```sql
/* Check for Missing Values */
SELECT
COUNTIF(date IS NULL) AS missing_date,
COUNTIF(transaction_id IS NULL) AS missing_transaction_id,
COUNTIF(customer_id IS NULL) AS missing_customer_id,
COUNTIF(product IS NULL) AS missing_product,
COUNTIF(product_code IS NULL) AS missing_product_code,
COUNTIF(product_color IS NULL) AS missing_product_color,
COUNTIF(product_price IS NULL) AS missing_product_price,
COUNTIF(purchase_size IS NULL) AS missing_purchase_size,
COUNTIF(purchase_price IS NULL) AS missing_purchase_prize,
COUNTIF(revenue IS NULL) AS missing_revenue
FROM `lets-learn-sql-395417.customer_data.customer_purchase`

/* Look at the missing values founded */
SELECT product, product_code, product_color, date
FROM `lets-learn-sql-395417.customer_data.customer_purchase`
WHERE product IS NULL
/* Identify the missing product*/
SELECT product, product_code, product_color, product_price
FROM `lets-learn-sql-395417.customer_data.customer_purchase`
WHERE product_code = "SKU13351"
AND product_color = 'grey'


SELECT product, product_code, product_color, product_price
FROM `lets-learn-sql-395417.customer_data.customer_purchase`
WHERE product_code = "SKU77417"
AND product_color = 'beige'

/*find duplicates*/
SELECT transaction_id,
COUNT(*)
FROM `lets-learn-sql-395417.customer_data.customer_purchase`
GROUP BY transaction_id
HAVING COUNT(*) >1
```

```sql
/*identify duplicates*/
SELECT *
FROM `lets-learn-sql-395417.customer_data.customer_purchase`
WHERE transaction_id IN (
    SELECT transaction_id
    FROM `lets-learn-sql-395417.customer_data.customer_purchase`
    GROUP BY transaction_id
    HAVING COUNT(*) >1
)
ORDER BY transaction_id
/* those are not duplicates, but different products purchased in the same transaction,
therefore we will treat them as single transactions*/



/*correct data types*/
SELECT CAST(purchase_price AS FLOAT64) AS purchase_price
FROM `lets-learn-sql-395417.customer_data.customer_purchase`



/* DATA EXPLORATION */
/*Sales over time */

SELECT
DATE_TRUNC(date, MONTH) AS MONTH,
SUM(revenue) AS total_revenue
FROM `lets-learn-sql-395417.customer_data.customer_purchase`
GROUP BY MONTH
ORDER BY MONTH

/* Top products */
SELECT product,
SUM(revenue) AS total_revenue
FROM `lets-learn-sql-395417.customer_data.customer_purchase`
GROUP BY product
ORDER BY total_revenue
```

```sql
DESC LIMIT 10

/* customer insight*/
SELECT
 customer_id,
 COUNT(transaction_id) AS transactions,
 SUM(revenue) AS total_revenue,
 AVG(revenue) AS average_revenue_per_transaction
FROM `lets-learn-sql-395417.customer_data.customer_purchase`
GROUP BY customer_id
ORDER BY total_revenue DESC

/*Product performance */
SELECT product, product_color,
SUM(revenue) AS total_revenue
FROM `lets-learn-sql-395417.customer_data.customer_purchase`
GROUP BY product, product_color
ORDER BY total_revenue DESC
```