`.
B. Run `RESTORE DATABASE WITH PAGE`.
C. Run `DBCC CHECKDB` and specify the `REPAIR_ALLOW_DATA_LOSS` parameter.
D. Run `DBCC CHECKDB` and specify the `REPAIT_REBUILD` parameter.

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
A page restore is intended for repairing isolated damaged pages. Restoring and recovering a few individual pages might be faster than a file restore, reducing the amount of data that is offline during a restore operation.

RESTORE DATABASE WITH PAGE
Restores individual pages. Page restore is available only under the full and bulk-logged recovery models.

References: https://docs.microsoft.com/en-us/sql/t-sql/statements/restore-statements-transact-sql

QUESTION 196
You have a database named DB1.

You discover that DB1 is corrupt.

You run `DBCC CHECKDB` and receive an error message within a few seconds. No pages are listed in the error message.

You need to repair the database corruption as quickly as possible. The solution must minimize data loss.

What should you do?

A. Run `DBCC CHECKDB ('db1', REPAIR_ALLOW_DATA_LOSS)`.
B. Run `DBCC CHECKDB ('db1', REPAIR_FAST)`.
C. Delete the transaction logs and restart the Microsoft SQL Server instance.
D. Run `DBCC CHECKDB ('db1', REPAIR_REBUILD)`.
E. Restore the database from a backup.

Correct Answer: D
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
REPAIR_REBUILD
Performs repairs that have no possibility of data loss. This can include quick repairs, such as repairing missing rows in non-clustered indexes, and more time-consuming repairs, such as rebuilding an index.

Incorrect Answers:
A: The REPAIR_ALLOW_DATA_LOSS option is a supported feature but it may not always be the best option for bringing a database to a physically consistent state. If successful, the REPAIR_ALLOW_DATA_LOSS option may result in some data loss. In fact, it may result in more data lost than if a user were to restore the database from the last known good backup.

B: REPAIR_FAST

Maintains syntax for backward compatibility only. No repair actions are performed.

E: Restoring from backup is not the fastest solution.

References: https://docs.microsoft.com/en-us/sql/t-sql/database-console-commands/dbcc-checkdb-transact-sql

QUESTION 197
You manage an on-premises Microsoft SQL server that has a database named DB1.

An application named App1 retrieves customer information for DB1.

Users report that App1 takes an unacceptably long time to retrieve customer records.

You need to find queries that take longer than 400 ms to run.

Which statement should you execute?

A.
```
SELECT    qp.query_plan,
          qs.*
FROM      (
     SELECT TOP 50 *
     FROM sys.dm_exec_query_stats
     ORDER BY total_worker_time DESC
) AS qs
CROSS APPLY sys.dm_exec_query_plan(qs.plan_handle) AS qp
WHERE (qs.max_worker_time > 400
         OR qs.max_elapsed_time > 400)
```

B.
```
SELECT pa.DatabaseID, SUM(qs.total_worker_time/100) AS [CPU_Time_Ms]
     FROM sys.dm_exec_query_stats AS qs
          CROSS APPLY (SELECT CONVERT(int, value) AS [DatabaseID]
               FROM sys.dm_exec_plan_attributes(qs.plan_handle)
               WHERE attribute = N'dbid') AS pa
     GROUP BY pa.DatabaseID
HAVING SUM(qs.total_worker_time/1000) > 400
     ORDER BY 2 DESC
```

C.
```
SELECT    qp.query_plan,
          qs.*
FROM      (
     SELECT TOP 50 *
     FROM sys.dm_exec_query_stats
     ORDER BY total_worker_time DESC
) AS qs
CROSS APPLY sys.dm_exec_query_plan(qs.plan_handle) AS qp
WHERE (qs.max_logical_reads > 400
         OR qs.max_logical_reads > 400)
```

D.
```
SELECT TOP 50 *
FROM sys.dm_exec_query_stats as qs
WHERE (qs.max_physical)_reads > 400
     OR qs.max_physical_reads > 400)
ORDER BY total_worker_time DESC
```

E.
```
SELECT st.text,
       qs.*
FROM   (
    SELECT  TOP 50 *
    FROM    sys.dm_exec_query_stats
    ORDER BY total_worker_time DESC
) AS qs
CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) AS st
WHERE (qs.max_worker_time > 400
       OR qs.max_elapsed_time > 400)
```

F.
```
SELECT st.text,
       qs.*
FROM   (
    SELECT  TOP 50 *
    FROM    sys.dm_exec_query_stats
    ORDER BY total_worker_time DESC
) AS qs
CROSS APPLY sys.dm_exec_sql_text(qs.sql_handle) AS st
WHERE (qs.max_worker_time > 400
       OR qs.max_logical_reads > 400)
```

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Total_worker_time: Total amount of CPU time, reported in microseconds (but only accurate to milliseconds), that was consumed by executions of this plan since it was compiled.

Incorrect Answers:
A: Qs.max_worker_time: Maximum CPU time, reported in microseconds (but only accurate to milliseconds), that this plan has ever consumed during a single execution.

References: https://docs.microsoft.com/en-us/sql/relational-databases/system-dynamic-management-views/sys-dm-exec-query-stats-transact-sql

QUESTION 198
DRAG DROP

You have a Microsoft SQL Server instance that has a database named DB1. DB1 has data files on drive E and transaction logs on drive L.

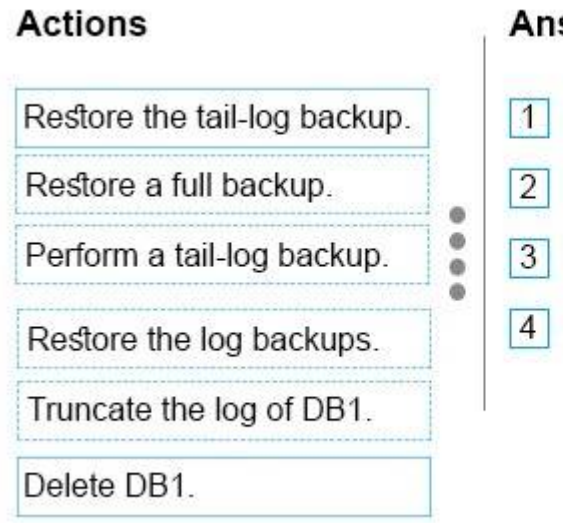
You perform full backups of DB1 daily and transaction log backups hourly.

Drive E fails and is replaced.

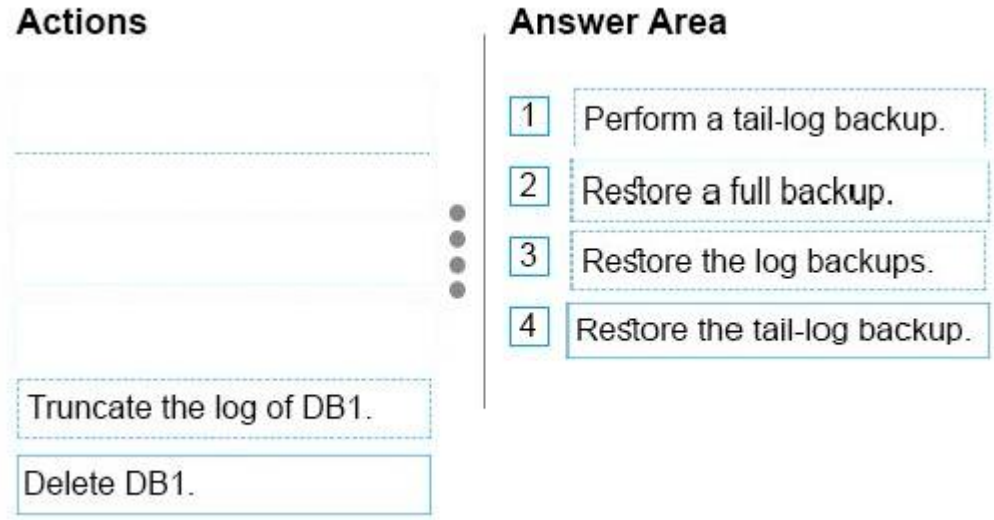
You need to recover DB1 and prevent any data loss.

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: Manage Storage
Explanation

Explanation/Reference:
Explanation:
Step 1: Perform a tail-log backup.
A tail-log backup captures any log records that have not yet been backed up (the tail of the log) to prevent work loss and to keep the log chain intact. Before you can recover a SQL Server database to its latest point in time, you must back up the tail of its transaction log. The tail-log backup will be the last backup of interest in the recovery plan for the database.

Step 2: Restore a full backup.
Backups must be restored in the order in which they were created. Before you can restore a particular transaction log backup, you must first restore the following previous backups without rolling back uncommitted transactions, that is WITH NORECOVERY:
The full database backup and the last differential backup, if any, taken before the particular transaction log

backup.

Step 3: Restore the log backups.
Log backups must be applied in the sequence in which they were created, without any gaps in the log chain.

Step 4: Restore the tail-log backups.

Reference:
https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/restore-a-transaction-log-backup-sql-server

https://docs.microsoft.com/en-us/sql/relational-databases/backup-restore/tail-log-backups-sql-server

QUESTION 199
User report that a query takes a long time to execute. The query has the following wait statistics.

```
<WaitStats>
    <Wait WaitType="MEMORY_ALLOCATION_EXT" WaitTimeMs="186" WaitCount="112046" />

    <Wait WaitType="PAGEIOLATCH_SH" WaitTimeMs="37001" WaitCount="183" />
    <Wait WaitType="SOS_SCHEDULER_YIELD" WaitTimeMs="399" WaitCount="12321" />
    <Wait WaitType="WRITELOG" WaitTimeMs="1632" WaitCount="627" />
    <Wait WaitType="IO_COMPLETION" WaitTimeMs="100287" WaitCount="5300" />
    <Wait WaitType="PAGEIOLATCH_UP" WaitTimeMs="59652" WaitCount="21027" />
    <Wait WaitType="PAGEIOLATCH_EX" WaitTimeMs="1116329" WaitCount="1840528" />
</WaitStats>
```

Which resource causes the issue?

A. processor
B. disk
C. blocking
D. network

Correct Answer: B
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
PAGEIOLATCH Wait time and WaitCount are both high.
One of the most common wait type seen on SQL Server and definitely one that causes a lot of troubles to less experienced database administrators is the PAGEIOLATCH_SH wait type. This is one of those wait types that clearly indicates one thing, but which background and potential causes are much subtler and may lead to erroneous conclusions and worse, incorrect solutions

The Microsoft definition of this wait type is:
Occurs when a task is waiting on a latch for a buffer that is in an I/O request. The latch request is in Shared mode. Long waits may indicate problems with the disk subsystem.

References: https://www.sqlshack.com/handling-excessive-sql-server-pageiolatch_sh-wait-types/

QUESTION 200
You have an on-premises Microsoft SQL server that has a database named DB1. DB1 contains several tables that are stretched to Microsoft Azure.

From SQL Server Management Studio (SSMS), a junior database administrator accidentally deletes several

rows from the Azure SQL database and breaks the connection to Azure.

You need to resume Stretch Database operations.

Which two stored procedures should you use? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

A. sys.sp_rda_reconcile_batch
B. sys.sp_rda_reconcile_indexes
C. sys.sp_rda_reauthorize_db
D. sys.sp_rda_reconcile_columns
E. sys.sp_rda_set_rpo_duration

Correct Answer: CD
Section: Manage Storage
Explanation

Explanation/Reference:
sys.sp_rda_reauthorize_db restores the authenticated connection between a local database enabled for Stretch and the remote database.

If you have accidentally deleted columns from the remote table, run sp_rda_reconcile_columns to add columns to the remote table that exist in the Stretch-enabled SQL Server table but not in the remote table.

Incorrect Answers:
A: sys.sp_rda_reconcile_batch reconciles the batch ID stored in the Stretch-enabled SQL Server table with the batch ID stored in the remote Azure table.
Typically you only have to run sp_rda_reconcile_batch if you have manually deleted the most recently migrated data from the remote table. When you manually delete remote data that includes the most recent batch, the batch IDs are out of sync and migration stops.

References:
https://docs.microsoft.com/en-us/sql/relational-databases/system-stored-procedures/sys-sp-rda-reconcile-batch-transact-sql
https://docs.microsoft.com/en-us/sql/relational-databases/system-stored-procedures/sys-sp-rda-reauthorize-db-transact-sql

QUESTION 201
You have a database named `DB1` that contains a table named `Table1`. `Table1` has 1 billion rows.

You import 10 million rows of data into `Table1`.

After the import, users report that queries take longer than usual to execute.

You need to identify whether an out-of-date execution plan is causing the performance issue.

Which dynamic management view should you use?

A. `sys.dm_xtp_transaction_stats`
B. `sys.dm_exec_input_buffer`
C. `sys.dm_db_index_operational_stats`
D. `sys.dm_db_stats_properties`

Correct Answer: C
Section: Manage Storage

Explanation

Explanation/Reference:
Explanation:
sys.dm_db_index_operational_stats dynamic management function provides us the current low-level I/O, locking, latching, and access method for each partition of the table. This information is really useful to troubleshoot SQL Server performance issues.

Reference: https://basitaalishan.com/2013/03/19/using-sys-dm_db_index_operational_stats-to-analyse-how-indexes-are-utilised/

QUESTION 202
DRAG DROP

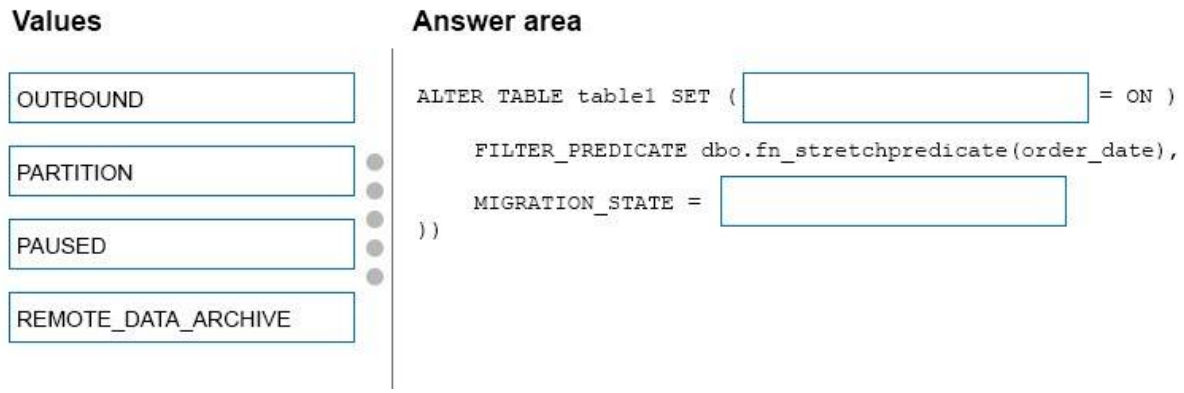
You have database that contains a 400-GB table that is read-only.

You need to enable the Stretch Database feature.

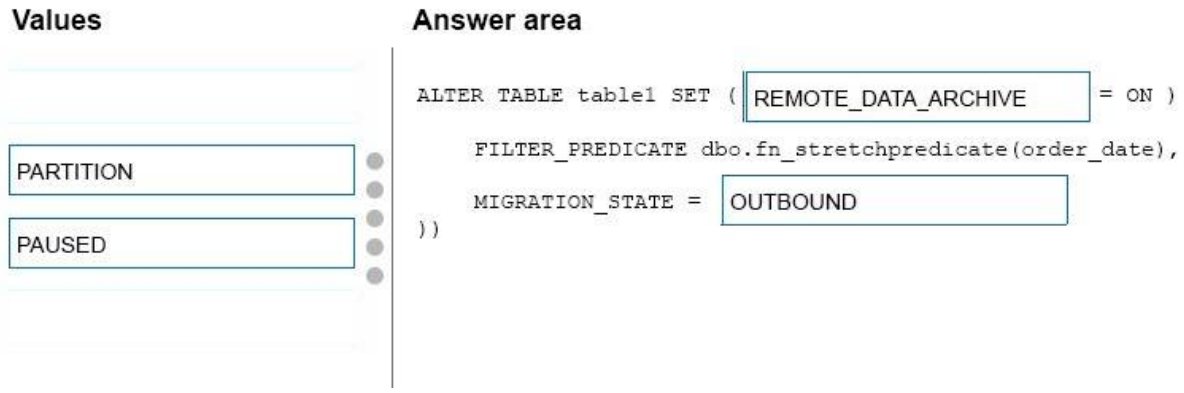
How should you complete the statement? To answer, drag the appropriate values to the correct targets. Each value may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Select and Place:



Correct Answer:



Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
To configure an existing table for Stretch Database, run the ALTER TABLE command.

Here's an example that migrates the entire table and begins data migration immediately.

```
USE <Stretch-enabled database name>;
GO
ALTER TABLE <table name>
   SET ( REMOTE_DATA_ARCHIVE = ON ( MIGRATION_STATE = OUTBOUND ) ) ;
GO
```

References: https://docs.microsoft.com/en-us/sql/sql-server/stretch-database/enable-stretch-database-for-a-table

QUESTION 203
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 sections, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You have Microsoft SQL Server on a Microsoft Azure virtual machine that has a database named DB1.

You discover that DB1 experiences WRITE_LOG waits that are longer than 50 ms.

You need to reduce the WRITE_LOG wait time.

Solution: Move the transaction logs to a faster disk.

Does this meet the goal?

A. Yes
B. No

Correct Answer: A
Section: Manage Storage
Explanation

Explanation/Reference:
Explanation:
In SQL Server, if we have a transactional based system and find a high WRITELOG wait type this is a performance bottleneck and can cause the transaction log file to grow rapidly and frequently.
It is being recommended to SQL server users that they must archive the log files on a separate disk for getting better performance.

References: https://atdhebuja.wordpress.com/2016/06/20/resolving-sql-server-transaction-log-waits/