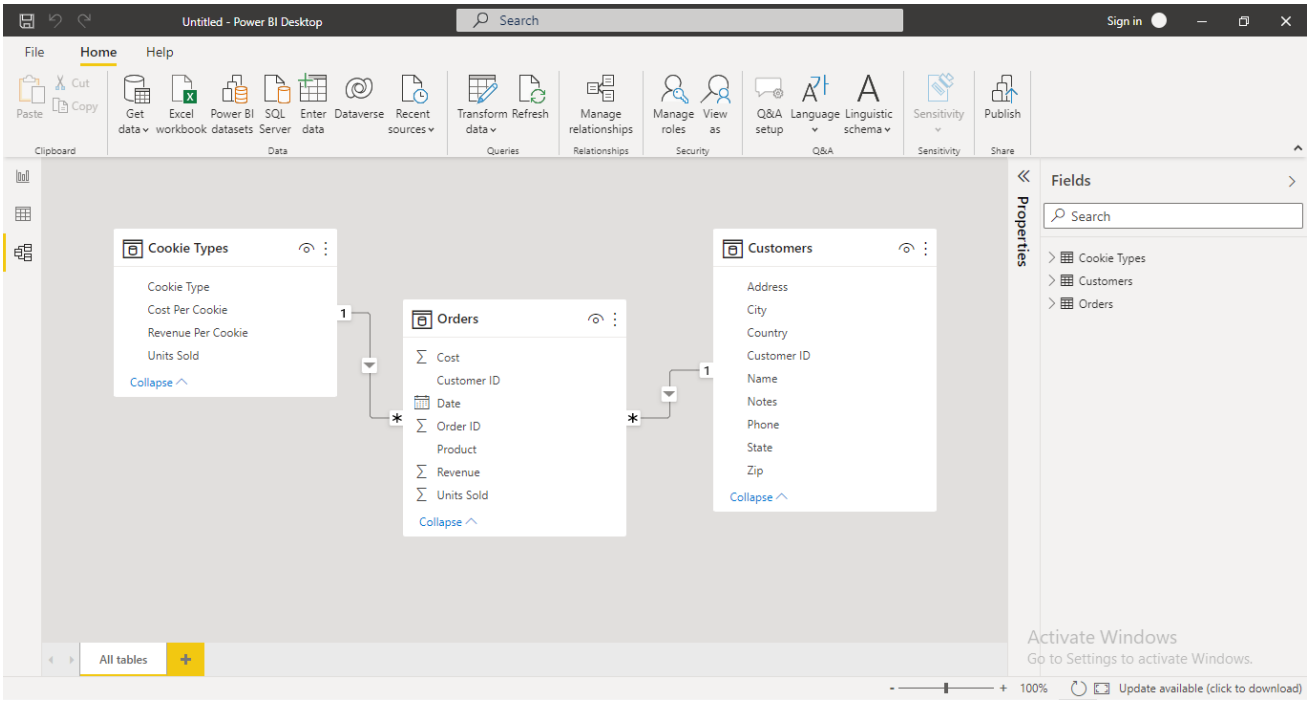
Power BI DAX

In this exercise, we will explore DAX in Power BI.

I first loaded our data, comprising three excel sheets: Cookie Types, Customers, and Orders. After loading, I went through these sheets from the data view and established a relationship between all these in the model view. Since the Customers and Orders queries had one column in common: Customer ID, Power BI created the relation itself. But there wasn't any relation found between Cookie Types and Orders. However, looking closely, I know that Cookie Types and Products have the same values but different column names, so I created that relationship. Creating relationships is vital to create our measures.



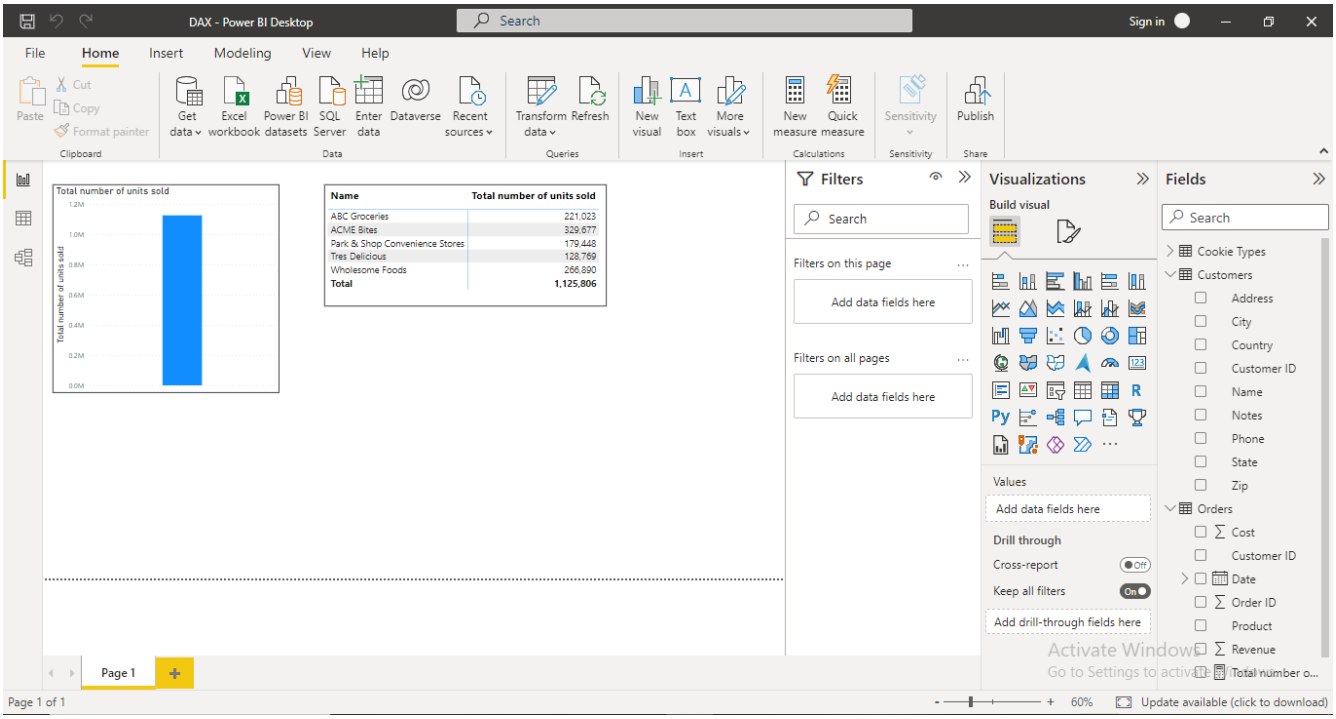
Now I can create my measures. In this exercise, our question is:

- How many total cookies did the company sell?

That means I wanted to know how many total cookies we sold across all these orders. For this, I will sum the values in the units sold field in the orders table. I created our first measure:

```
Total number of units sold = SUM(Orders[Units Sold])
```

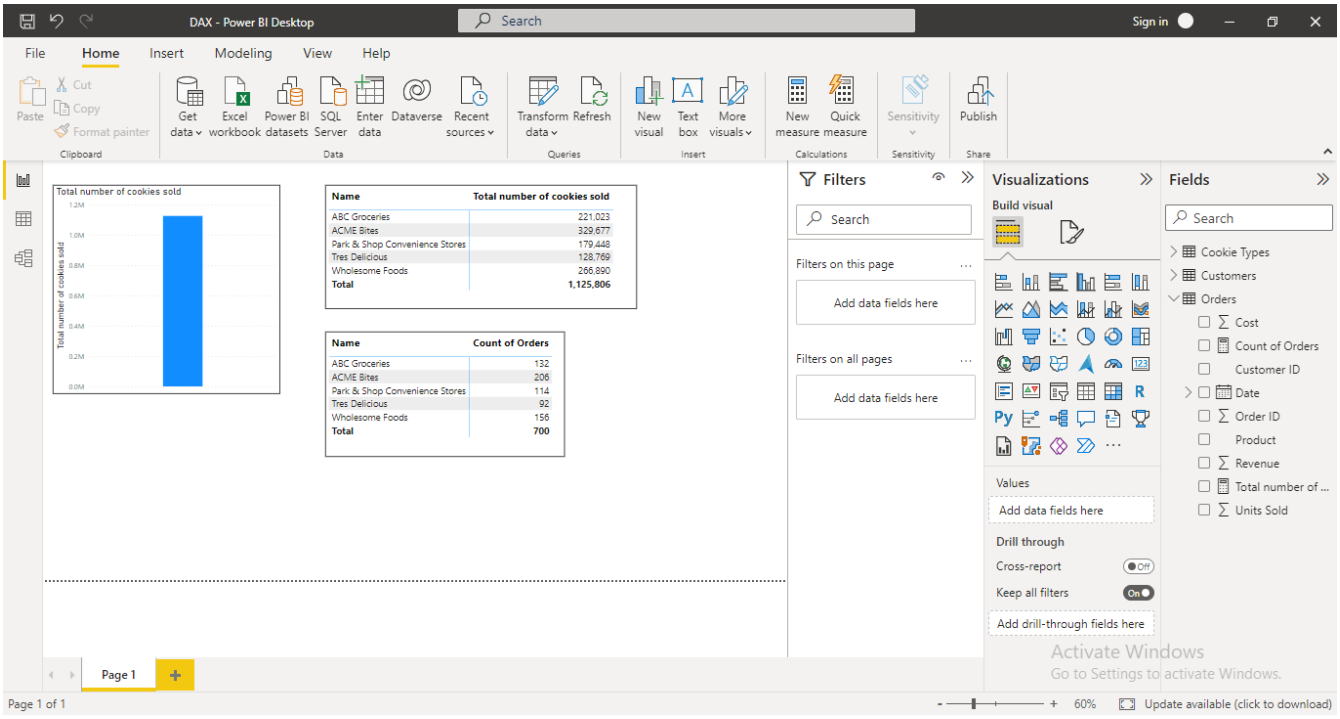
Using this measure, I can create some visuals as shown below:



Next, I want to know the total count of orders. So, I created my second measure:

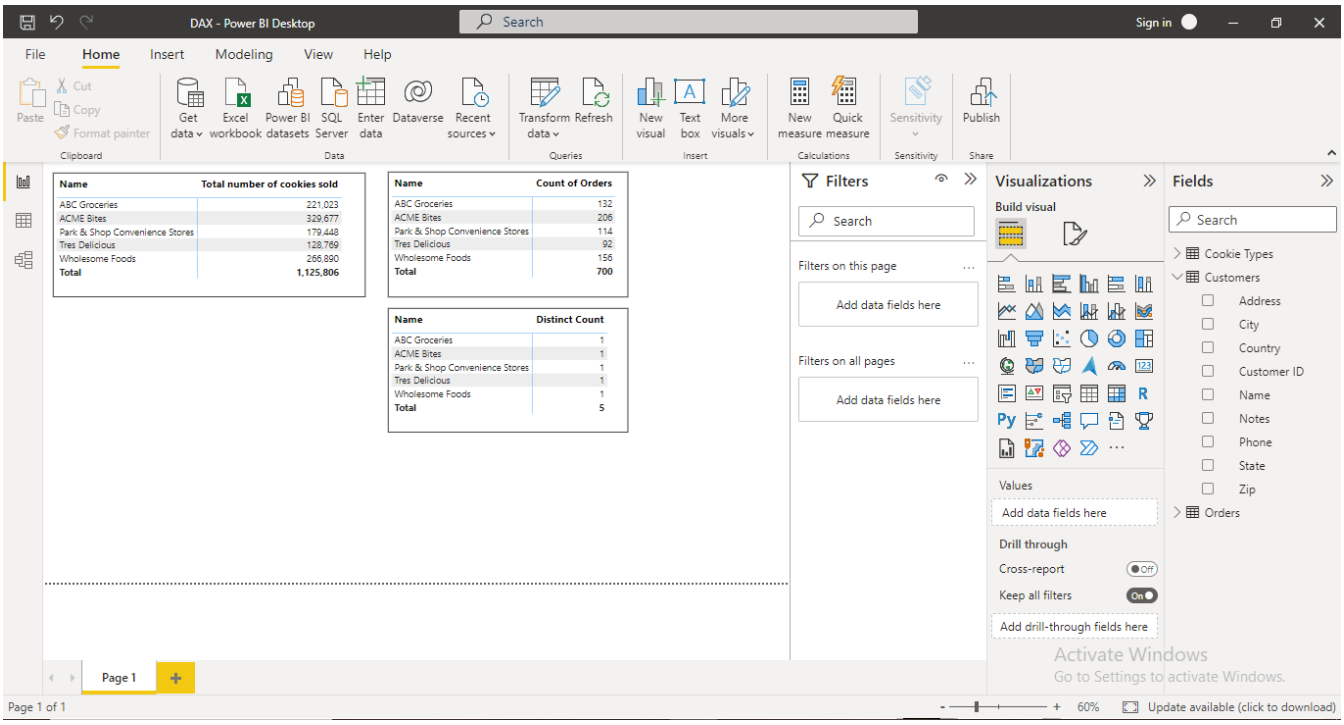
```
Count of Orders = COUNTROWS(Orders)
```

After that, I created my next visual displaying each customer's name and order counts. I can interpret from this visualization that my most active customer is ACME Bites with 206 number of order.

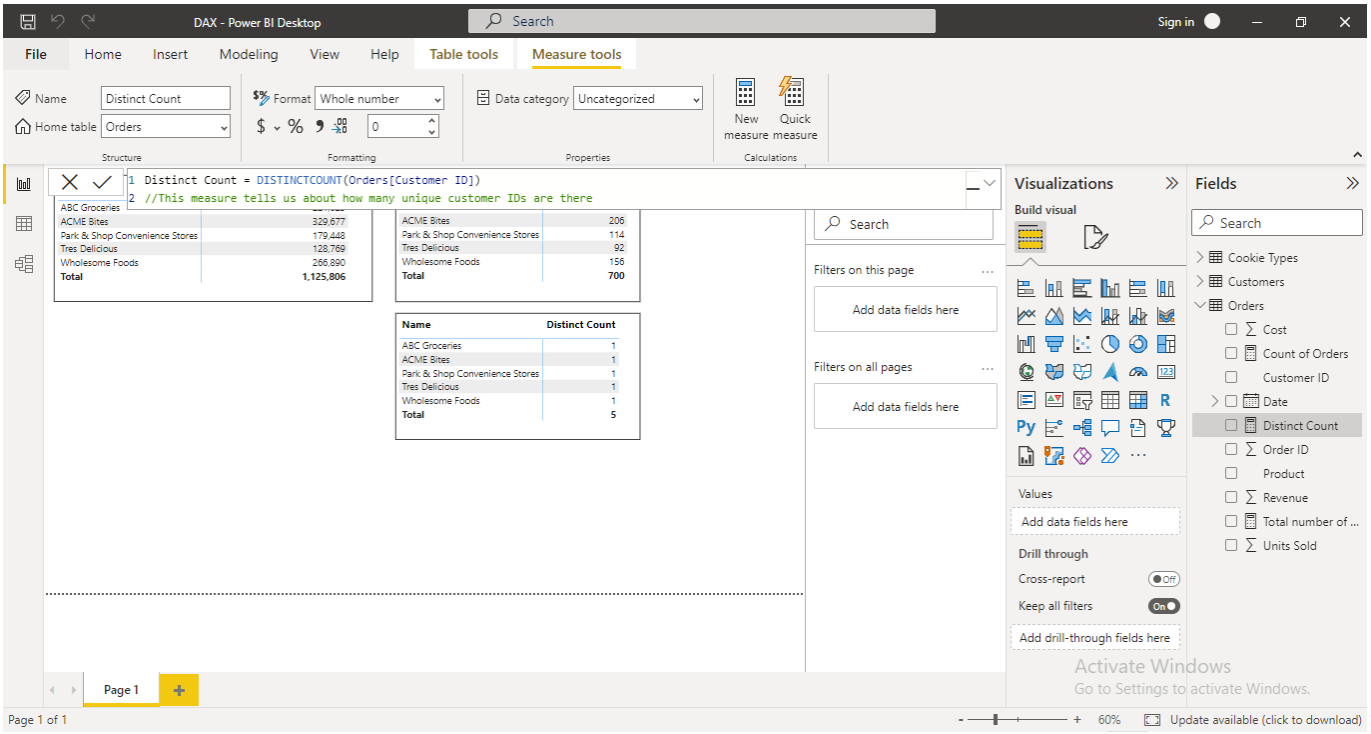


That was a simple count, but what if I want to know a distinct count of Customer IDs in my orders table? For this, I will employ a new measure:

```
Distinct Count = DISTINCTCOUNT(Orders[Customer ID])
```

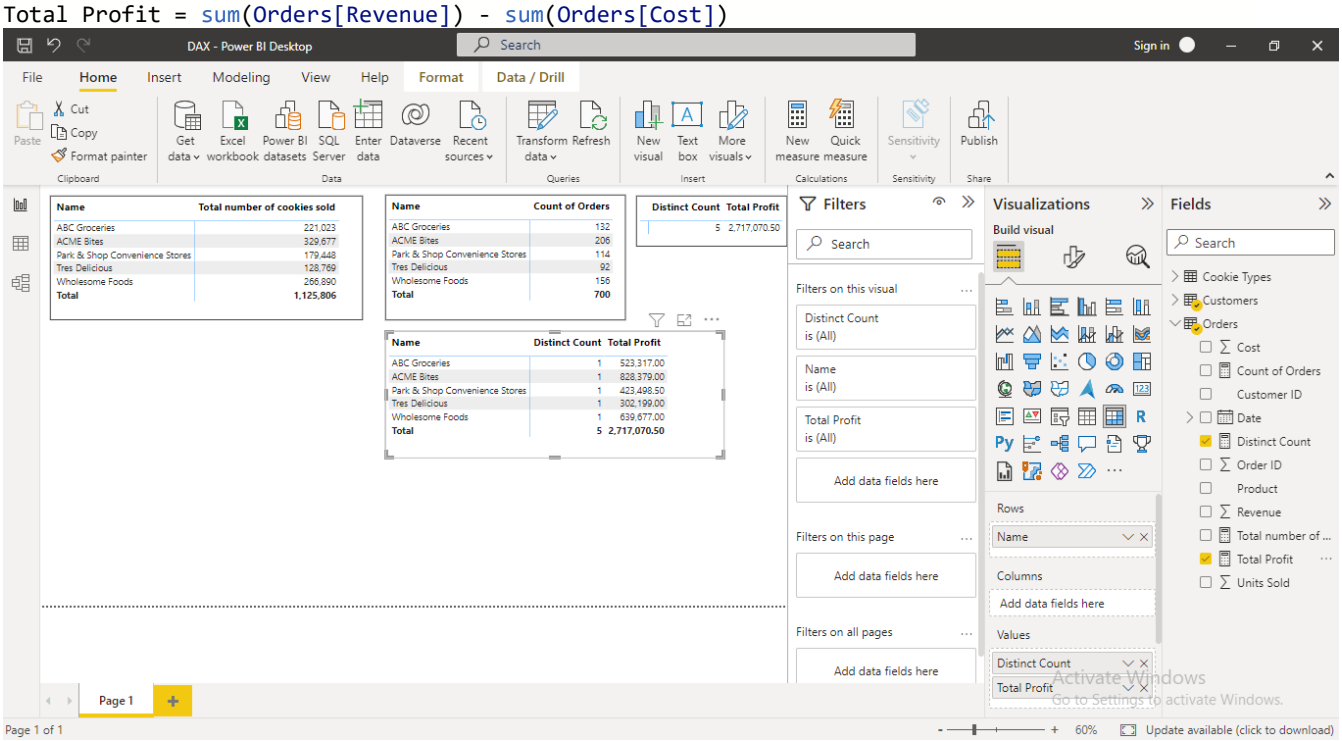


I also added a comment in my measure for just informational purpose



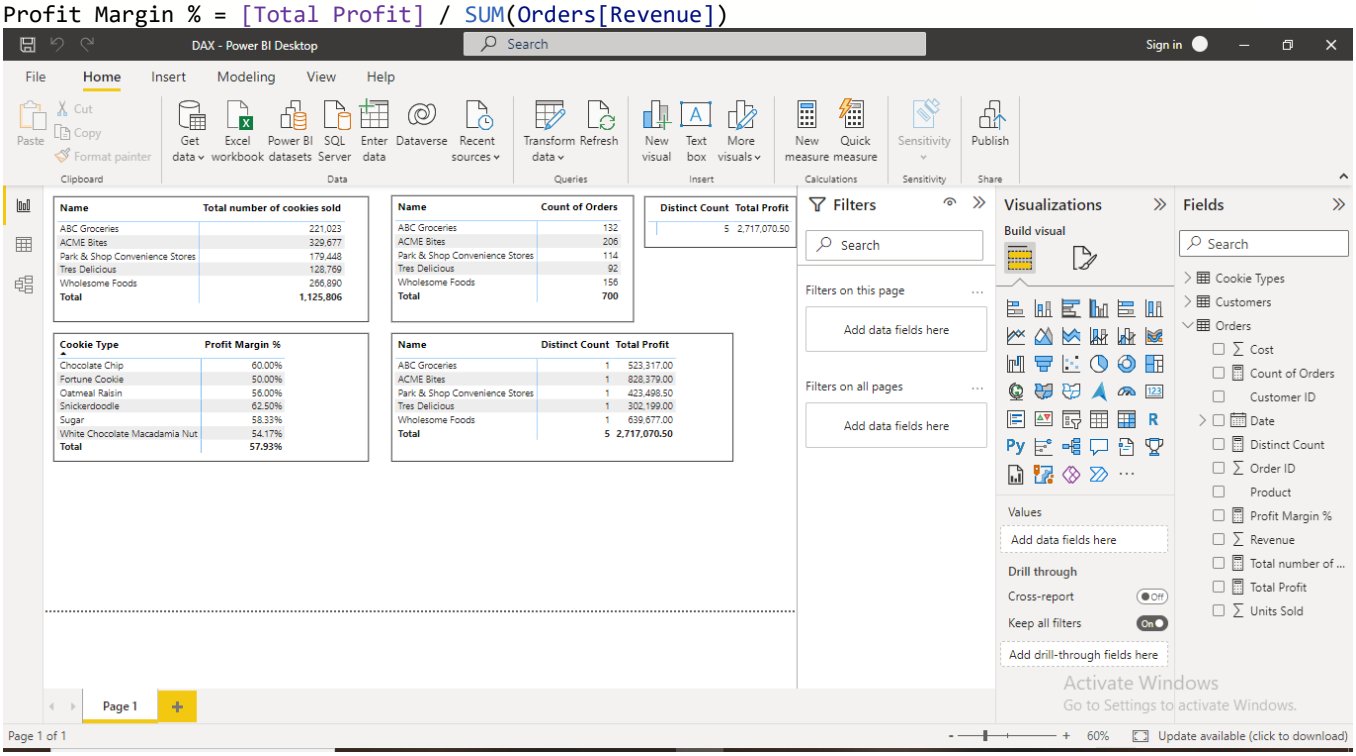
Now I want to calculate Profit. For this, I'll take the total revenue minus the total costs from my order ID to determine the Profit.

```
Total Profit = sum(Orders[Revenue]) - sum(Orders[Cost])
```



Next, I will calculate Profit Margin as a percentage by the cookie type. Profit Margin is our total Profit over the total revenue. In this measure, I will reuse our profit measure. My formula is:

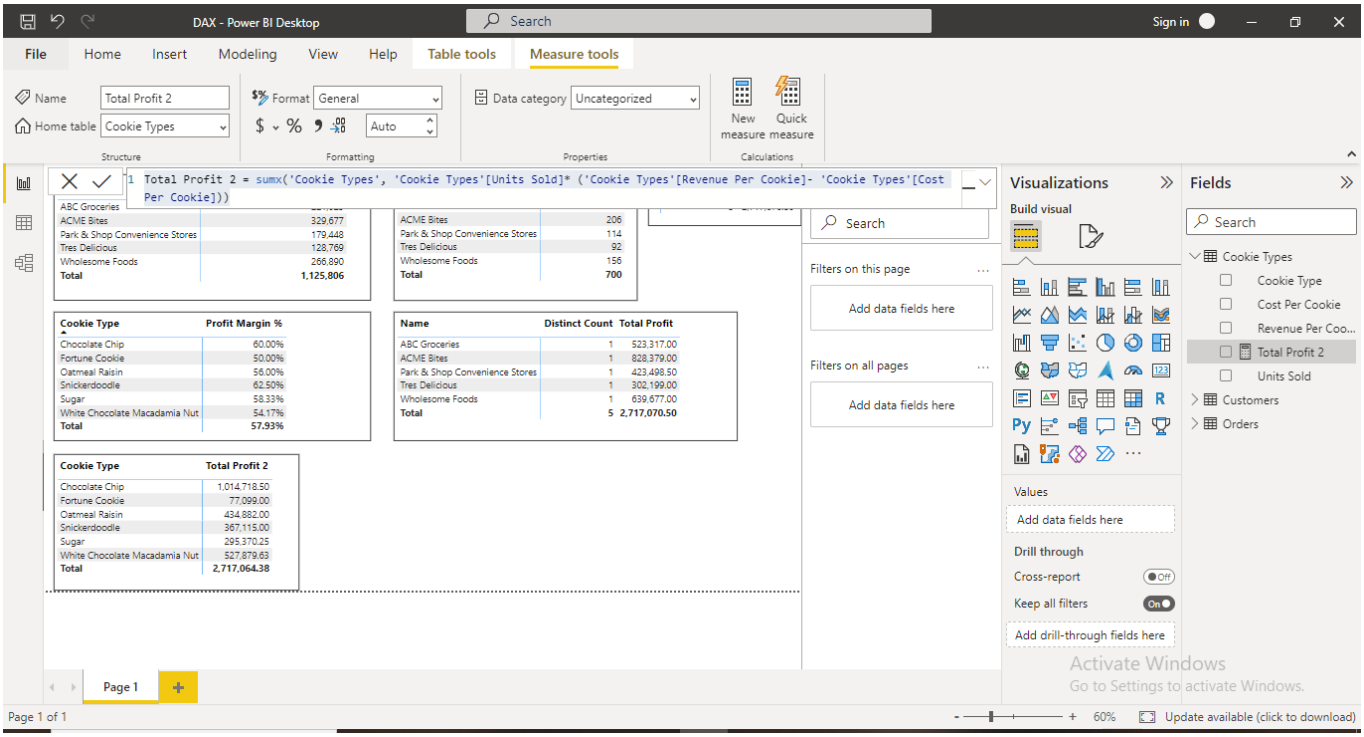
```
Profit Margin % = [Total Profit] / SUM(Orders[Revenue])
```



So far, we have been exploring aggregator functions. It means in our previously created measure we were working with our entire column present in the table. But what if I want to do calculations on a row-by-row basis? Here, the role of iterator functions comes into play.

For example, in our cookie types table, let's say I want to calculate Profit. For this, we will have to take revenue per cookie minus cost per cookie and then multiply that by units sold. That means I will have to go row by row. So my measure formula would be:

```
Total Profit 2 = sumx('Cookie Types', 'Cookie Types'[Units Sold]* ('Cookie Types'[Revenue Per Cookie]- 'Cookie Types'[Cost Per Cookie]))
```



Next, we will explore the time and date function in Power BI.

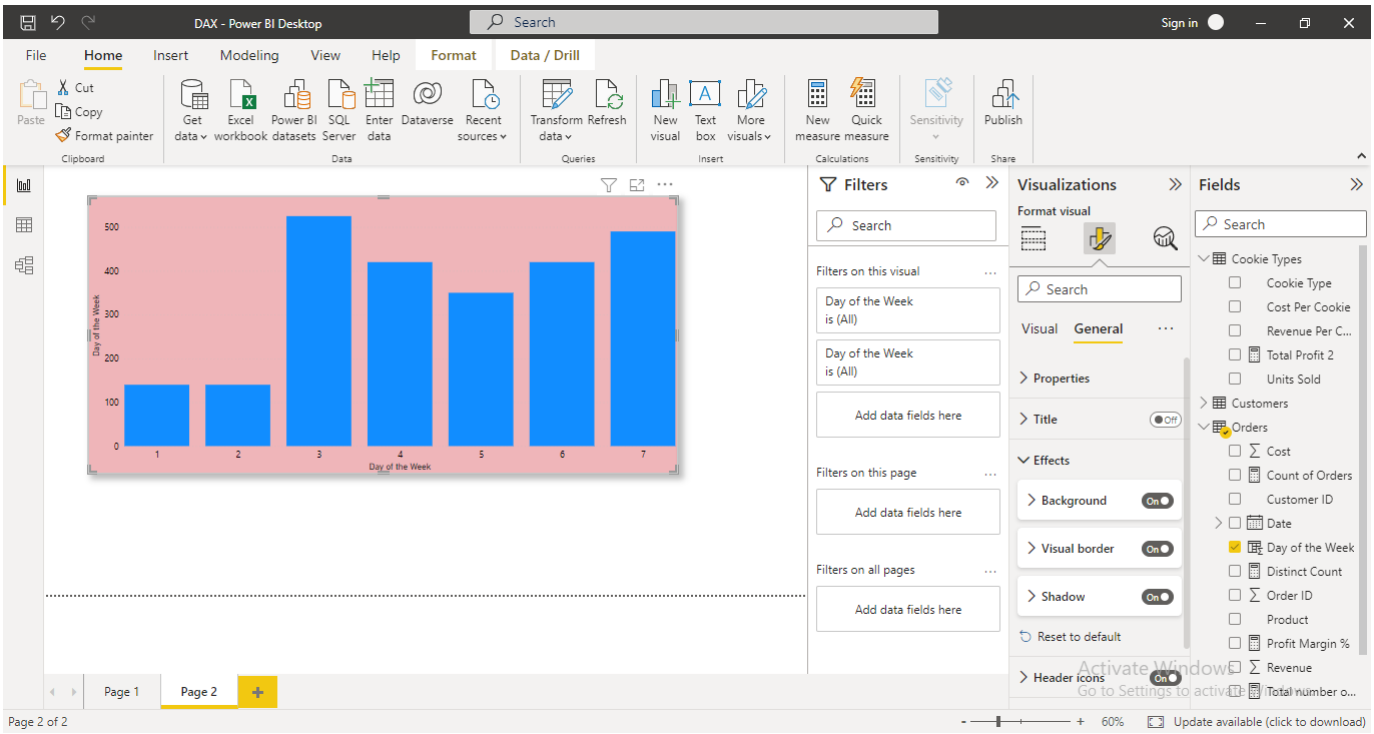
Our question is, how many cookies do we sell on each day of the week?

So we created a new column in our data view: Day of the Week.

```
Day of the Week = WEEKDAY(Orders[Date], 1)
```

Power BI shows that Sunday = 1 and Saturday = 7.

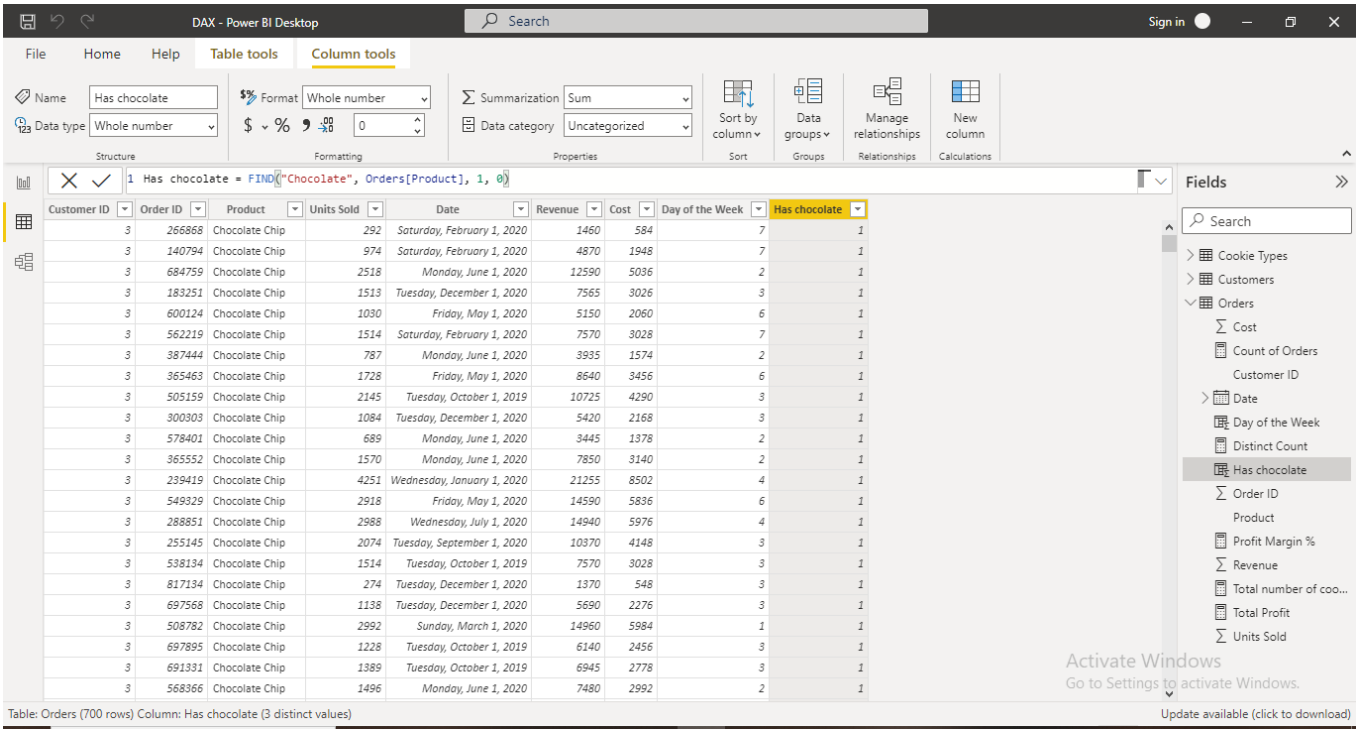
But I want to know what day of the week most orders occurred on. So going back to our report page, I can create a clustered column chart visual that displays more accurately. On the x-axis, we can see days of the week from 1 to 7 (1 being Sunday and 7 being Saturday). We can observe that there were the lowest orders on Sunday and Monday compared to the other days of the week. However, the company sold many orders on Tuesday, and the spike continued till Saturday.



In the orders table, we can see a column names Product. Let's say I want to know how many products have chocolate, so I'll create a new column and use the FIND function.

```
Has chocolate = FIND("Chocolate", Orders[Product], 1, 0)
```

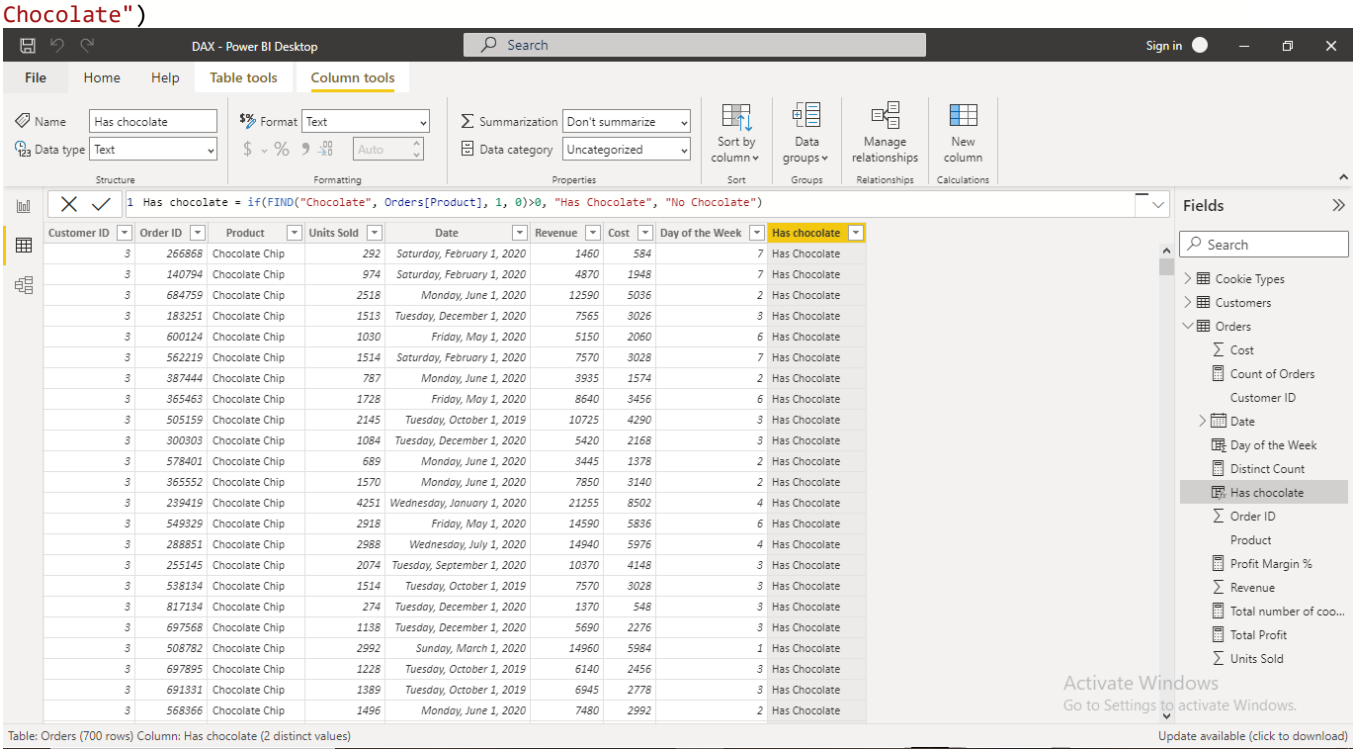
Since the chocolate chip has chocolate, it returns 1. Scrolling down, I can see Fortune cookies do not have chocolate, so it gave me 0. But, scrolling down further, I can see White Chocolate Macadamia Nuts that also has chocolates, and it's in position seven, so it returns 7.



Customer ID	Order ID	Product	Units Sold	Date	Revenue	Cost	Day of the Week	Has chocolate
3	266868	Chocolate Chip	292	Saturday, February 1, 2020	1460	584	7	1
3	140794	Chocolate Chip	974	Saturday, February 1, 2020	4870	1948	7	1
3	684759	Chocolate Chip	2518	Monday, June 1, 2020	12590	5036	2	1
3	183251	Chocolate Chip	1513	Tuesday, December 1, 2020	7565	3026	3	1
3	600124	Chocolate Chip	1030	Friday, May 1, 2020	5150	2060	6	1
3	562219	Chocolate Chip	1514	Saturday, February 1, 2020	7570	3028	7	1
3	387444	Chocolate Chip	787	Monday, June 1, 2020	3935	1574	2	1
3	365463	Chocolate Chip	1728	Friday, May 1, 2020	8640	3456	6	1
3	505159	Chocolate Chip	2145	Tuesday, October 1, 2019	10725	4290	3	1
3	300303	Chocolate Chip	1084	Tuesday, December 1, 2020	5420	2168	3	1
3	578401	Chocolate Chip	689	Monday, June 1, 2020	3445	1378	2	1
3	365552	Chocolate Chip	1570	Monday, June 1, 2020	7850	3140	2	1
3	239419	Chocolate Chip	4251	Wednesday, January 1, 2020	21255	8502	4	1
3	549329	Chocolate Chip	2918	Friday, May 1, 2020	14590	5836	6	1
3	288851	Chocolate Chip	2988	Wednesday, July 1, 2020	14940	5976	4	1
3	255145	Chocolate Chip	2074	Tuesday, September 1, 2020	10370	4148	3	1
3	538134	Chocolate Chip	1514	Tuesday, October 1, 2019	7570	3028	3	1
3	817134	Chocolate Chip	274	Tuesday, December 1, 2020	1370	548	3	1
3	697568	Chocolate Chip	1138	Tuesday, December 1, 2020	5690	2276	3	1
3	508782	Chocolate Chip	2992	Sunday, March 1, 2020	14960	5984	1	1
3	697895	Chocolate Chip	1228	Tuesday, October 1, 2019	6140	2456	3	1
3	691331	Chocolate Chip	1389	Tuesday, October 1, 2019	6945	2778	3	1
3	568366	Chocolate Chip	1496	Monday, June 1, 2020	7480	2992	2	1

Now, let's discover logical functions on the above find function. We can see that values above 0 have chocolate.

```
Has chocolate = if(FIND("Chocolate", Orders[Product], 1, 0)>0, "Has Chocolate", "No Chocolate")
```



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3	183251	Chocolate Chip	1513	Tuesday, December 1, 2020	7565	3026	3	Has Chocolate
3	600124	Chocolate Chip	1030	Friday, May 1, 2020	5150	2060	6	Has Chocolate
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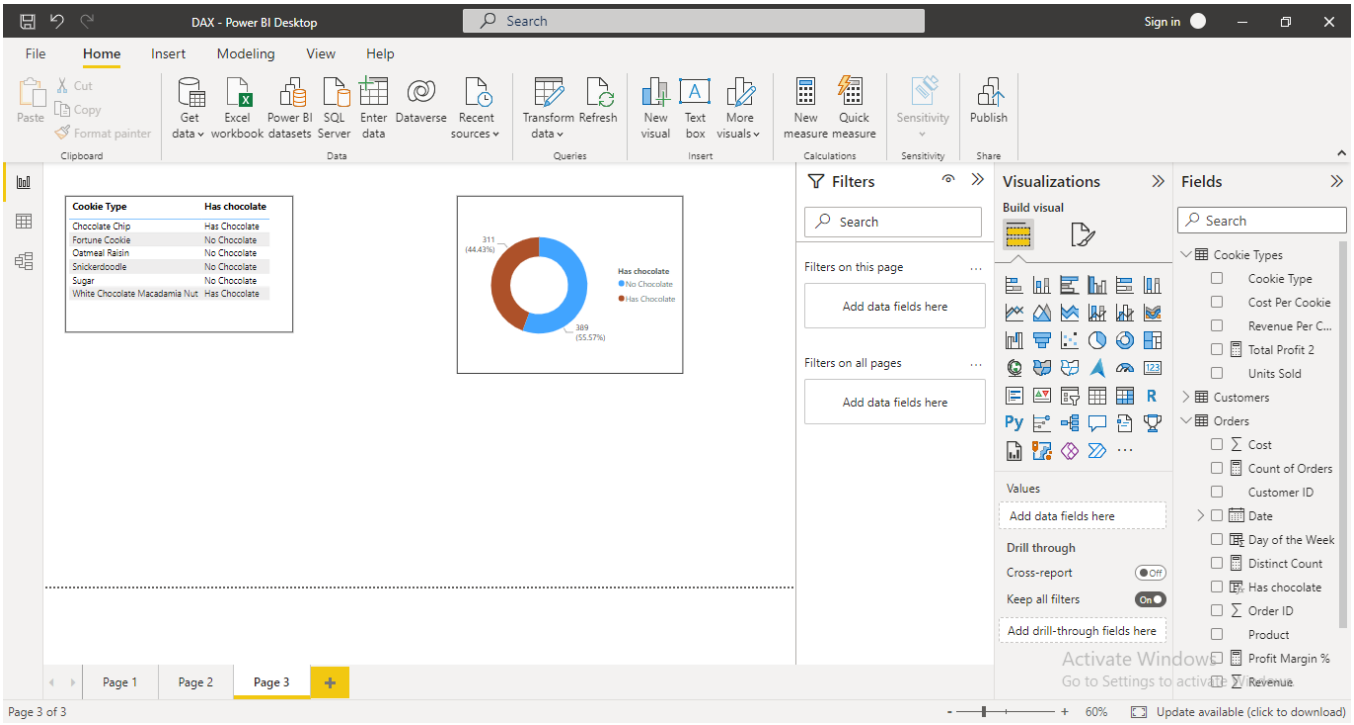
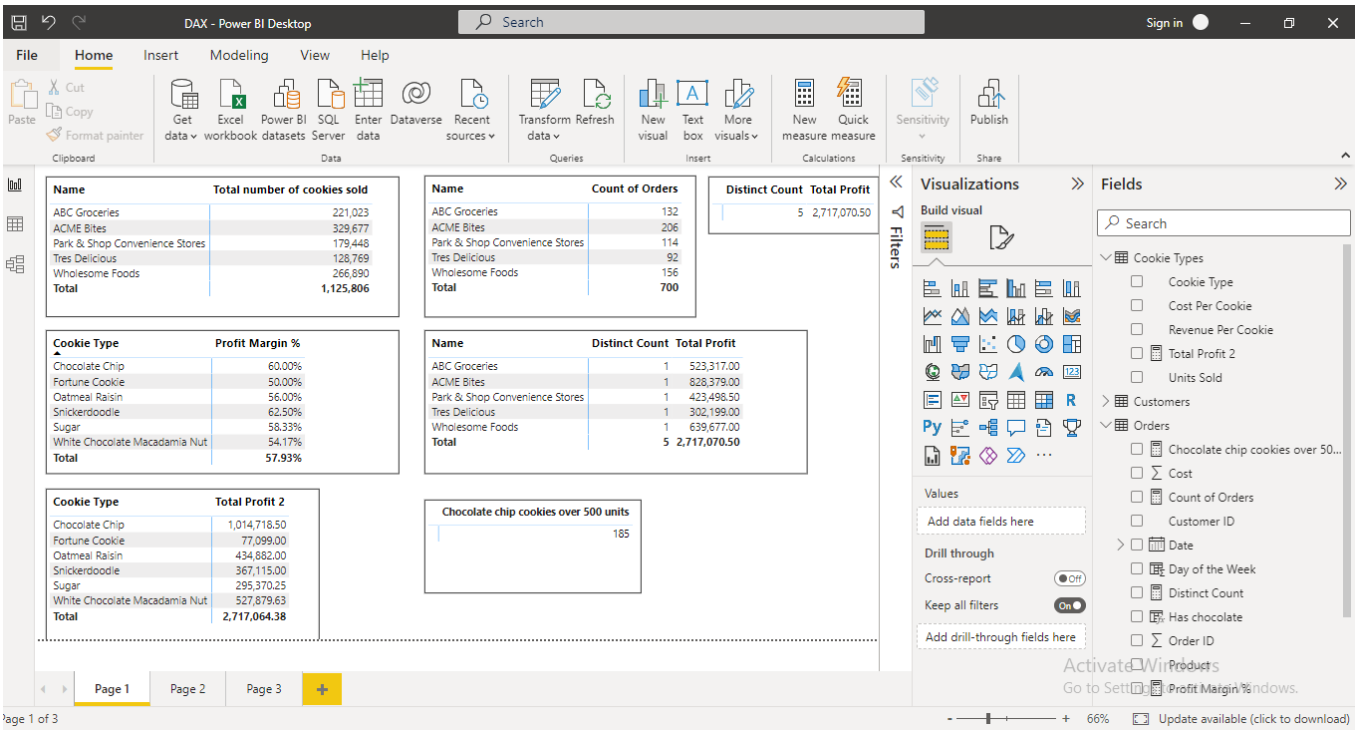
3	239419	Chocolate Chip	4251	Wednesday, January 1, 2020	21255	8502	4	Has Chocolate
3	549329	Chocolate Chip	2918	Friday, May 1, 2020	14590	5836	6	Has Chocolate
3	288851	Chocolate Chip	2988	Wednesday, July 1, 2020	14940	5976	4	Has Chocolate
3	255145	Chocolate Chip	2074	Tuesday, September 1, 2020	10370	4148	3	Has Chocolate
3	538134	Chocolate Chip	1514	Tuesday, October 1, 2019	7570	3028	3	Has Chocolate
3	817134	Chocolate Chip	274	Tuesday, December 1, 2020	1370	548	3	Has Chocolate
3	697568	Chocolate Chip	1138	Tuesday, December 1, 2020	5690	2276	3	Has Chocolate
3	508782	Chocolate Chip	2992	Sunday, March 1, 2020	14960	5984	1	Has Chocolate
3	697895	Chocolate Chip	1228	Tuesday, October 1, 2019	6140	2456	3	Has Chocolate
3	691331	Chocolate Chip	1389	Tuesday, October 1, 2019	6945	2778	3	Has Chocolate
3	568366	Chocolate Chip	1496	Monday, June 1, 2020	7480	2992	2	Has Chocolate



Our last yet powerful function is CALCULATE.

Our question is, how many orders did we have of chocolate chip cookies above 500 units? That means we have two filters here that we can input in our CALCULATE function:

```
Chocolate chip cookies over 500 units = CALCULATE(COUNTROWS(Orders),Orders[Units Sold] > 500,
Orders[Product] == "Chocolate Chip")
```



This shows there are 185 orders with chocolate chip cookies and over 500 units.