# Power BI Lesson 5: Data Modeling - Theoretical Questions with Answers

### 1. Explain the concept of star schema in data modeling.

Star schema is a type of data model used in Power BI where a central fact table (like Sales) is surrounded by dimension tables (like Products, Customers, Time). It simplifies queries and improves performance.

### 2. What is normalization in database design, and why is it used?

Normalization is the process of organizing data to minimize redundancy. It helps improve data integrity and ensures consistency across the dataset.

### 3. What is a surrogate key, and why would you use one?

A surrogate key is an artificial or system-generated key used instead of a natural key. It ensures uniqueness and can be used when natural keys are not stable.

### 4. Why should relationships between tables be created using unique identifiers?

Using unique identifiers (like primary keys) ensures that each record can be uniquely matched across related tables, improving accuracy and performance in filtering.

### 5. What are the differences between 1-to-many and many-to-many relationships?

1-to-many means one record in a table is related to many in another (e.g., one customer with many orders). Many-to-many allows both tables to have multiple matching records (e.g., customers and products through purchases).

### 6. Why is it important to manage relationships in the data model?

Managing relationships properly ensures that filters propagate correctly and data is calculated as expected in

reports. It also avoids performance issues and ambiguity.

### 7. When would you use a role-playing dimension in Power BI?

Role-playing dimensions are used when the same dimension (like Date) is used multiple times in a model for different purposes (e.g., Order Date and Ship Date). You create multiple instances of the date table for this.

### 8. What is bidirectional filtering, and when should it be used?

Bidirectional filtering allows filters to flow in both directions between tables. It should be used sparingly because it can create circular dependencies and impact performance.

### 9. Why is it necessary to create a bridge table in a many-to-many relationship?

A bridge table is needed in many-to-many relationships to connect tables using intermediate values, ensuring that data filters correctly and avoids ambiguity.

### 10. What does enforcing referential integrity mean in Power BI?

It means ensuring that all foreign key values in a fact table exist in the related dimension table. It avoids issues like blank values and incorrect aggregations in visuals.