

```
1  /*Database creation*/
2  create database Sports;
3
4  /*Switching to newly created database*/
5  use Sports;
6
7  /*Retrieving the data from the tables*/
8  select * from Sales;
9
10 select * from Product;
11
12 select * from Territories;
13
14 select * from Customer;
15
16 /*Data Cleaning*/
17 --Customer table
18 update Customer
19 set MaritalStatus='Married'
20 where MaritalStatus='M';
21
22 update Customer
23 set MaritalStatus='Single'
24 where MaritalStatus='S';
25
26 update Customer
27 set Gender='Male'
28 where Gender='M';
29
30 update Customer
31 set Gender='Female'
32 where Gender='F';
33
34 alter table Customer
35 drop column FullName, HouseOwnerFlag, NumberCarsOwned, CommuteDistance, NumberChildrenAtHome;
```

```
36
37 alter table Customer
38 add FullName varchar(55);
39
40 update Customer
41 set FullName=CONCAT(FirstName, ' ', LastName);
42
43 alter table Customer
44 add Age int;
45
46 alter table Customer
47 add Age_Group varchar(70);
48
49 update Customer
50 set Age=DATEDIFF(YEAR,BirthDate,GETDATE());
51
52 update Customer
53 set Age_Group = CASE
54     WHEN [Age] >= 3 AND [Age] < 6 THEN 'Preschoolers'
55     WHEN [Age] >= 6 AND [Age] < 13 THEN 'Children'
56     WHEN [Age] >= 13 AND [Age] < 20 THEN 'Teenagers'
57     WHEN [Age] >= 20 AND [Age] < 36 THEN 'Young Adults'
58     WHEN [Age] >= 36 AND [Age] < 56 THEN 'Adults'
59     WHEN [Age] >= 56 AND [Age] < 66 THEN 'Middle-aged Adults'
60     WHEN [Age] >= 66 AND [Age] < 80 THEN 'Older Adults/Seniors'
61     ELSE 'Elderly'
62 END;
63
64 select * from Customer;
65
66 --Product table
67 alter table Product
68 drop column DaysToManufacture, ProductDescription;
69
70 select * from Product;
```

```
71
72 --Territories table
73 alter table Territories
74 drop column Region_info;
75
76 select * from Territories;
77
78 /*KPI's*/
79 --Total Sales
80 select SUM(SalesAmount) AS [Total Sales] from Sales;
81
82 --YTD Total Sales
83 select
84     SUM(CASE WHEN YEAR(OrderDate) = 2014 THEN SalesAmount ELSE 0 END) AS [YTD Total Sales 2014],
85     SUM(CASE WHEN YEAR(OrderDate) = 2015 THEN SalesAmount ELSE 0 END) AS [YTD Total Sales 2015],
86     SUM(CASE WHEN YEAR(OrderDate) = 2016 THEN SalesAmount ELSE 0 END) AS [YTD Total Sales 2016],
87     SUM(CASE WHEN YEAR(OrderDate) = 2017 THEN SalesAmount ELSE 0 END) AS [YTD Total Sales 2017]
88 from
89     Sales;
90
91 --PYTD Total Sales
92 select
93     SUM(CASE WHEN YEAR(OrderDate) = 2013 THEN SalesAmount ELSE 0 END) AS [PYTD Total Sales 2014],
94     SUM(CASE WHEN YEAR(OrderDate) = 2014 THEN SalesAmount ELSE 0 END) AS [PYTD Total Sales 2015],
95     SUM(CASE WHEN YEAR(OrderDate) = 2015 THEN SalesAmount ELSE 0 END) AS [PYTD Total Sales 2016],
96     SUM(CASE WHEN YEAR(OrderDate) = 2016 THEN SalesAmount ELSE 0 END) AS [PYTD Total Sales 2017]
97 from Sales
98 where YEAR(OrderDate) IN (2013, 2014, 2015, 2016);
99
100 --Total Quantity sold
101 select SUM(OrderQuantity) AS [Total Quantity Sold] from Sales;
102
103 --YTD Total Quantity sold
104 select
105     SUM(CASE WHEN YEAR(OrderDate) = 2014 THEN OrderQuantity ELSE 0 END) AS [YTD Total Quantity sold 2014],
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106     SUM(CASE WHEN YEAR(OrderDate) = 2015 THEN OrderQuantity ELSE 0 END) AS [YTD Total Quantity sold 2015],
107     SUM(CASE WHEN YEAR(OrderDate) = 2016 THEN OrderQuantity ELSE 0 END) AS [YTD Total Quantity sold 2016],
108     SUM(CASE WHEN YEAR(OrderDate) = 2017 THEN OrderQuantity ELSE 0 END) AS [YTD Total Quantity sold 2017]
109 from
110     Sales;
111
112 --PYTD Total Quantity sold
113 select
114     SUM(CASE WHEN YEAR(OrderDate) = 2013 THEN OrderQuantity ELSE 0 END) AS [PYTD Total Quantity sold 2014],
115     SUM(CASE WHEN YEAR(OrderDate) = 2014 THEN OrderQuantity ELSE 0 END) AS [PYTD Total Quantity sold 2015],
116     SUM(CASE WHEN YEAR(OrderDate) = 2015 THEN OrderQuantity ELSE 0 END) AS [PYTD Total Quantity sold 2016],
117     SUM(CASE WHEN YEAR(OrderDate) = 2016 THEN OrderQuantity ELSE 0 END) AS [PYTD Total Quantity sold 2017]
118 from Sales
119 where YEAR(OrderDate) IN (2013, 2014, 2015, 2016);
120
121 --Total Profit
122 select (SUM(SalesAmount)-SUM(TotalProductCost)) AS Profit from Sales;
123
124 --YTD Total Profit
125 select
126     SUM(CASE WHEN YEAR(OrderDate) = 2014 THEN (SalesAmount-TotalProductCost) ELSE 0 END) AS [YTD Total Profit 2014],
127     SUM(CASE WHEN YEAR(OrderDate) = 2015 THEN (SalesAmount-TotalProductCost) ELSE 0 END) AS [YTD Total Profit 2015],
128     SUM(CASE WHEN YEAR(OrderDate) = 2016 THEN (SalesAmount-TotalProductCost) ELSE 0 END) AS [YTD Total Profit 2016],
129     SUM(CASE WHEN YEAR(OrderDate) = 2017 THEN (SalesAmount-TotalProductCost) ELSE 0 END) AS [YTD Total Profit 2017]
130 from
131     Sales;
132
133 --PYTD Total Profit
134 select
135     SUM(CASE WHEN YEAR(OrderDate) = 2013 THEN (SalesAmount-TotalProductCost) ELSE 0 END) AS [PYTD Total Profit 2014],
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136     SUM(CASE WHEN YEAR(OrderDate) = 2014 THEN (SalesAmount-TotalProductCost) ELSE 0 END) AS [PYTD Total Profit
      2015],
137     SUM(CASE WHEN YEAR(OrderDate) = 2015 THEN (SalesAmount-TotalProductCost) ELSE 0 END) AS [PYTD Total Profit
      2016],
138     SUM(CASE WHEN YEAR(OrderDate) = 2016 THEN (SalesAmount-TotalProductCost) ELSE 0 END) AS [PYTD Total Profit
      2017]
139 from Sales
140 where YEAR(OrderDate) IN (2013, 2014, 2015, 2016);
141
142 --Profit Margin
143 select (SUM(SalesAmount)-SUM(TotalProductCost))/SUM(SalesAmount)*100 AS [Profit Margin] from Sales;
144
145 --YTD Profit Margin
146 with ProfitAndSales AS
147 (
148 select
149     SUM(CASE WHEN YEAR(OrderDate)=2014 THEN SalesAmount-TotalProductCost ELSE 0 END) AS TotalProfit2014,
150     SUM(CASE WHEN YEAR(OrderDate)=2015 THEN SalesAmount-TotalProductCost ELSE 0 END) AS TotalProfit2015,
151     SUM(CASE WHEN YEAR(OrderDate)=2016 THEN SalesAmount-TotalProductCost ELSE 0 END) AS TotalProfit2016,
152     SUM(CASE WHEN YEAR(OrderDate)=2017 THEN SalesAmount-TotalProductCost ELSE 0 END) AS TotalProfit2017,
153
154     SUM(CASE WHEN YEAR(OrderDate)=2014 THEN SalesAmount ELSE 0 END) AS TotalSales2014,
155     SUM(CASE WHEN YEAR(OrderDate)=2015 THEN SalesAmount ELSE 0 END) AS TotalSales2015,
156     SUM(CASE WHEN YEAR(OrderDate)=2016 THEN SalesAmount ELSE 0 END) AS TotalSales2016,
157     SUM(CASE WHEN YEAR(OrderDate)=2017 THEN SalesAmount ELSE 0 END) AS TotalSales2017
158 from Sales
159 )
160 select (TotalProfit2014/NULLIF(TotalSales2014,0))*100 AS [YTD Profit Margin],
161        (TotalProfit2015/NULLIF(TotalSales2015,0))*100 AS [YTD Profit Margin],
162        (TotalProfit2016/NULLIF(TotalSales2016,0))*100 AS [YTD Profit Margin],
163        (TotalProfit2017/NULLIF(TotalSales2017,0))*100 AS [YTD Profit Margin]
164 from ProfitAndSales;
165
166 --PYTD Profit Margin
167 with Profit_And_Sales AS
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```
168 (
169 select
170     SUM(CASE WHEN YEAR(OrderDate)=2013 THEN SalesAmount-TotalProductCost ELSE 0 END) AS TotalProfit2014,
171     SUM(CASE WHEN YEAR(OrderDate)=2014 THEN SalesAmount-TotalProductCost ELSE 0 END) AS TotalProfit2015,
172     SUM(CASE WHEN YEAR(OrderDate)=2015 THEN SalesAmount-TotalProductCost ELSE 0 END) AS TotalProfit2016,
173     SUM(CASE WHEN YEAR(OrderDate)=2016 THEN SalesAmount-TotalProductCost ELSE 0 END) AS TotalProfit2017,
174
175     SUM(CASE WHEN YEAR(OrderDate)=2013 THEN SalesAmount ELSE 0 END) AS TotalSales2014,
176     SUM(CASE WHEN YEAR(OrderDate)=2014 THEN SalesAmount ELSE 0 END) AS TotalSales2015,
177     SUM(CASE WHEN YEAR(OrderDate)=2015 THEN SalesAmount ELSE 0 END) AS TotalSales2016,
178     SUM(CASE WHEN YEAR(OrderDate)=2016 THEN SalesAmount ELSE 0 END) AS TotalSales2017
179 from Sales
180 )
181 select (TotalProfit2014/NULLIF(TotalSales2014,0))*100 AS [PYTD Profit Margin],
182        (TotalProfit2015/NULLIF(TotalSales2015,0))*100 AS [PYTD Profit Margin],
183        (TotalProfit2016/NULLIF(TotalSales2016,0))*100 AS [PYTD Profit Margin],
184        (TotalProfit2017/NULLIF(TotalSales2017,0))*100 AS [PYTD Profit Margin]
185 from Profit_And_Sales;
186
187 --Gross Sales
188 select SUM(SalesAmount)+SUM(TaxAmt) AS [Gross Sales] from Sales;
189
190 --YTD Gross Sales
191 select
192     SUM(CASE WHEN YEAR(OrderDate) = 2014 THEN (SalesAmount+TaxAmt) ELSE 0 END) AS [YTD Gross Sales 2014],
193     SUM(CASE WHEN YEAR(OrderDate) = 2015 THEN (SalesAmount+TaxAmt) ELSE 0 END) AS [YTD Gross Sales 2015],
194     SUM(CASE WHEN YEAR(OrderDate) = 2016 THEN (SalesAmount+TaxAmt) ELSE 0 END) AS [YTD Gross Sales 2016],
195     SUM(CASE WHEN YEAR(OrderDate) = 2017 THEN (SalesAmount+TaxAmt) ELSE 0 END) AS [YTD Gross Sales 2017]
196 from
197     Sales;
198
199 --PYTD Gross Sales
200 select
201     SUM(CASE WHEN YEAR(OrderDate) = 2013 THEN (SalesAmount+TaxAmt) ELSE 0 END) AS [PYTD Gross Sales 2014],
202     SUM(CASE WHEN YEAR(OrderDate) = 2014 THEN (SalesAmount+TaxAmt) ELSE 0 END) AS [PYTD Gross Sales 2015],
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203     SUM(CASE WHEN YEAR(OrderDate) = 2015 THEN (SalesAmount+TaxAmt) ELSE 0 END) AS [PYTD Gross Sales 2016],
204     SUM(CASE WHEN YEAR(OrderDate) = 2016 THEN (SalesAmount+TaxAmt) ELSE 0 END) AS [PYTD Gross Sales 2017]
205 from Sales
206 where YEAR(OrderDate) IN (2013, 2014, 2015, 2016);
207
208 --Total Orders
209 select COUNT(DISTINCT(SalesOrderNumber)) AS [Total Orders] from Sales;
210
211 --YTD Total Orders
212 select
213     COUNT(DISTINCT CASE WHEN YEAR(OrderDate) = 2014 THEN SalesOrderNumber END) AS [YTD Total Orders 2014],
214     COUNT(DISTINCT CASE WHEN YEAR(OrderDate) = 2015 THEN SalesOrderNumber END) AS [YTD Total Orders 2015],
215     COUNT(DISTINCT CASE WHEN YEAR(OrderDate) = 2016 THEN SalesOrderNumber END) AS [YTD Total Orders 2016],
216     COUNT(DISTINCT CASE WHEN YEAR(OrderDate) = 2017 THEN SalesOrderNumber END) AS [YTD Total Orders 2017]
217 from
218     Sales;
219
220 --PYTD Total Orders
221 select
222     COUNT(DISTINCT CASE WHEN YEAR(OrderDate) = 2013 THEN SalesOrderNumber END) AS [PYTD Total Orders 2014],
223     COUNT(DISTINCT CASE WHEN YEAR(OrderDate) = 2014 THEN SalesOrderNumber END) AS [PYTD Total Orders 2015],
224     COUNT(DISTINCT CASE WHEN YEAR(OrderDate) = 2015 THEN SalesOrderNumber END) AS [PYTD Total Orders 2016],
225     COUNT(DISTINCT CASE WHEN YEAR(OrderDate) = 2016 THEN SalesOrderNumber END) AS [PYTD Total Orders 2017]
226 from Sales
227 where YEAR(OrderDate) IN (2013, 2014, 2015, 2016);
228
229 /*OVERVIEW*/
230 --Grouping Region and Country
231 select (SUM(s.SalesAmount)-SUM(s.TotalProductCost)) AS Profit,
232 (SUM(s.SalesAmount)-SUM(s.TotalProductCost))/(SUM(s.SalesAmount))*100 AS [Profit Margin],
233 SUM(s.SalesAmount)+SUM(s.TaxAmt) AS [Gross Sales],
234 SUM(s.SalesAmount) AS [Total Sales],
235 COUNT(DISTINCT(s.SalesOrderNumber)) AS [Total Orders],
236 t.Region, t.Country, SUM((SUM(s.SalesAmount)-SUM(s.TotalProductCost))) OVER() AS [Sum of Profit],
237 SUM((SUM(s.SalesAmount)-SUM(s.TotalProductCost))/(SUM(s.SalesAmount))*100) OVER() AS [Sum of Profit Margin],
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238 SUM(SUM(s.SalesAmount)+SUM(s.TaxAmt)) OVER() AS [Sum of Gross Profit],
239 SUM(SUM(s.SalesAmount)) AS [Sum of Total Sales],
240 SUM(COUNT(DISTINCT(s.SalesOrderNumber))) OVER() from Sales s
241 INNER JOIN Territories t
242 ON s.SalesTerritoryKey=t.SalesTerritoryKey
243 group by t.Region, t.Country
244 order by [Total Sales] DESC;
245
246 --Total Sales and Profit by Month Name
247 select SUM(SalesAmount) AS [Total Sales],
248 (SUM(SalesAmount)-SUM(TotalProductCost)) AS Profit, DATENAME(MONTH, OrderDate) AS [Month Name], MONTH(OrderDate) AS [Month Number] from Sales s
249 group by DATENAME(MONTH, OrderDate), MONTH(OrderDate)
250 order by [Month Number];
251
252 --Total Sales and Profit by Quarter
253 select SUM(SalesAmount) AS [Total Sales],
254 (SUM(SalesAmount)-SUM(TotalProductCost)) AS Profit,
255 'Q'+DATENAME(QUARTER, OrderDate) AS Quarter from Sales s
256 group by DATENAME(QUARTER, OrderDate)
257 order by Quarter;
258
259 --Total Sales and Profit by Day
260 select SUM(SalesAmount) AS [Total Sales],
261 (SUM(SalesAmount)-SUM(TotalProductCost)) AS Profit, DATENAME(WEEKDAY, OrderDate) AS [Day Name], DATEPART
    (WEEKDAY, OrderDate) AS [Day Number] from Sales
262 group by DATENAME(WEEKDAY, OrderDate), DATEPART(WEEKDAY, OrderDate)
263 order by [Day Number];
264
265 /*Customer Analysis*/
266 --Grouping by Marital Status
267 select c.MaritalStatus AS [Marital Status], COUNT(DISTINCT s.SalesOrderNumber) AS [Total Orders],
268 SUM(s.SalesAmount) AS [Total Sales], SUM(COUNT(DISTINCT s.SalesOrderNumber)) OVER() AS [Sum of Total Orders],
269 SUM(SUM(s.SalesAmount)) OVER() AS [Sum of Total Sales] from Sales s
270 INNER JOIN Customer c
```



```
271 ON c.CustomerKey=s.CustomerKey
272 group by c.MaritalStatus;
273
274 --Total Sales by Country
275 select SUM(s.SalesAmount) AS [Total Sales], c.CustomerCountry AS [Customer Country] from Sales s
276 INNER JOIN Customer c
277 ON c.CustomerKey=s.CustomerKey
278 group by c.CustomerCountry
279 order by [Total Sales] DESC;
280
281 --Total Sales by State
282 select SUM(s.SalesAmount) AS [Total Sales], c.CustomerState AS [Customer State] from Sales s
283 INNER JOIN Customer c
284 ON c.CustomerKey=s.CustomerKey
285 group by c.CustomerState
286 order by [Total Sales] DESC;
287
288 --Total Sales by City
289 select SUM(s.SalesAmount) AS [Total Sales], c.CustomerCity AS [Customer City] from Sales s
290 INNER JOIN Customer c
291 ON c.CustomerKey=s.CustomerKey
292 group by c.CustomerCity
293 order by [Total Sales] DESC;
294
295 --Total Sales by Age Group and Gender
296 select SUM(s.SalesAmount) AS [Total Sales], c.Age_Group AS [Age Group], c.Gender AS Gender from Sales s
297 INNER JOIN Customer c
298 ON c.CustomerKey=s.CustomerKey
299 group by c.Gender, c.Age_Group
300 order by [Total Sales] DESC;
301
302 --Total Sales by Occupation and Gender
303 select SUM(s.SalesAmount) AS [Total Sales], c.Occupation AS Occupation, c.Gender AS Gender from Sales s
304 INNER JOIN Customer c
305 ON c.CustomerKey=s.CustomerKey
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306 group by c.Gender, c.Occupation
307 order by [Total Sales] DESC;
308
309 /*Product Analysis*/
310 --Category by Profit
311 select p.Category AS Category, (SUM(SalesAmount)-SUM(TotalProductCost)) AS Profit from Sales s
312 INNER JOIN Product p
313 ON p.ProductKey=s.ProductKey
314 group by p.Category
315 order by Profit DESC;
316
317 --Top 10 Products by Profit
318 select TOP 10 WITH TIES p.ProductName AS Products, (SUM(SalesAmount)-SUM(TotalProductCost)) AS Profit from
Sales s
319 INNER JOIN Product p
320 ON p.ProductKey=s.ProductKey
321 group by p.ProductName
322 order by Profit DESC; --Used DESC to get top products
323
324 --Top 10 Products by Total Sales
325 select TOP 10 WITH TIES p.ProductName AS Products, SUM(SalesAmount) AS [Total Sales] from Sales s
326 INNER JOIN Product p
327 ON p.ProductKey=s.ProductKey
328 group by p.ProductName
329 order by [Total Sales] DESC; --Used DESC to get top products
330
331 --Bottom 10 Products by Total Sales
332 select TOP 10 WITH TIES p.ProductName AS Products, SUM(SalesAmount) AS [Total Sales] from Sales s
333 FULL JOIN Product p
334 ON p.ProductKey=s.ProductKey
335 group by p.ProductName
336 order by [Total Sales] ASC; --Used ASC to get bottom products
337
338 --Top 10 Model Names by Total Sales
339 select TOP 10 WITH TIES p.ModelName AS [Model Name], SUM(SalesAmount) AS [Total Sales] from Sales s
```

```
340 INNER JOIN Product p
341 ON p.ProductKey=s.ProductKey
342 group by p.ModelName
343 order by [Total Sales] DESC; --Used DESC to get top Model Names
344
345 /*Territory Analysis*/
346 --Total Sales by Quarter and Group
347 select SUM(s.SalesAmount) AS [Total Sales], 'Q'+DATENAME(QUARTER, OrderDate) AS Quarter, t.[Group] AS [Group]
    from Sales s
348 INNER JOIN Territories t
349 ON t.SalesTerritoryKey=s.SalesTerritoryKey
350 group by DATENAME(QUARTER, OrderDate),[Group]
351 order by [Total Sales];
352
353 --Total Orders by Country and Group
354 select COUNT(DISTINCT s.SalesOrderNumber) AS [Total Orders], t.Country AS Country, t.[Group] AS [Group] from
    Sales s
355 INNER JOIN Territories t
356 ON s.SalesTerritoryKey=t.SalesTerritoryKey
357 group by t.Country, t.[Group]
358 order by [Total Orders];
359
360 --YTD Total Sales by Country and Year
361 -- Calculate Year-To-Date (YTD) Total Sales by Country and Year
362 select DISTINCT
363     t.Country AS Country,
364     DATENAME(YEAR, s.OrderDate) AS Year,
365     SUM(s.SalesAmount) OVER (PARTITION BY t.Country, YEAR(s.OrderDate)) AS [YTD Total Sales]
366 from
367     Sales s
368 INNER JOIN
369     Territories t
370     ON t.SalesTerritoryKey = s.SalesTerritoryKey
371 where
372     YEAR(s.OrderDate) BETWEEN 2014 AND 2017
```

```
373 order by
374     Year, Country;
375
376 --Total Quantity sold by Country and ProductLine
377 select SUM(s.OrderQuantity) AS [Total Quantity Sold], t.Country AS Country, p.ProductLine AS [Product Line] from ↗
    Sales s
378 INNER JOIN Territories t
379 ON t.SalesTerritoryKey=s.SalesTerritoryKey
380 INNER JOIN Product p
381 ON p.ProductKey=s.ProductKey
382 group by t.Country, p.ProductLine
383 order by [Total Quantity Sold] DESC;
384
385 --Top 5 Regions by Profit
386 select TOP 5 WITH TIES t.Region AS Region, (SUM(SalesAmount)-SUM(TotalProductCost)) AS Profit from Sales s
387 INNER JOIN Territories t
388 ON s.SalesTerritoryKey=t.SalesTerritoryKey
389 group by t.Region
390 order by Profit DESC;
391
392
393
```