

CALCULATIONS AND ANALYSIS IN TABLEAU

CALCULATIONS AND ANALYSIS IN TABLEAU

RECAP

So far in this module, we've learned how to:

1. Build graphs, calculated fields, dashboards, and stories in Tableau.
2. Work with different types of dates in Tableau.
3. Create different visual charts types.
4. Import, analyze, filter, and build a dashboard from sample data.
5. Clean data with a variety of string functions, including **LEFT**, **MID**, **FIND**, and **REPLACE**.

CALCULATIONS AND ANALYSIS IN TABLEAU

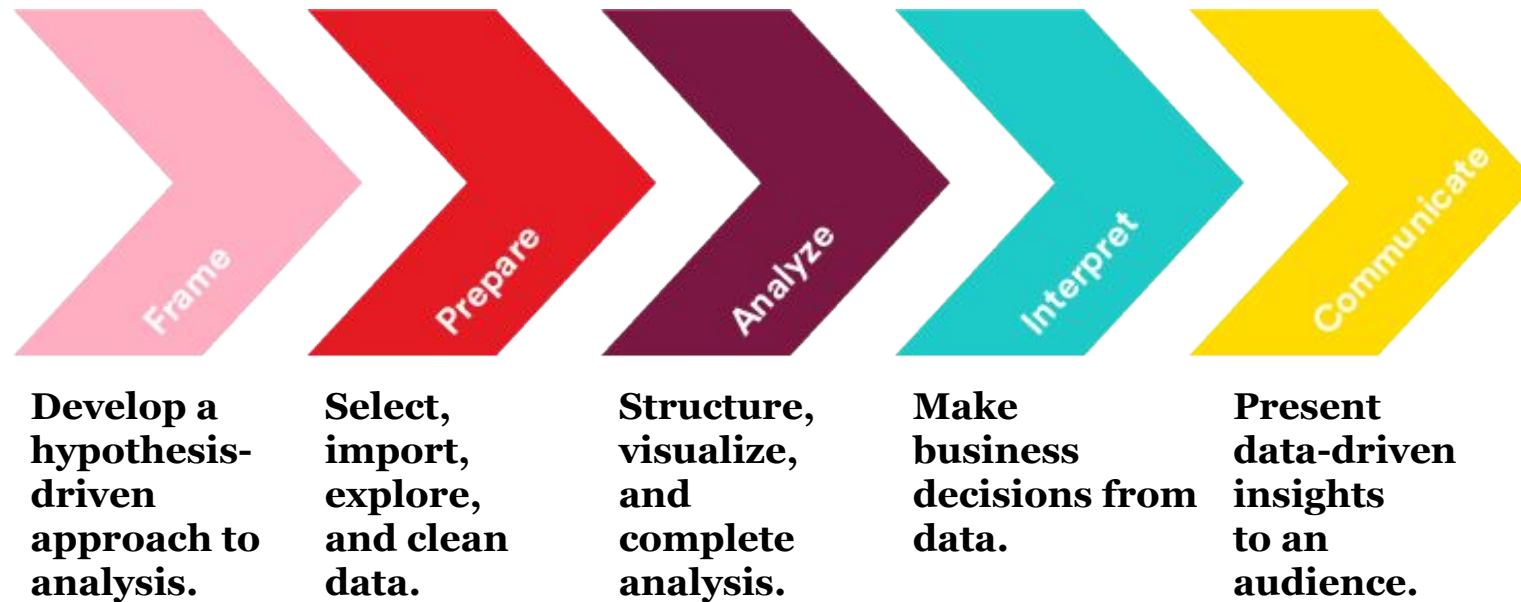
LEARNING OBJECTIVES

After this lesson, you'll be able to:

1. Create different types of calculated fields in order to analyze sample data.
2. Define and demonstrate how to use quick table calculations.
3. Apply new skills in order to analyze and visualize sample data.

CALCULATIONS AND ANALYSIS IN TABLEAU

Today, we will be exploring calculations in Tableau. We'll get the chance to apply the data analytics workflow in Tableau by making business recommendations based on the Superstore data set:



CALCULATIONS AND ANALYSIS IN TABLEAU

GUIDED PRACTICE: CALCULATIONS

TABLEAU CALCULATIONS

For the following exercises, we'll use the Tableau Superstore dataset, which is included in your default Tableau installation.

If you have any problems replicating the following Tableau features, you should be able to find an example using the Superstore data set.

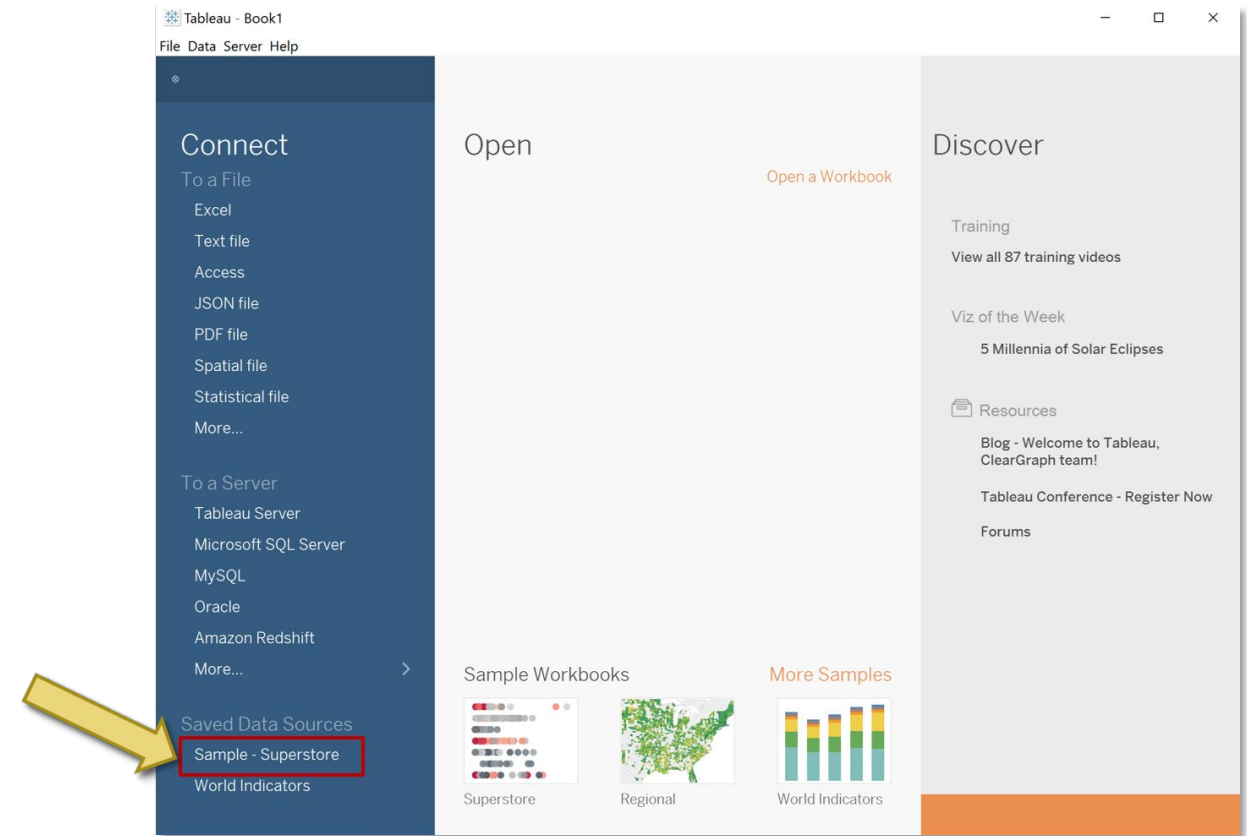


TABLEAU CALCULATIONS

Download the workbook '[Calculations and Analysis activities v4](#)' and follow the instructions to complete the activities

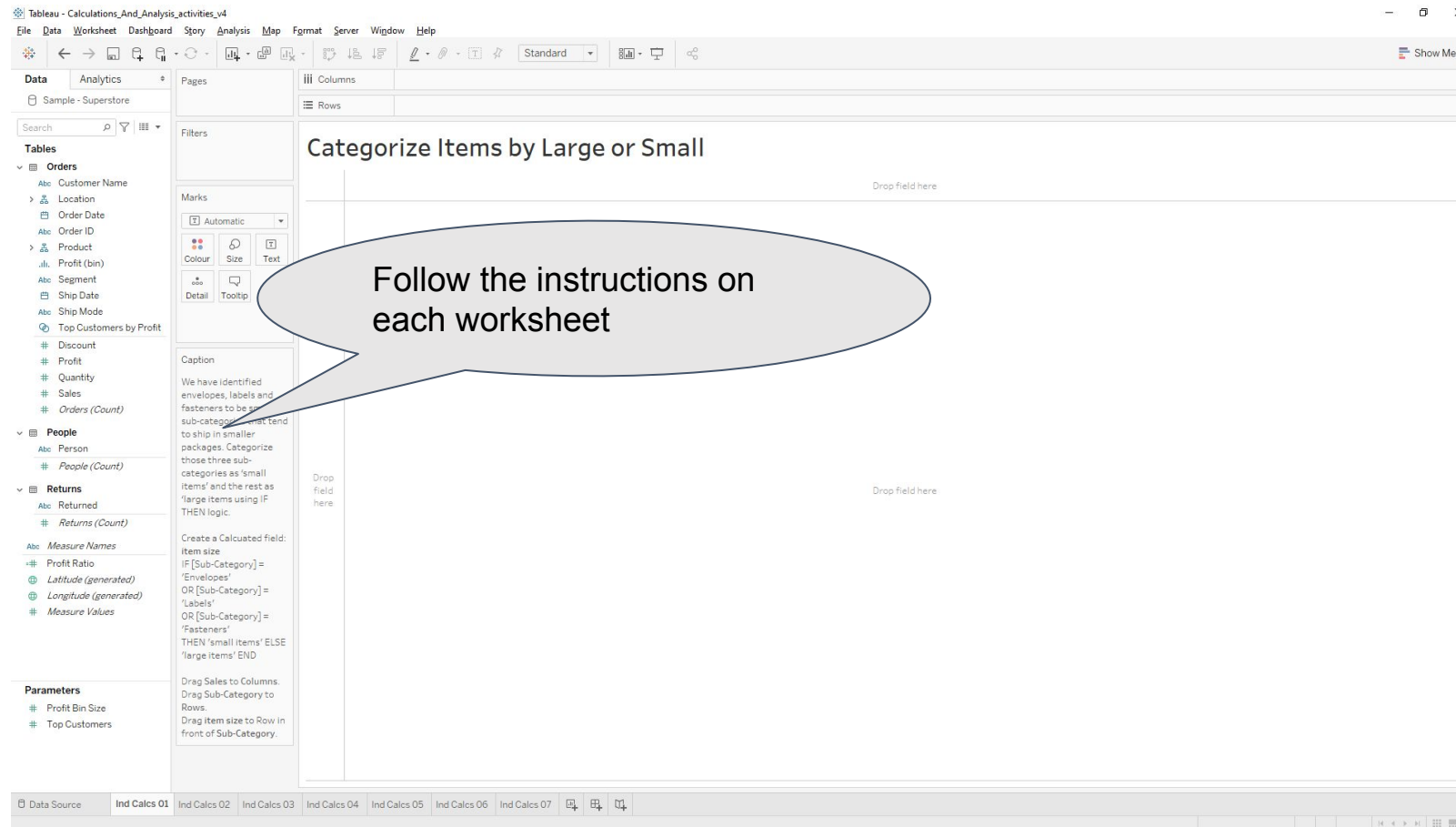


TABLEAU CALCULATIONS, ANALYSIS, AND ACTIONS

Logic statements: **IF, THEN, ELSE.**

- IF a happens, THEN return b, ELSE do c. End.
- After completing its logical task, this statement ends.

independent_calculation_01:

1. In the Superstore data set, we have identified envelopes, labels, and fasteners as subcategories that tend to ship in smaller packages.
2. Categorize these three subcategories as “small items” and the rest as “large items” using **IF, THEN** logic.
3. When we work with string data for a calculation in Tableau, we’ll need to enclose them with single or double quotes — much like in SQL and Excel. Either will work in Tableau.



TABLEAU CALCULATIONS

Dates — DATEDIFF :

- DATEDIFF ('datepart', start date , end date)
 - **Note:** 'datepart' = 'year', 'month', 'day', etc.
 - You can find more information about DATEDIFF calculations on the [Tableau help site](#).

independent_calculation_02:

- What is the length of time, in days, that it takes for an order to ship? Create a histogram of orders by number of days to ship.
- Try to translate the business question to the functions and data you have available in Tableau.



TABLEAU CALCULATIONS

Logic — IF THEN ELSEIF:

IF **a** happens, THEN return **b**,
ELSEIF **c** happens, THEN return **d**
END

independent_calculation_03:

- How many orders were shipped slowly, at a medium pace, and quickly (slow, medium, fast)?
Slow: > 4 days, medium: >2 days and <=4 days, fast: <=2 days.



TABLEAU CALCULATIONS

Dates – TODAY:

- TODAY() is a dynamic way of returning today's date.
- Much like the TODAY() and getdate() functions in Excel and SQL, respectively, this is **dynamic**. When you open the workbook again in the future, TODAY() will change and affect your calculations.

independent_calculation_04:

- Considering today's date, how many months has it been since each item shipped?



TABLEAU CALCULATIONS

Aggregate vs. row level:

- Measure/measure.
- SUM(measure)/SUM(measure).

independent_calculation_05:

- What is the profit ratio for each subcategory (i.e., profit/sales)?



TABLEAU CALCULATIONS

▸ Aggregate and logic:

- IF the aggregate of **a** is true, THEN return **b**.

▸ independent_calculation_06:

- Which subcategories are doing good, OK, and poorly?
Good: $>.3$, OK: $\leq .3$ and >0 , bad: ≤ 0 .
- Is this calculation running at the row level or at an aggregate level (before or after the GROUP BY)?



TABLEAU CALCULATIONS

Dates – DATEPART:

- DATEPART('datepart', date)

independent_calculation_07:

- Does it take longer to ship items that were ordered on the weekend?
- Categorize order dates by weekdays and weekends using a DATEPART calculation.



TABLEAU CALCULATIONS

Parameters:

- A parameter is a data point that is not in the data set. It's an outside input.
- These are especially useful for when consumers of your reports interact with them. They can change inputs and see how they will affect results.
- For example: “What are our sales if they are increased by n percent?”
 - In this case, sales is our data set and n is the parameter.

independent_calculation_o8:

- How will profits change by subcategory if we were to increase them by n percent?



CALCULATIONS AND ANALYSIS IN TABLEAU

DEMO: CALCULATED FIELDS AND TABLE CALCULATIONS

CALCULATION FIELD: GRANULARITY AND AGGREGATION

What is the difference between the following calculated field formulas, assuming we are trying to determine net profit?

- Profit ratio = $\frac{[PROFIT]}{[SALES]}$
- Profit ratio = $\frac{SUM([PROFIT])}{SUM([SALES])}$

Sales	Profit	Profit Ratio
\$100	15	15%
10	5	50%
50	20	40%
<u>100</u>	<u>30</u>	<u>30%</u>
		135%
\$260	\$ 70	27%

When we sum each row first: *incorrect.*

When we sum column first: *correct.*

CALCULATION FIELD: GRANULARITY AND AGGREGATION

Here's an illustration
using Excel calculations:

SUM ✕ ✓ <i>fx</i> =SUM(D3:D7)				
	A	B	C	D
1	INCORRECT - profit/sales			
2	Row ID	Profit	Sales	Profit Ratio
3	89536	\$1.32	\$19.97	7%
4	89547	\$51.35	\$132.10	39%
5	89549	-\$1,685.04	\$180.29	-935%
6	89550	-\$415.70	\$3,422.18	-12%
7	89536	\$455.42	\$660.03	69%
8	TOTAL	-\$1,592.64	\$4,414.57	=SUM(D3:D7)
9				
SUM ✕ ✓ <i>fx</i> =B8/C8				
	A	B	C	D
1	CORRECT - SUM(profit) / SUM(sales)			
2	Row ID	Profit	Sales	Profit Ratio
3	89536	\$1.32	\$19.97	7%
4	89547	\$51.35	\$132.10	39%
5	89549	-\$1,685.04	\$180.29	-935%
6	89550	-\$415.70	\$3,422.18	-12%
7	89536	\$455.42	\$660.03	69%
8	TOTAL	-\$1,592.64	\$4,414.57	=B8/C8
9				

TABLE CALCULATIONS

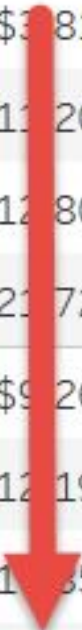
A regular calculation, such as profit/sales, runs across row data.

Year of Order Date	Quarter ..	Profit	Sales
2012	Q1	\$3,811	\$74,448
	Q2	\$11,287	\$75,539
	Q3	\$12,805	\$143,633
	Q4	\$21,724	\$179,628
2013	Q1	\$9,265	\$68,852
	Q2	\$12,191	\$89,124
	Q3	\$16,854	\$130,260
	Q4	\$23,309	\$182,297

TABLE CALCULATIONS

A table calculation, such as year-over-year profit growth, runs down a single column of raw data.

Year of Order Date	Quarter ..	Profit	Sales
2012	Q1	\$3,811	\$74,448
	Q2	\$11,204	\$86,539
	Q3	\$12,805	\$143,633
	Q4	\$21,724	\$179,628
2013	Q1	\$9,265	\$68,852
	Q2	\$12,191	\$89,124
	Q3	\$11,354	\$130,260
	Q4	\$23,309	\$182,297



CALCULATIONS AND ANALYSIS IN TABLEAU

GUIDED PRACTICE: TABLE CALCULATIONS

TABLE CALCULATIONS

- Table calculations can be added to any measure in the Tableau view by right clicking and selecting “**Quick Table Calculation.**”
- When right clicking the created table calculation, the “Compute Using” option allows us to specify how to use that table calculation.
- Now, use the Guided Practice tabs to answer the table calculation questions.

CALCULATIONS AND ANALYSIS IN TABLEAU

INDEPENDENT PRACTICE: ANALYZE DATA

ACTIVITY: ANALYZE DATA (USING TABLEAU)



EXERCISE

DIRECTIONS:

Take a few minutes to build Tableau visualizations and/or dashboards that answer these questions.

Using your initial hypotheses, validate initial answers to:

- Which product categories or subcategories are not doing well?
- Can a product be a problem even if it has high sales?
- How should we define underperforming products?
- If a product is not performing well but has a large market share (lots of customers), is it worth keeping?

Share your insights (and relative time/effort required)!

CALCULATIONS AND ANALYSIS IN TABLEAU

CONCLUSION

REVIEW: CALCULATIONS AND ANALYSIS IN TABLEAU

RECAP

In today's lesson, we learned how to:

1. Create logic, aggregation, and date calculated fields to analyze data
2. Define the procedures and order of operations for table calculations.
3. Apply our calculations to the Superstore data set in order to answer real world questions.

CALCULATIONS AND ANALYSIS IN TABLEAU

Q&A

CALCULATIONS AND ANALYSIS IN TABLEAU

RESOURCES

CALCULATIONS AND ANALYSIS IN TABLEAU

RESOURCES

- Additional Examples of Calculated Fields (Interworks):
<https://www.interworks.com/blog/ccapitula/2015/03/24/tableau-essentials-calculated-fields-introduction>
- Differences Between Calculated Fields and Table Calculations:
<https://www.thedataschool.co.uk/elena-caric/difference-table-calculations-calculated-fields/>
- Example: Descriptive and Inferential Analysis Dashboard Using Superstore Data Set:
<https://www.ryansleeper.com/super-sample-superstore/>