James Livingstone
12/2/22

#1

```
SELECT YEAR(SOH.OrderDate) AS "Year of Order",
          DATENAME(MONTH, SOH.OrderDate) AS "Month",
          SUM(SOD.OrderQty) AS "Total Quantity Sold",
          SUM(SOH.Subtotal) AS "Total Revenue"
FROM Sales.SalesOrderHeader AS SOH
        JOIN Sales.SalesOrderDetail AS SOD ON SOH.SalesOrderID = SOD.SalesOrderID
        JOIN Production.Product AS P ON SOD.ProductID = P.ProductID
        JOIN Production.ProductSubcategory AS PS ON P.ProductSubcategoryID =
PS.ProductSubcategoryID
WHERE PS.Name = 'Road Bikes'
         AND YEAR(SOH.OrderDate) IN (2013,2014)
         AND MONTH(SOH.OrderDate) = 5
GROUP BY YEAR(SOH.OrderDate), DATENAME(MONTH,SOH.OrderDate);
```

Results | Messages

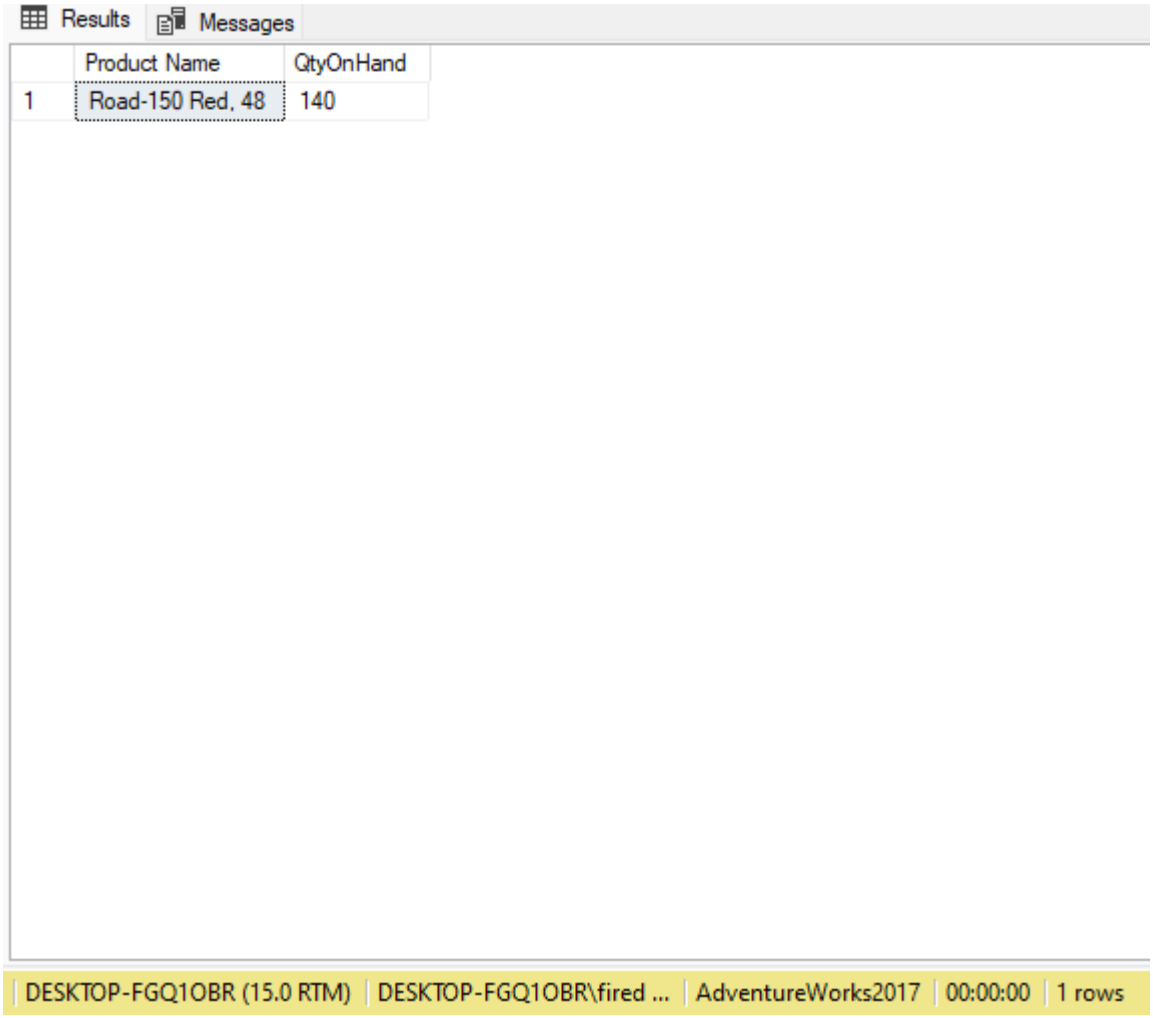
	Year of Order	Month	Total Quantity Sold	Total Revenue
1	2013	May	1175	14605481.5777
2	2014	May	1379	11536643.3252

DESKTOP-FGQ1OBR (15.0 RTM) | DESKTOP-FGQ1OBR\fired ... | AdventureWorks2017 | 00:00:00 | 2 rows

James Livingstone
12/2/22

#2

```
SELECT DISTINCT P.Name AS "Product Name", SUM(PI.Quantity) AS "QtyOnHand"
FROM Production.ProductInventory AS PI
        JOIN Production.Product AS P ON PI.ProductID = P.ProductID
WHERE P.ProductNumber = 'BK-R93R-48'
GROUP BY P.Name, P.ProductNumber;
```



James Livingstone
12/2/22

#3

```
SELECT P.Name AS "Component Name", SUM(PI.Quantity) AS "QtyOnHand", SUM(POD.OrderQty) AS
"QtyOnOrder"
FROM Production.BillofMaterials AS BOM
        JOIN Production.Product AS P ON BOM.ComponentID = P.ProductID
        FULL OUTER JOIN Production.ProductInventory AS PI ON BOM.ComponentID =
PI.ProductID
        FULL OUTER JOIN Purchasing.PurchaseOrderDetail AS POD ON BOM.ComponentID =
POD.ProductID
WHERE BOM.ProductAssemblyID = 751
GROUP BY P.Name
ORDER BY P.Name;
```

Results | Messages

	Component Name	QtyOnHand	QtyOnOrder
1	Chain	29450	9000
2	Front Brakes	38350	55000
3	Front Derailleur	853	NULL
4	HL Bottom Bracket	970	NULL
5	HL Crankset	1846	NULL
6	HL Headset	782	NULL
7	HL Road Frame - Red, 48	NULL	NULL
8	HL Road Front Wheel	678	NULL
9	HL Road Handlebars	811	NULL
10	HL Road Pedal	38052	69300
11	HL Road Rear Wheel	716	NULL
12	HL Road Seat Assembly	1642	NULL
13	Rear Brakes	36150	82500
14	Rear Derailleur	847	NULL

DESKTOP-FGQ1OBR (15.0 RTM) | DESKTOP-FGQ1OBR\fired ... | AdventureWorks2017 | 00:00:00 | 14 rows

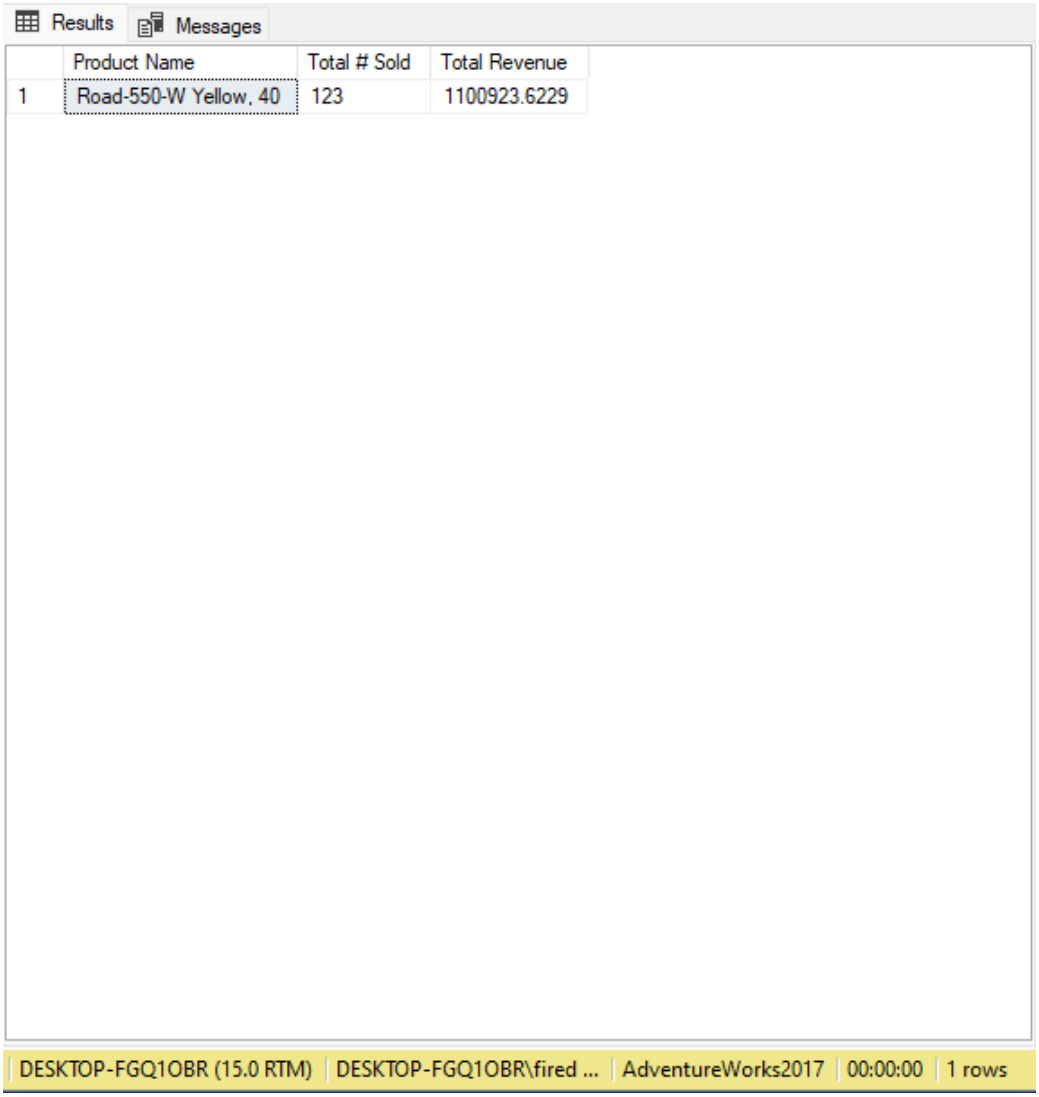
James Livingstone
12/2/22

#4

Yes, there will be a problem with the inventory, according to the data the “HL Road Frame - Red.48” has no quantity on hand, and has no quantity on order. If this is not rectified, they will not be able to complete the bicycle. They need to order more of this component.

#5

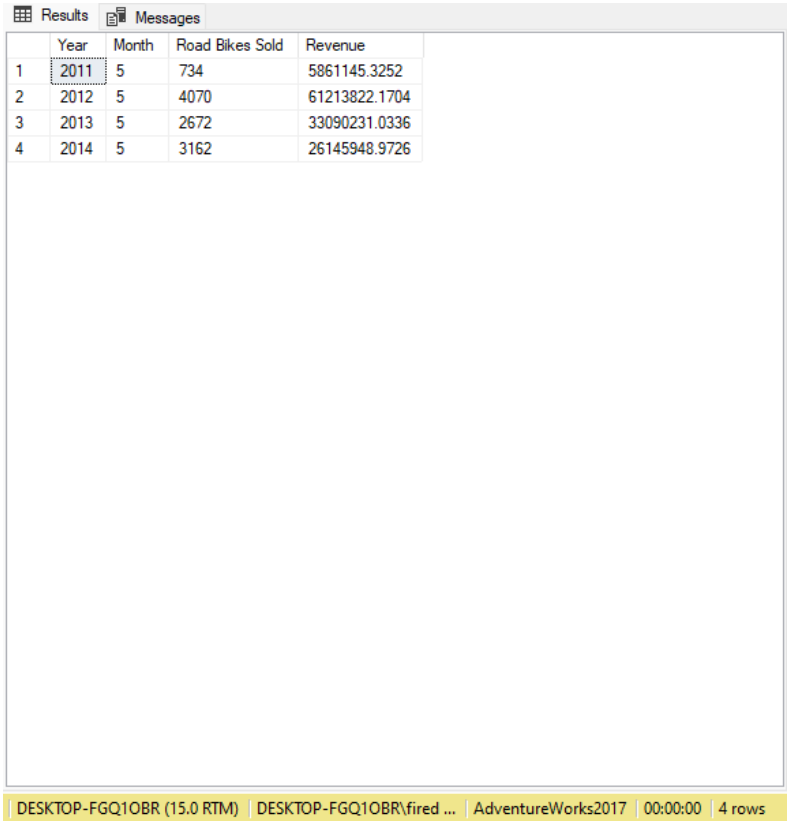
```
SELECT DISTINCT P.Name AS "Product Name",
          SUM(SOD.OrderQty) AS "Total # Sold",
          SUM(SOH.Subtotal) AS "Total Revenue"
FROM Sales.SalesOrderHeader AS SOH
        JOIN Sales.SalesOrderDetail AS SOD ON SOH.SalesOrderID = SOD.SalesOrderID
        JOIN Production.Product AS P ON SOD.ProductID = P.ProductID
WHERE P.ProductNumber = 'BK-R64Y-40'
         AND YEAR(SOH.OrderDate) = 2013
         AND MONTH(SOH.OrderDate) IN (11,12)
GROUP BY P.Name;
```



James Livingstone
12/2/22

#6

```
SELECT YEAR(SOH.OrderDate) AS Year, MONTH(SOH.OrderDate) AS "Month",
       SUM(SOD.OrderQty) AS "Road Bikes Sold",
          SUM(SOH.SubTotal) AS "Revenue"
FROM Sales.SalesOrderHeader AS SOH
         JOIN Sales.SalesOrderDetail AS SOD ON SOH.SalesOrderID = SOD.SalesOrderID
         JOIN Production.Product AS P ON SOD.ProductID = P.ProductID
         JOIN Production.ProductSubcategory AS PS ON P.ProductSubcategoryID =
PS.ProductSubcategoryID
         JOIN Production.BillofMaterials AS BOM ON BOM.ComponentID = P.ProductID
         FULL OUTER JOIN Production.ProductInventory AS PI ON BOM.ComponentID =
PI.ProductID
         FULL OUTER JOIN Purchasing.PurchaseOrderDetail AS POD ON BOM.ComponentID =
POD.ProductID
WHERE PS.Name = 'Road Bikes'
      AND YEAR(SOH.OrderDate) IN (2011,2012,2013,2014)
         AND MONTH(SOH.OrderDate) = 5
GROUP BY YEAR(SOH.OrderDate),MONTH(SOH.OrderDate)
ORDER BY YEAR(SOH.OrderDate);
```



Results | Messages

	Year	Month	Road Bikes Sold	Revenue
1	2011	5	734	5861145.3252
2	2012	5	4070	61213822.1704
3	2013	5	2672	33090231.0336
4	2014	5	3162	26145948.9726

DESKTOP-FGQ1OBR (15.0 RTM) | DESKTOP-FGQ1OBR\fired ... | AdventureWorks2017 | 00:00:00 | 4 rows

I'm not certain what the Sales Manager sales forecast is according to the pdf. If the forecast is based on problem #3 in that he believes they can sell in excess of 200 during the holiday season at the end of 2014, I believe its entirely possible seeing that the number of road bikes sold has increased by nearly 400 in comparison to the same time period last year, an even greater increase occurred from 2011 to 2012 of around 3300. Though it is worth noting that the amount sold dropped by about 1400 from 2012 to 2013. If the components not in stock or on order as listed in problem #3 fail to be acquired, this will definitely lead to a shortage on hand to fulfill orders.

James Livingstone
12/2/22

#7

```
SELECT DISTINCT TOP 3 P.Name AS "Product Name",
          SUM(SOD.OrderQty) AS "Total # Sold"
FROM Sales.SalesOrderHeader AS SOH
        JOIN Sales.SalesOrderDetail AS SOD ON SOH.SalesOrderID = SOD.SalesOrderID
        JOIN Production.Product AS P ON SOD.ProductID = P.ProductID
WHERE YEAR(SOH.OrderDate) = 2014
         AND MONTH(SOH.OrderDate) IN (1,2,3,4,5)
         AND ProductSubcategoryID IN (1,2,3)
GROUP BY P.Name
ORDER BY SUM(SOD.OrderQty) DESC;
```

Results | Messages

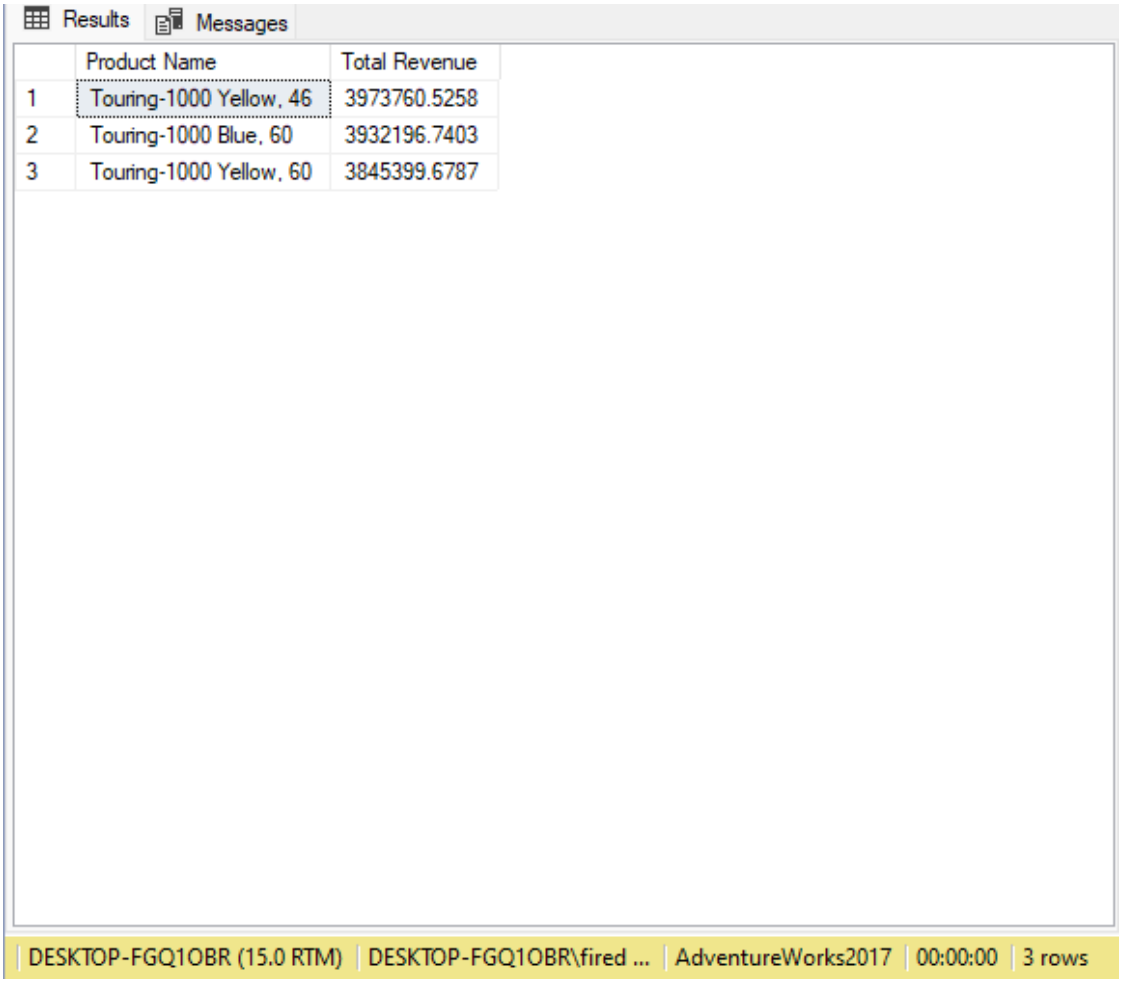
	Product Name	Total # Sold
1	Mountain-200 Black, 38	619
2	Road-350-W Yellow, 48	586
3	Road-750 Black, 48	580

DESKTOP-FGQ1OBR (15.0 RTM) | DESKTOP-FGQ1OBR\fired ... | AdventureWorks2017 | 00:00:00 | 3 rows

James Livingstone
12/2/22

#8

```
SELECT DISTINCT TOP 3 P.Name AS "Product Name",
          SUM(SOH.Subtotal) AS "Total Revenue"
FROM Sales.SalesOrderHeader AS SOH
        JOIN Sales.SalesOrderDetail AS SOD ON SOH.SalesOrderID = SOD.SalesOrderID
        JOIN Production.Product AS P ON SOD.ProductID = P.ProductID
WHERE YEAR(SOH.OrderDate) = 2014
         AND MONTH(SOH.OrderDate) IN (1,2,3,4,5)
         AND ProductSubcategoryID IN (1,2,3)
GROUP BY P.Name
ORDER BY  SUM(SOH.Subtotal) DESC;
```



#9

The lists in #7 and #8 output are not the same. The list in #7 is comprised of the top three bikes based on total number sold. The list in #8 is comprised of the top three bikes based on total revenue. The Touring bikes are much more expensive than the other categories Mountain and Road, and thus even though they sold less in amount, they made up much more in revenue to top that list.

James Livingstone
12/2/22

#10

```
SELECT P.Name AS "Product Name",
          SUM(SOH.Subtotal) AS "Total Revenue",
          SUM(P.STANDARDCOST) AS "Total Cost",
          (SUM(SOH.SubTotal) - SUM(P.STANDARDCOST)) AS "Profit",
          CONCAT(CAST(((SUM(SOH.SubTotal) - SUM(P.STANDARDCOST)) / SUM(SOH.SubTotal))
          AS DECIMAL(4, 4)), '%') AS "Profit Margin"
FROM Production.Product AS P
        JOIN Production.ProductSubcategory AS PS ON P.ProductSubcategoryID =
PS.ProductSubcategoryID
        JOIN Sales.SalesOrderDetail AS SOD ON P.ProductID = SOD.ProductID
        JOIN Sales.SalesOrderHeader AS SOH ON SOD.SalesOrderID = SOH.SalesOrderID
WHERE PS.Name = 'Road Bikes'
      AND YEAR(SOH.OrderDate) = 2014
         AND MONTH(SOH.OrderDate) <= 5
GROUP BY P.Name
ORDER BY  [Profit Margin] DESC;
```

Results | Messages

	Product Name	Total Revenue	Total Cost	Profit	Profit Margin
1	Road-750 Black, 58	2808014.0003	79383.0576	2728630.9427	0.9717%
2	Road-750 Black, 48	3223783.9666	98971.0848	3124812.8818	0.9692%
3	Road-750 Black, 52	3151953.7102	105156.7776	3046796.9326	0.9666%
4	Road-550-W Yellow, 38	2912964.6077	124075.8852	2788888.7225	0.9574%
5	Road-550-W Yellow, 48	3004469.26	134059.0024	2870410.2576	0.9553%
6	Road-550-W Yellow, 40	2751231.7657	124788.965	2626442.8007	0.9546%
7	Road-750 Black, 44	1581962.799	72510.0656	1509452.7334	0.9541%
8	Road-550-W Yellow, 42	2356977.9379	126928.2044	2230049.7335	0.9461%
9	Road-550-W Yellow, 44	1670306.1325	98405.0124	1571901.1201	0.9410%
10	Road-250 Black, 44	2948647.2262	185038.8001	2763608.4261	0.9372%
11	Road-250 Black, 52	2146566.4022	144610.1547	2001956.2475	0.9326%
12	Road-650 Red, 48	7041.5716	486.7066	6554.865	0.9308%
13	Road-650 Red, 44	7041.5716	486.7066	6554.865	0.9308%
14	Road-650 Black, 58	7041.5716	486.7066	6554.865	0.9308%
15	Road-650 Red, 62	7041.5716	486.7066	6554.865	0.9308%
16	Road-250 Black, 48	2795151.5554	194368.4875	2600783.0679	0.9304%
17	Road-350-W Yellow, 42	3190100.4692	229492.12	2960608.3492	0.9280%
18	Road-250 Black, 58	1698330.0056	124395.832	1573934.1736	0.9267%
19	Road-350-W Yellow, 40	3431380.5226	269544.99	3161835.5326	0.9214%
20	Road-350-W Yellow, 48	3369240.7234	265214.95	3104025.7734	0.9212%
21	Road-250 Red, 58	1655808.3696	130615.6236	1525192.746	0.9211%
22	Road-650 Red, 60	9506.8014	973.4132	8533.3882	0.8976%
23	Road-350-W Yellow, 44	1716028.085	180779.17	1535248.915	0.8946%

DESKTOP-FGQ1OBR (15.0 RTM) | DESKTOP-FGQ1OBR\fired ... | AdventureWorks2017 | 00:00:00 | 23 rows

This type of profit margin can be achieved by outsourcing the labor to third world countries for example. The material itself can be of good quality while cutting cost in labor would increase profit margin, but there is also the option to attempt to use cheaper materials and produce lesser quality products but retain the prices they charged otherwise, thus increasing the profit margin even more. With manufacturing being done in the United States, these profit margins are much more difficult to achieve.