**1. Question: Find the Second Highest Salary**

Answer: To find the second-highest salary in a table, you can use a subquery with the LIMIT clause:

SELECT DISTINCT salary   
FROM employees   
ORDER BY salary DESC   
LIMIT 1 OFFSET 1;

**2. Question: Calculate the Average Salary**

Answer: To calculate the average salary, use the AVG function:

SELECT AVG(salary)   
FROM employees;

**3. Question: Identify Duplicate Rows**

Answer: To find duplicate rows, use the GROUP BY clause and HAVING:

SELECT column1, column2, COUNT(\*) as count  
FROM table\_name  
GROUP BY column1, column2  
HAVING COUNT(\*) > 1;

**4. Question: Retrieve N Random Records**

Answer: To fetch N random records, use ORDER BY and LIMIT

SELECT column1, column2   
FROM table\_name  
ORDER BY RANDOM()  
LIMIT N;

**5. Question: Calculate Running Total**

Answer: You can calculate a running total using the SUM function with the OVER clause:

SELECT date, value,   
 SUM(value) OVER (ORDER BY date) AS running\_total  
FROM data;

**6. Question: Find Missing Numbers in a Range**

Answer: To find missing numbers in a range, use a recursive common table expression (CTE)

WITH RECURSIVE MissingNumbers AS (  
 SELECT 1 AS number  
 UNION ALL  
 SELECT number + 1  
 FROM MissingNumbers  
 WHERE number < 100  
)  
SELECT number  
FROM MissingNumbers  
LEFT JOIN table\_name ON MissingNumbers.number = table\_name.column\_name  
WHERE table\_name.column\_name IS NULL;

**7. Question: Concatenate Values from Multiple Rows**

Answer: To concatenate values from multiple rows into a single string, use the GROUP\_CONCAT function (MySQL) or the STRING\_AGG function (SQL Server):

SELECT id, GROUP\_CONCAT(value ORDER BY value ASC) AS concatenated\_values  
FROM table\_name  
GROUP BY id;

**8. Question: Calculate the Difference Between Two Dates**

Answer: To calculate the difference between two dates, use the DATEDIFF function (SQL Server) or DATE\_PART function (PostgreSQL):

SELECT DATEDIFF(day, start\_date, end\_date) AS date\_difference  
FROM table\_name;

**9. Question: Find the Nth Highest Salary Without Using**LIMIT

Answer: To find the Nth highest salary without using LIMIT, you can use a subquery with a JOIN:

SELECT DISTINCT e1.salary   
FROM employees e1   
WHERE N = (  
 SELECT COUNT(DISTINCT e2.salary)   
 FROM employees e2   
 WHERE e2.salary >= e1.salary  
);

**10. Question: Select Records with Maximum Value in Each Group**

Answer: To select records with the maximum value in each group, you can use a subquery or the RANK or DENSE\_RANK window functions:

SELECT column1, column2, column3  
FROM (  
 SELECT column1, column2, column3,   
 RANK() OVER (PARTITION BY group\_column ORDER BY value\_column DESC) AS r  
 FROM table\_name  
) ranked  
WHERE r = 1;

**11. Question: Calculate the Median Value**

Answer: To calculate the median value, you can use window functions and subqueries:

WITH OrderedData AS (  
 SELECT value\_column,  
 ROW\_NUMBER() OVER (ORDER BY value\_column) AS row,  
 COUNT(\*) OVER () AS total\_rows  
 FROM table\_name  
)  
SELECT AVG(value\_column) AS median  
FROM OrderedData  
WHERE row IN ((total\_rows + 1) / 2, (total\_rows + 2) / 2);

**12. Question: Find the Top N Records for Each Group**

Answer: To find the top N records for each group, you can use window functions:

SELECT column1, column2, column3  
FROM (  
 SELECT column1, column2, column3,   
 ROW\_NUMBER() OVER (PARTITION BY group\_column ORDER BY value\_column DESC) AS r  
 FROM table\_name  
) ranked  
WHERE r <= N

**13. Question: Calculate the Percentage of Total**

Answer: To calculate the percentage of the total, you can use the SUM function with a subquery:

SELECT column1, value\_column,   
 (value\_column / (SELECT SUM(value\_column) FROM table\_name)) \* 100 AS percentage  
FROM table\_name;

**14. Question: Select Rows with the Most Recent Date**

Answer: To select rows with the most recent date, you can use a subquery:

SELECT column1, column2, date\_column  
FROM table\_name  
WHERE date\_column = (  
 SELECT MAX(date\_column) FROM table\_name  
);

**15. Question: Calculate the Moving Average**

Answer: To calculate a moving average, you can use window functions:

SELECT date, value\_column,   
 AVG(value\_column) OVER (ORDER BY date ROWS BETWEEN 2 PRECEDING AND CURRENT ROW) AS moving\_average  
FROM table\_name;