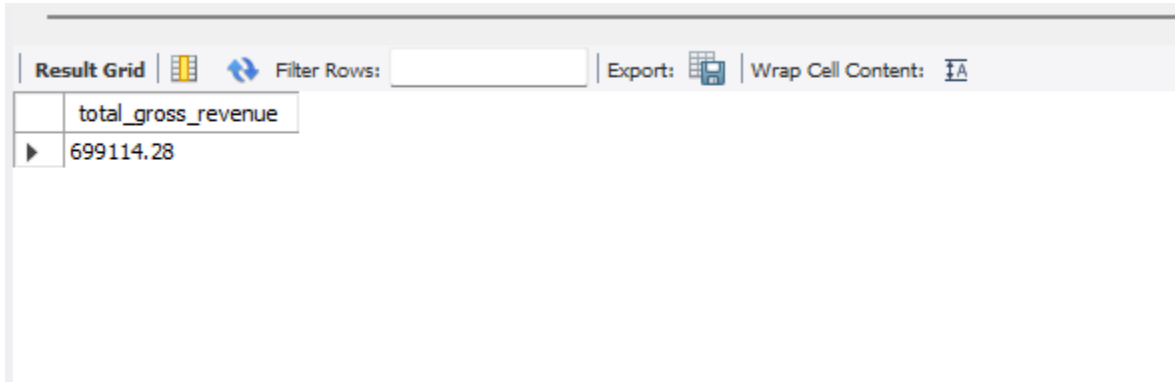


## Task – 02: Business Questions

### 1. What is the total gross revenue?

```
SELECT  
    SUM(gross_revenue) AS total_gross_revenue  
FROM fact_transaction;
```

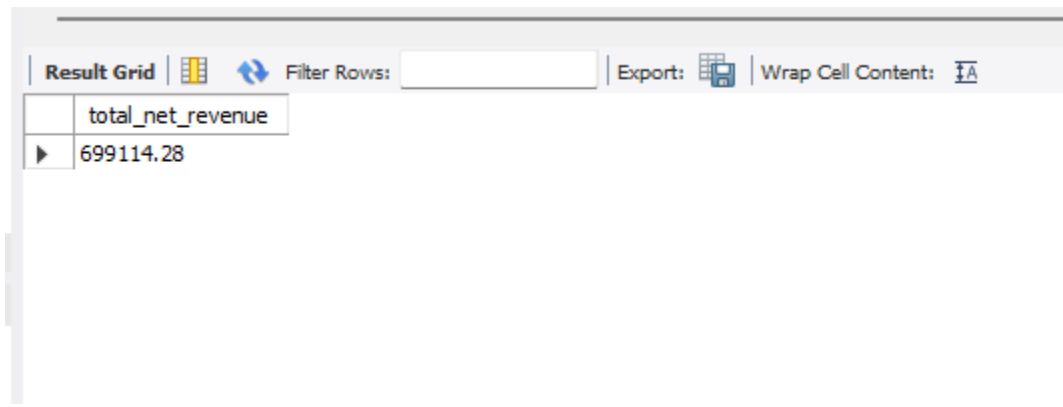


The screenshot shows a SQL query result grid. The grid has a header row with the column name 'total\_gross\_revenue' and a data row with the value '699114.28'. The grid is displayed in a window with a toolbar at the top containing options like 'Result Grid', 'Filter Rows', 'Export', and 'Wrap Cell Content'.

total_gross_revenue
699114.28

### 2. What is the total net revenue?

```
SELECT  
    SUM(net_revenue) AS total_net_revenue  
FROM fact_transaction;
```



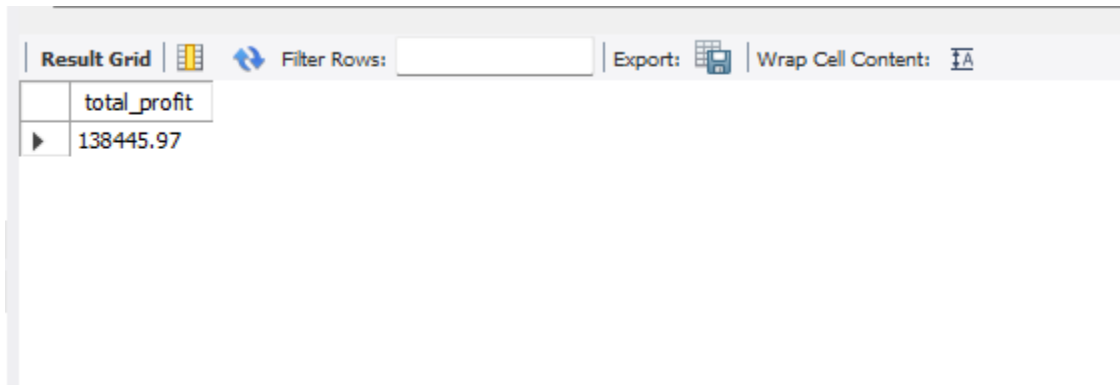
The screenshot shows a SQL query result grid. The grid has a header row with the column name 'total\_net\_revenue' and a data row with the value '699114.28'. The grid is displayed in a window with a toolbar at the top containing options like 'Result Grid', 'Filter Rows', 'Export', and 'Wrap Cell Content'.

total_net_revenue
699114.28

### 3. What is the total profit?

```
SELECT  
    SUM(profit) AS total_profit
```

FROM fact\_transaction;

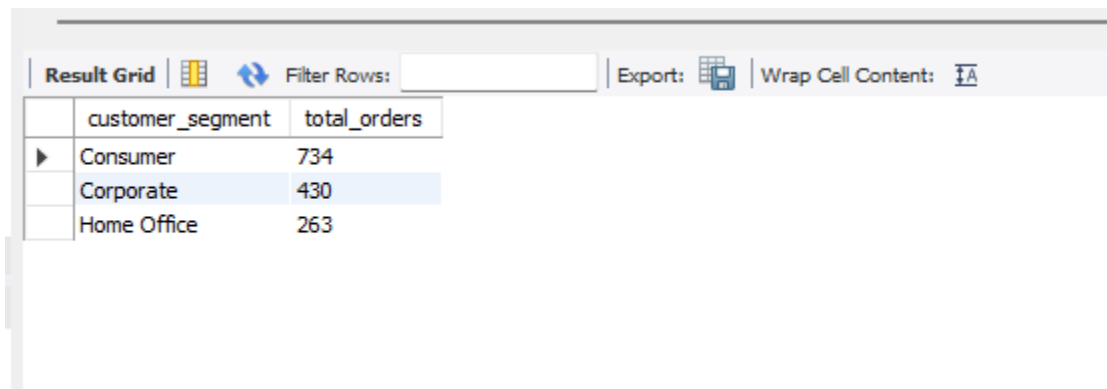


The screenshot shows a database interface with a toolbar at the top containing 'Result Grid', 'Filter Rows', 'Export', and 'Wrap Cell Content'. Below the toolbar is a table with one column labeled 'total\_profit' and one row containing the value '138445.97'.

	total_profit
▶	138445.97

#### 4. How many orders were placed by each customer segment?

```
SELECT
    customer_segment,
    COUNT(DISTINCT order_id) AS total_orders
FROM fact_transaction
GROUP BY customer_segment;
```



The screenshot shows a database interface with a toolbar at the top. Below the toolbar is a table with two columns: 'customer\_segment' and 'total\_orders'. The table contains three rows: 'Consumer' with 734 orders, 'Corporate' with 430 orders, and 'Home Office' with 263 orders.

	customer_segment	total_orders
▶	Consumer	734
	Corporate	430
	Home Office	263

#### 5. What are the top 5 best-selling products by quantity?

```
SELECT
    dp.product_name,
    SUM(ft.quantity) AS total_quantity
FROM fact_transaction ft
JOIN dim_product dp ON ft.product_sk = dp.product_sk
GROUP BY dp.product_name
ORDER BY total_quantity DESC
LIMIT 5;
```

Result Grid			Filter Rows:	Export:	Wrap Cell Content:	Fetch rows:
	product_name	total_quantity				
▶	P-OffSup-Blnd-050	38				
	P-OffSup-Blnd-212	35				
	P-Furnt-CH-086	35				
	P-Furnt-CH-059	34				
	P-OffSup-Fstr-080	31				

## 6. What is the monthly gross revenue trend for 2015?

```

SELECT
    DATE_FORMAT(order_date, '%Y-%m') AS month,
    SUM(gross_revenue) AS monthly_gross_revenue
FROM fact_transaction
WHERE YEAR(order_date) = 2015
GROUP BY month
ORDER BY month;

```

Result Grid			Filter Rows:	Export:	Wrap Cell Content:
	month	monthly_gross_revenue			
▶	2015-01	11537.91			
	2015-02	4977.82			
	2015-03	7504.42			
	2015-04	9986.79			
	2015-05	13035.78			
	2015-06	19856.63			
	2015-07	15301.56			
	2015-08	16863.57			
	2015-09	28362.40			
	2015-10	30050.96			
	2015-11	22773.90			
	2015-12	26158.04			

## 7. Which sub-category has the highest profit margin?

```

SELECT
    dsc.sub_category_name,
    ROUND(SUM(profit) / SUM(net_revenue) * 100, 2) AS profit_margin_pct

```

```

FROM fact_transaction ft
JOIN dim_product dp ON ft.product_sk = dp.product_sk
JOIN dim_sub_category dsc ON dp.sub_category_id = dsc.sub_category_id
GROUP BY dsc.sub_category_name
ORDER BY profit_margin_pct DESC
LIMIT 1;

```

Result Grid		Filter Rows:	Export:	Wrap Cell Content:	Fetch rows:
	sub_category_name	profit_margin_pct			
▶	Accessories	26.53			

**8. Which continents experience the most product returns as a percentage of total products sold?**

```

SELECT
    dl.continent,
    ROUND(SUM(CASE WHEN return_flag = 1 THEN 1 ELSE 0 END) * 100.0 /
COUNT(DISTINCT ft.order_id), 2) AS return_percentage
FROM fact_transaction ft
JOIN dim_location dl ON ft.location_id = dl.location_id
GROUP BY dl.continent;

```

Result Grid		Filter Rows:	Export:	Wrap Cell Content:
	continent	return_percentage		
▶	North America	7.09		
	South America	13.10		

## 9. Which products have a negative profit?

```
SELECT
    dp.product_name,
    SUM(profit) AS total_profit
FROM fact_transaction ft
JOIN dim_product dp ON ft.product_sk = dp.product_sk
GROUP BY dp.product_name
HAVING total_profit < 0;
```

Result Grid			Filter Rows:	Export:	Wrap Cell Content:
	product_name	total_profit			
▶	P-Tech-Accss-016	-68.39			
	P-OffSup-Fstr-041	-2.13			
	P-Furnt-Furng-080	-25.76			
	P-OffSup-Env-156	-4.40			
	P-Tech-Phn-144	-8.73			
	P-OffSup-App-168	-38.10			
	P-Tech-Cop-015	-223.12			
	P-Furnt-BC-015	-92.55			
	P-Furnt-Tbl-155	-0.02			
	P-OffSup-Art-160	-4.05			
	P-OffSup-Blnd-302	-4.50			
	P-OffSup-Str-098	-34.56			
	P-Tech-Mchn-036	-52.98			
	P-OffSup-Env-054	-0.88			
	P-OffSup-Blnd-175	-9.14			
	P-OffSup-Blnd-267	-2.47			
	P-OffSup-Str-042	-31.89			
	P-Furnt-CH-133	-9.82			
	P-Furnt-BC-088	-187.34			
	P-OffSup-Ppr-155	-13.35			
	P-OffSup-Lbl-058	-0.36			
	P-OffSup-Env-087	-2.08			

Result 26 ×

## 10. How does discount percentage correlate with order volume?

```
SELECT
    discount_pct,
    COUNT(*) AS order_count
FROM fact_transaction
GROUP BY discount_pct
ORDER BY discount_pct;
```

Result Grid		
Filter Rows:		
Export:		
Wrap Cell Content:		
	discount_pct	order_count
▶	0.000	2901

## 11. What is the return rate by product category?

```

SELECT
    dc.category_name,
    ROUND(SUM(CASE WHEN return_flag = 1 THEN 1 ELSE 0 END) * 100.0 /
COUNT(DISTINCT ft.order_id), 2) AS return_rate_pct
FROM fact_transaction ft
JOIN dim_product dp ON ft.product_sk = dp.product_sk
JOIN dim_sub_category dsc ON dp.sub_category_id = dsc.sub_category_id
JOIN dim_category dc ON dsc.category_id = dc.category_id
GROUP BY dc.category_name;

```

Result Grid		
Filter Rows:		
Export:		
Wrap Cell Content:		
	category_name	return_rate_pct
▶	Furniture	5.55
	Office Supplies	7.35
	Technology	4.16

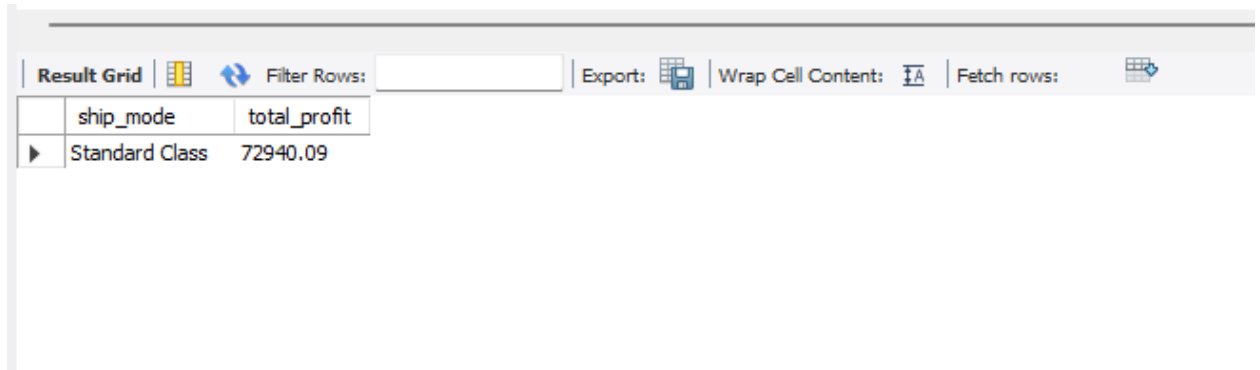
## 12. Which shipping mode is most profitable?

```

SELECT
    ship_mode,
    SUM(profit) AS total_profit
FROM fact_transaction
GROUP BY ship_mode
ORDER BY total_profit DESC

```

LIMIT 1;

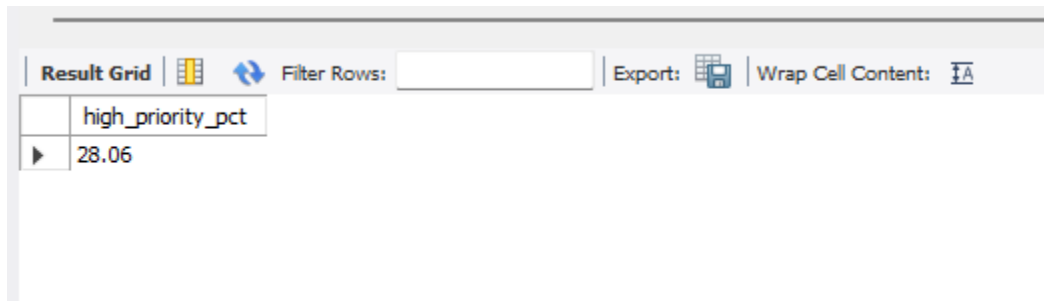


The screenshot shows a database interface with a toolbar at the top containing options like 'Result Grid', 'Filter Rows', 'Export', 'Wrap Cell Content', and 'Fetch rows'. Below the toolbar is a table with two columns: 'ship\_mode' and 'total\_profit'. The first row of data shows 'Standard Class' and '72940.09'.

	ship_mode	total_profit
▶	Standard Class	72940.09

### 13. What percentage of orders are high priority?

```
SELECT  
  ROUND(SUM(CASE WHEN order_priority = 'High' THEN 1 ELSE 0 END) * 100.0 /  
COUNT(*), 2) AS high_priority_pct  
FROM fact_transaction;
```



The screenshot shows a database interface with a toolbar at the top containing options like 'Result Grid', 'Filter Rows', 'Export', and 'Wrap Cell Content'. Below the toolbar is a table with one column: 'high\_priority\_pct'. The first row of data shows '28.06'.

	high_priority_pct
▶	28.06

### 14. Which city generates the highest revenue per order?

```
SELECT  
  dl.city,  
  ROUND(SUM(net_revenue) / COUNT(DISTINCT ft.order_id), 2) AS  
revenue_per_order  
FROM fact_transaction ft  
JOIN dim_location dl ON ft.location_id = dl.location_id  
GROUP BY dl.city  
ORDER BY revenue_per_order DESC  
LIMIT 1;
```

Result Grid			Filter Rows:	Export:	Wrap Cell Content:	Fetch rows:
	city	revenue_per_order				
▶	Uberaba	3878.32				

### 15. What is the average profit per customer segment?

```
SELECT
    customer_segment,
    ROUND(AVG(profit), 2) AS avg_profit
FROM fact_transaction
GROUP BY customer_segment;
```

Result Grid			Filter Rows:	Export:	Wrap Cell Content:
	customer_segment	avg_profit			
▶	Consumer	49.10			
	Home Office	48.38			
	Corporate	45.12			

### 16. What is the year-over-year (YoY) revenue growth by category?

```
SELECT
    dc.category_name,
    YEAR(order_date) AS year,
    SUM(net_revenue) AS revenue,
    LAG(SUM(net_revenue)) OVER (PARTITION BY dc.category_name ORDER BY
YEAR(order_date)) AS prev_year_revenue,
    ROUND((SUM(net_revenue) - LAG(SUM(net_revenue)) OVER (PARTITION BY
dc.category_name ORDER BY YEAR(order_date))) * 100.0 / LAG(SUM(net_revenue))
OVER (PARTITION BY dc.category_name ORDER BY YEAR(order_date)), 2) AS
yoy_growth_pct
FROM fact_transaction ft
JOIN dim_product dp ON ft.product_sk = dp.product_sk
```



```

JOIN dim_sub_category dsc ON dp.sub_category_id = dsc.sub_category_id
JOIN dim_category dc ON dsc.category_id = dc.category_id
GROUP BY dc.category_name, YEAR(order_date);

```

Result Grid					
		Filter Rows:	Export:		Wrap Cell Content:
	category_name	year	revenue	prev_year_revenue	yoy_growth_pct
▶	Furniture	2012	50624.74	NULL	NULL
	Furniture	2013	51510.50	50624.74	1.75
	Furniture	2014	82227.51	51510.50	59.63
	Furniture	2015	88246.09	82227.51	7.32
	Office Supplies	2012	34757.18	NULL	NULL
	Office Supplies	2013	40230.95	34757.18	15.75
	Office Supplies	2014	54288.26	40230.95	34.94
	Office Supplies	2015	47536.76	54288.26	-12.44
	Technology	2012	41760.16	NULL	NULL
	Technology	2013	63066.84	41760.16	51.02
	Technology	2014	74238.36	63066.84	17.71
	Technology	2015	70626.93	74238.36	-4.86

## 17. Which products are frequently purchased together?

```

SELECT
    a.product_name AS product_1,
    b.product_name AS product_2,
    COUNT(*) AS times_bought_together
FROM (
    SELECT order_id, product_sk FROM fact_transaction GROUP BY order_id,
    product_sk
) o1
JOIN (
    SELECT order_id, product_sk FROM fact_transaction GROUP BY order_id,
    product_sk
) o2 ON o1.order_id = o2.order_id AND o1.product_sk < o2.product_sk
JOIN dim_product a ON o1.product_sk = a.product_sk
JOIN dim_product b ON o2.product_sk = b.product_sk
GROUP BY product_1, product_2
ORDER BY times_bought_together DESC
LIMIT 10;

```

Result Grid			
Filter Rows:			
Export:			
Wrap Cell Content:			
Fetch rows:			
	product_1	product_2	times_bought_together
▶	P-OffSup-Lbl-142	P-Tech-Phn-022	2
	P-Furnt-CH-040	P-Tech-Accss-058	2
	P-OffSup-Str-038	P-Furnt-CH-096	2
	P-Furnt-Furng-079	P-OffSup-Fstr-095	2
	P-Furnt-Furng-162	P-OffSup-Blnd-262	1
	P-Furnt-Furng-162	P-OffSup-Art-111	1
	P-Furnt-CH-082	P-OffSup-Blnd-065	1
	P-Furnt-BC-050	P-OffSup-Blnd-262	1
	P-Furnt-BC-050	P-OffSup-Art-111	1
	P-OffSup-Blnd-262	P-OffSup-Art-111	1

## 18. What percentage of orders contain multiple products?

```

SELECT
  ROUND(SUM(CASE WHEN product_count > 1 THEN 1 ELSE 0 END) * 100.0 /
COUNT(*), 2) AS multi_product_order_pct
FROM (
  SELECT order_id, COUNT(DISTINCT product_sk) AS product_count
  FROM fact_transaction
  GROUP BY order_id
) t;

```

Result Grid	
Filter Rows:	
Export:	
Wrap Cell Content:	
Fetch rows:	
	multi_product_order_pct
▶	49.33

## 19. Which orders have abnormally high shipping costs?

```

SELECT
  order_id,
  unit_ship_cost,
  quantity

```

```

FROM fact_transaction
WHERE unit_ship_cost > (SELECT AVG(unit_ship_cost) + 2 * STD(unit_ship_cost)
FROM fact_transaction);

```

Result Grid			
Filter Rows:			
Export:			
Wrap Cell Content:			
	order_id	unit_ship_cost	quantity
▶	MX-2015-SC2044031-42189	31.43	3
	MX-2012-JM1558082-41045	89.53	5
	MX-2015-MG1820518-42140	73.59	3
	MX-2014-BM1114028-41843	54.82	3
	US-2015-TZ2144518-42259	37.50	2
	MX-2014-AG1033028-41865	55.42	3
	MX-2013-AR1034582-41601	59.80	4
	MX-2014-CR1273028-41993	94.64	3
	MX-2014-CR1273028-41993	38.93	2
	US-2012-RR1952536-41270	140.81	5
	MX-2013-MH1762082-41612	52.25	2
	MX-2015-RK1930082-42206	37.09	5
	MX-2015-RK1930082-42206	39.43	1
	MX-2013-LS1723082-41368	44.26	4
	MX-2014-HA1492016-41984	37.60	5
	MX-2015-LS1720080-42294	34.19	6
	MX-2014-MM1805582-41901	55.88	2

## 20. How are orders distributed by value segments (Low/Medium/High)?

```

SELECT
  order_id,
  CASE
    WHEN net_revenue < 100 THEN 'Low'
    WHEN net_revenue BETWEEN 100 AND 500 THEN 'Medium'
    ELSE 'High'
  END AS value_segment,
  net_revenue
FROM fact_transaction;

```

Result Grid			
Filter Rows:		Export:	Wrap Cell Content: Fetch rows:
order_id	value_segment	net_revenue	
MX-2015-SC2057582-42279	Low	13.08	
MX-2013-KW1657028-41562	Medium	252.16	
MX-2013-KW1657028-41562	Medium	193.28	
MX-2013-KW1657028-41562	Low	35.44	
MX-2013-KW1657028-41562	Low	71.60	
MX-2013-KW1657028-41562	Low	56.12	
MX-2014-DP1300018-41909	Low	56.12	
MX-2014-DP1300018-41909	Medium	344.64	
MX-2014-DP1300018-41909	Low	97.36	
MX-2014-DP1300018-41909	Medium	341.52	
MX-2014-DP1300018-41909	Low	12.06	
MX-2014-TB2125093-41703	Low	20.76	
MX-2014-TB2125093-41703	Medium	210.64	
MX-2015-PK1891093-42271	Low	80.10	
MX-2015-JK1562518-42295	Medium	132.64	
MX-2015-JK1562518-42295	Low	12.94	
US-2014-HE1480098-41816	Low	26.38	
US-2014-HE1480098-41816	Medium	431.62	
US-2014-HE1480098-41816	Low	56.24	