**1. How do you group data by month and year?**

To group data by **month and year** in PostgreSQL

SELECT

EXTRACT(YEAR FROM order\_date) AS year,

EXTRACT(MONTH FROM order\_date) AS month,

SUM(amount)

FROM online\_sales

GROUP BY

EXTRACT(YEAR FROM order\_date),

EXTRACT(MONTH FROM order\_date);

EXTRACT() helps pull the year and month from a date column.  
GROUP BY organizes data into groups for aggregation.

**2. What's the difference between COUNT(\*) and COUNT(DISTINCT col)?**

| **Function** | **Purpose** |
| --- | --- |
| COUNT(\*) | Counts **all rows**, including duplicates and NULLs. |
| COUNT(DISTINCT col) | Counts only **unique non-NULL** values in a specific column. |

Example:

COUNT(\*) -- total number of rows

COUNT(DISTINCT order\_id) -- number of unique orders

**3. How do you calculate monthly revenue?**

You use SUM (amount) after grouping by month and year:

SELECT

EXTRACT (YEAR FROM order\_date) AS year,

EXTRACT(MONTH FROM order\_date) AS month,

SUM (amount) AS monthly revenue

FROM online\_sales

GROUP BY

EXTRACT (YEAR FROM order\_date),

EXTRACT (MONTH FROM order\_date);

**4. What are aggregate functions in SQL?**

Aggregate functions perform calculations on groups of rows and return a single result. Common examples:

* SUM () – Total value
* AVG () – Average value
* COUNT () – Number of rows
* MAX () – Highest value
* MIN () – Lowest value

Ex:

SELECT AVG (amount) FROM online\_sales;

**5. How to handle NULLs in aggregates?**

Most aggregate functions ignore NULLs by default

SELECT AVG (amount) FROM online\_sales;

This will calculate the average excluding NULL values in the amount column.

If you want to treat NULLs as zero:

SELECT SUM (COALESCE (amount, 0)) FROM online\_sales;

**6. What’s the role of ORDER BY and GROUP BY?**

|  |  |
| --- | --- |
| GROUP BY | * Groups rows sharing a value into summary rows. Required for aggregate functions. |
| ORDER BY | * Sorts the result set by one or more columns. |

Ex

SELECT EXTRACT(MONTH FROM order\_date), SUM(amount)

FROM online sales

GROUP BY EXTRACT(MONTH FROM order\_date)

ORDER BY SUM(amount) DESC;

**7. How do you get the top 3 months by sales?**

Use ORDER BY and LIMIT:

SELECT

EXTRACT(YEAR FROM order\_date) AS year,

EXTRACT(MONTH FROM order\_date) AS month,

SUM(amount) AS monthly sales

FROM online sales

GROUP BY

EXTRACT(YEAR FROM order\_date),

EXTRACT(MONTH FROM order\_date)

ORDER BY monthly\_sales DESC

LIMIT 3;

This returns the top 3 months with the highest total sales.