1. What is a primary key in a table?
A unique column (or set of columns) that identifies each row in a table.

2. Name the two types of table relationships in Power BI.

- One-to-many (most common)

- Many-to-many

3. How do you create a relationship between two tables in Power BI?
Go to **Model view**, drag the field from one table to the matching field in another (e.g., CustomerID).

4. What is a "star schema"?
A design where a central **fact table** is connected to surrounding **dimension tables**.

5. Which table is typically the fact table in a sales dataset?
Sales table (transactions).

6. Link Sales.csv to Customers.csv using CustomerID (one-to-many).
Customers = "one" side, Sales = "many" side → create relationship on **CustomerID**.

7. Why is ProductID in Sales.csv a foreign key?
Because it points to **ProductID** in the Products table (it references another table).

8. Fix a relationship error where ProductID has mismatched data types.
Change both columns (Sales.ProductID and Products.ProductID) to the **same data type** (e.g., whole number or text).

9. Explain why a star schema improves performance.
It reduces complexity, avoids circular relationships, and makes queries faster.

10. Add a new column TotalSales in Sales (Quantity * Price from Products).
Use **DAX calculated column**:

```
TotalSales = Sales[Quantity] * RELATED(Products[Price])
```

11. Optimize a model with circular relationships—how would you resolve it?
Remove extra relationships, keep a clear **one-to-many flow**, or create a **bridge table**.

12. Create a role-playing dimension for OrderDate and ShipDate.
Duplicate the **Date table** → link one to **OrderDate**, another to **ShipDate**.

13. Handle a many-to-many relationship between Customers and Products.
 Create a **bridge table** (Customer-Product mapping) instead of direct many-to-many.

14. Use bidirectional filtering sparingly—when is it appropriate?
 When both tables need to filter each other (e.g., in special reporting like **Customer ↔ Salesperson**).