1. Найдите самый популярный товар в сервисе (тот, который попал в заказы клиентов наибольшее количество раз).

```
SELECT
  p.product_id,
  p.product_name,
  COUNT(op.order_id) As order_count
FROM orders_product op
JOIN products p
ON op.product_id = p.product_id
GROUP BY p.product_id, p.product_name
ORDER BY order_count DESC
LIMIT 1
;
```

product_id	product_name	order_count
15	Вода	429

2. Найдите день, в который количество выполненных доставок в сервисе было максимальным за всё время работы сервиса.

```
with deliveries_count as (
    SELECT
    delivery_dt,
    COUNT(delivery_dt) As count_deliveries
    FROM info
    WHERE is_completed_flg = 'True'
    GROUP BY delivery_dt
    )
SELECT
delivery_dt, count_deliveries
FROM deliveries_count
WHERE count_deliveries = (
    SELECT
    MAX(count_deliveries)
    FROM deliveries_count
    )
;
```

delivery_dt	count_deliveries
12-12-2022	6
09-12-2022	6
23-06-2020	6

3. Найдите день, в который количество выполненных доставок в сервисе было минимальным за всё время работы сервиса.

```
with deliveries_count as (
    SELECT
    delivery_dt,
    COUNT(delivery_dt) As count_deliveries
    FROM info
    WHERE is_completed_flg = 'True'
    GROUP BY delivery_dt
    )
SELECT
delivery_dt, count_deliveries
FROM deliveries_count
WHERE count_deliveries = (
    SELECT
    MIN(count_deliveries)
    FROM deliveries_count
    )
;
```

Таких дней много.

4. Посчитайте среднее время сессии пользователей в приложении в зависимости от используемого устройства в минутах.

```
SELECT
device_name,
AVG(timestampdiff(MINUTE, start_dttm, finish_dttm))
FROM app_sess
GROUP BY device_name
```

device_name	AVG(timestampdiff(MINUTE, start_dttm, finish_dttm))
iOS	171308.0957
Windows	230577.2717
Ubuntu	262132.0631
Android	233843.5941
MacOS	262358.9453

5. Найдите максимальное количество различных товаров, добавленных в один заказ.

```
SELECT
MAX(product_count) AS max_products_in_order
FROM (
    SELECT
    order_id,
    COUNT(DISTINCT product_id) AS product_count
    FROM orders_product
    GROUP BY order_id
) AS tub
;
```

6. Подготовьте статистику по количеству незавершённых доставок по месяцам, начиная с 2022 года.

```
SELECT
  DATE_FORMAT(STR_TO_DATE(delivery_dt, '%d-%m-%Y'), '%Y-%m') AS month,
  COUNT(*) AS incomplete_deliveries
FROM info
WHERE is_completed_flg = 'False'
  AND STR_TO_DATE(delivery_dt, '%d-%m-%Y') >= '2022-01-01'
GROUP BY month
ORDER BY month
;
```

month	incomplete_deliveries
2022-01	36
2022-02	32
2022-03	26
2022-04	34
2022-05	52
2022-06	49
2022-07	43
2022-08	47
2022-09	37
2022-10	55
2022-11	36
2022-12	42
2023-01	34
2023-02	29
2023-03	35
2023-04	44
2023-05	43
2023-06	9

7. Подготовьте статистику по количеству заказов в разрезе метода оплаты по годам за всё время работы сервиса.

```
SELECT
YEAR(STR_TO_DATE(order_dt, '%d.%m.%Y')) AS order_year,
payment_method,
COUNT(*) AS count_orders
FROM orders
GROUP BY order_year, payment_method
ORDER BY order_year
;
```

order_year	payment_method	count_orders
2020	offline	432
2020	online	425
2021	offline	441
2021	online	430
2022	offline	454
2022	online	468
2023	offline	151
2023	online	149

8. Найдите топ-10 клиентов, совершивших наибольшее количество заказов за всё время работы сервиса.

```
SELECT
customer_id,
COUNT(order_id) as count_order
FROM orders
GROUP BY customer_id
ORDER BY count_order DESC
LIMIT 10
;
```

customer_id	count_order
1436524	16
4104376	14
4909710	13
4812043	12
2576384	12
3656851	12
2911210	12
1788676	12
7431085	12
1388281	12

9. Найдите самые популярные категории товаров (product_group_name) среди пользователей различных возрастных групп:

- 18–30 лет;
- 30–45 лет;
- 45–60 лет;
- 60+ лет.

```sql
WITH age_customers AS (
SELECT
    customer_id,
    TIMESTAMPDIFF(
    YEAR,
    STR_TO_DATE(birth_dt, '%d.%m.%Y'),
    CURDATE()
) AS age
FROM customers
),

customer_group_age AS (
SELECT
    customer_id,
    CASE
    WHEN age BETWEEN 18 AND 30 THEN '18-30'
    WHEN age > 30 AND age <= 45 THEN '30-45'
    WHEN age > 45 AND age <= 60 THEN '45-60'
    WHEN age > 60 THEN '60+'
    ELSE 'Other'
END AS age_group
FROM age_customers
),

orders_products AS (
SELECT
    o.order_id,
    o.customer_id,
    op.product_id,
    p.product_group_name
    FROM orders o
    JOIN orders_product op ON o.order_id = op.order_id
    JOIN products p ON op.product_id = p.product_id
),

tubl_with_groupage AS (
SELECT
    cg.age_group,
    opr.product_group_name
    FROM orders_products opr
    JOIN customer_group_age cg ON opr.customer_id = cg.customer_id
),

ranked AS (
SELECT
     age_group,
     product_group_name,
     COUNT(*) AS order_count,
     RANK() OVER (PARTITION BY age_group ORDER BY COUNT(*) DESC) AS rnk
     FROM tubl_with_groupage
     GROUP BY age_group, product_group_name
)
SELECT
    age_group,
    product_group_name,
    order_count
FROM ranked
WHERE rnk = 1 AND age_group != 'Other'
;
```

age_group	product_group_name	order_count
18-30	Часы	262
30-45	Одежда	384
45-60	Продукты	388
60+	Продукты	642

10. Найдите товар, который клиенты чаще всего заказывают совместно с [товаром X]. Товар X – юбка.

```
WITH orders_skirt AS (
    SELECT order_id
    FROM orders_product op
    JOIN products p ON p.product_id = op.product_id
    WHERE p.product_name = 'Юбка'
)
SELECT
product_name,
COUNT(*) AS count_second_product
FROM orders_product op
JOIN products p ON op.product_id = p.product_id
JOIN orders_skirt os ON os.order_id = op.order_id
WHERE p.product_name != 'Юбка'
GROUP BY p.product_name
ORDER BY count_second_product DESC
LIMIT 1
;
```

product_name	count_second_product
Часы с кукушкой	66