1. What is a primary key in a table?
A primary key is a unique field or combination of fields in a table that identifies each record. It ensures that no two rows have the same value and prevents null entries. For example, *CustomerID* in a Customers table is usually the primary key because it uniquely identifies each customer.

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2. Name the two types of table relationships in Power BI.
The two main types of relationships in Power BI are **one-to-many (1:*)** and **many-to-many (*:*)**. In a one-to-many relationship, one record from the first table can relate to many records in the second table. A many-to-many relationship allows multiple records in one table to relate to multiple records in another table.

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3. How do you create a relationship between two tables in Power BI?
To create a relationship, go to the **Model view** in Power BI, then drag a field from one table to the matching field in another table (for example, *CustomerID* from Customers to *CustomerID* in Sales). You can also use the **Manage Relationships** option under the Home tab to create or edit relationships manually. Both fields must have the same data type for the relationship to work.

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4. What is a "star schema"?
A star schema is a data model design where a central **fact table** is connected to multiple **dimension tables**. The fact table contains quantitative data, such as sales amounts or quantities, while dimension tables hold descriptive information like product names, customers, or dates. The structure resembles a star, with the fact table at the center and dimension tables surrounding it.

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5. Which table is typically the fact table in a sales dataset?
In a sales dataset, the **Sales** table is typically the fact table. It stores transactional data such as sales quantity, price, and total amount, along with foreign keys (like *ProductID* or *CustomerID*) that link to the corresponding dimension tables.

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6. Why is ProductID in Sales.csv a foreign key?
ProductID in the Sales.csv file is a foreign key because it links each sales record to a specific product in the Products table. The foreign key connects the transactional data in the fact table (Sales) to the descriptive information in the dimension table (Products), allowing Power BI to combine and analyze data accurately.

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7. Optimize a model with circular relationships—how would you resolve it?
Circular relationships occur when tables are linked in a loop, making it unclear how filters should flow. To fix this, remove or deactivate one of the relationships to break the loop, or create a bridge table to connect the related data logically. Another solution is to redesign the model into a star schema structure or use DAX measures instead of direct relationships.

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8. Use bidirectional filtering sparingly—when is it appropriate? Bidirectional filtering allows filters to flow in both directions between tables, which can make data analysis more flexible but may also slow performance. It is appropriate when you need both tables to influence each other, such as in many-to-many relationships or when dimension tables must filter one another for accurate results. However, it should be used carefully to avoid ambiguity and performance issues.