Quiz 1: AGGREGATE FUNCTIONS

An aggregate function is a mathematical computation involving a range of values that results in just a single value expressing the significance of the accumulated data it is derived from. Aggregate functions are often used to derive descriptive statistics

Aggregate functions are often used in databases, spreadsheets, and statistical software packages now common in the workplace. Aggregate functions are used extensively in economics and finance to provide key numbers that represent economic health or market performance

NOTE:

* Aggregate functions deliver a single number to represent a larger data set. The numbers being used may themselves be products of aggregate functions.
* Many descriptive statistics are the result of aggregate functions.
* Economists use the outputs of data aggregation to plot changes over time and project future trends.
* The models created out of aggregated data can be used to influence policy and business decisions.

The aggregate function simply refers to the calculations performed on a data set to get a single number that accurately represents the underlying data. The use of computers has improved how these calculations are performed, allowing aggregate functions to produce results very quickly and even adjust weightings based on the confidence the user has in the data. Thanks to computers, aggregate functions can handle ever larger and more complex data sets.

Some common aggregate functions include:

* Average (also called [arithmetic mean](https://www.investopedia.com/terms/m/mean.asp))
* Count
* Maximum
* Minimum
* Range
* Mean
* Median
* Sum

**1.Mean**

The mean is a [statistical indicator](https://www.investopedia.com/terms/d/descriptive_statistics.asp) that can be used to gauge performance over time. Specific to investing, the mean is used to understand the performance of a company’s stock price over a period of days, months, or years.

In statistics, it is a measure of central tendency of a probability distribution along median and mode. It is also referred to as an expected value.

**How to Calculate Mean?**

There are different ways of measuring the central tendency of a set of values. There are multiple ways to calculate the mean. Here are the two most popular ones:

Arithmetic mean is the total of the sum of all values in a collection of numbers divided by the number of numbers in a collection. It is calculated in the following way:



In finance, the arithmetic mean may be misleading in the calculations of returns, as it does not consider the effects of volatility and compounding, producing an inflated value for the central point of the distribution.

Geometric mean is an *n*th root of the product of all numbers in a collection. The formula for the [geometric mean](https://corporatefinanceinstitute.com/resources/knowledge/other/what-is-geometric-mean/) is:



The geometric mean includes the volatility and compounding effects of returns. Thus, the geometric average provides a more accurate calculation of an average return.

**Arithmetic Mean Example**

Jim wants to find a [stock](https://corporatefinanceinstitute.com/resources/knowledge/finance/what-is-a-stock/) for investment. He is a big fan of [Apple Inc.](https://finance.yahoo.com/quote/aapl/profile?ltr=1) He knows that the company has strong financials. However, to ensure that this investment will bring him a substantial return, he has decided to check how the stock performed in the past. He decides to find the average price of Apple’s share price for the past five months.

He gathered the monthly company’s stock prices from January 2018 to June 2018 and found the monthly returns. The stock prices and returns are summarized in the table below:



The formula used for the calculation would be the following:



**Geometric Mean Example**

In order to check the obtained result, Jim has decided to calculate the geometric mean return of Apple’s share price. However, it should be calculated not in percentages but in decimal numbers.

The geometric mean is equal to:



**Example**

An analyst who wants to measure the trajectory of a company’s stock value in, say, the last 10 days would sum up the [closing price](https://www.investopedia.com/terms/c/closingprice.asp) of the stock in each of the 10 days. The sum total would then be divided by the number of days to get the arithmetic mean. The geometric mean will be calculated by multiplying all of the values together. The nth root of the product total is then taken—in this case, the 10th root—to get the mean.

**2. Median**

The median is the middle number in a sorted, ascending or descending list of numbers and can be more descriptive of that data set than the average. It is the point above and below which half (50%) the observed data falls, and so represents the midpoint of the data.

The median is often compared with other descriptive statistics such as the [mean](https://www.investopedia.com/terms/m/mean.asp) (average), [mode](https://www.investopedia.com/terms/m/mode.asp), and [standard deviation](https://www.investopedia.com/terms/s/standarddeviation.asp).

Median is the middle number in a sorted list of numbers. To determine the median value in a sequence of numbers, the numbers must first be sorted, or arranged, in value order from lowest to highest or highest to lowest. The median can be used to determine an approximate average, or [mean](https://www.investopedia.com/terms/m/mean.asp), but is not to be confused with the actual mean.

If there is an odd amount of numbers, the median value is the number that is in the middle, with the same amount of numbers below and above.

If there is an even amount of numbers in the list, the middle pair must be determined, added together, and divided by two to find the median value.

Important: The median is sometimes used as opposed to the mean when there are outliers in the sequence that might skew the average of the values. The median of a sequence can be less affected by outliers than the mean.

**How Do You Calculate the Median?**

The median is the middle value in a set of data. First, organize and order the data from smallest to largest. To find the midpoint value, divide the number of observations by two. If there are an odd number of observations, round that number up, and the value in that position is the median. If the number of observations is even, take the average of the values found above and below that position.

To find the median value in a list with an **odd** amount of numbers, one would find the number that is in the middle with an equal amount of numbers on either side of the median. To find the median, first arrange the numbers in order, usually from lowest to highest.

For example, in a data set of {3, 13, 2, 34, 11, 26, 47}, the sorted order becomes {2, 3, 11, 13, 26, 34, 47}. The median is the number in the middle {2, 3, 11, **13**, 26, 34, 47}, which in this instance is 13 since there are three numbers on either side.

To find the median value in a list with an **even** amount of numbers, one must determine the middle pair, add them, and divide by two. Again, arrange the numbers in order from lowest to highest.

For example, in a data set of {3, 13, 2, 34, 11, 17, 27, 47}, the sorted order becomes {2, 3, 11, 13, 17, 27, 34, 47}. The median is the average of the two numbers in the middle {2, 3, 11, **13**,**17**,2634, 47}, which in this case is fifteen {(13 + 17) ÷ 2 = 15}.

**Application in business**

The median is especially useful when you have skewed data. That is, it has high data distribution towards one side. In this case, the average wouldn't give you a fair mid-value but would lean more towards the higher values. In this case, you can use the middle data point as the central point instead.

Consider n terms X\_1, X\_2, X\_3,………… X\_n. The basic formula for the median is by dividing the total number of observations by 2. This works fine when you have an odd number of terms because you will have one middle term and the same number of terms above and below. For an even number of terms, consider the two middle terms and find their average.



**3.Count**

The term count refers to a form of [technical analysis](https://www.investopedia.com/terms/t/technicalanalysis.asp) that employs [point and figure (P&F) charts](https://www.investopedia.com/terms/p/pointandfigurechart.asp) to evaluate the vertical movement of stock prices. Designed to be used for long-term investing analysis, point and figure charting is considered one of the easiest ways for traders to determine entry and exit points. Traders who employ count analysis plot price increases and decreases that are used to pinpoint target prices.

Count analysis plots Xs to represent price increases and Os for price decreases on its chart. Analysts base count calculations on historical sideways price movements and use them to determine the probability that a [price target](https://www.investopedia.com/terms/p/pricetarget.asp) can be reached. Count analysis Xs and Os are used with a traditional scale and a previously determined reversal amount. Traders use this to determine if certain positions are profitable. Investors can review the sequence of price fluctuations to estimate how prices will move in the future. There are several count methods, such as the breakout count method that is used to find a bullish price objective must be used with an active P&F buy signal.

Types of Count Analysis

**Breakout Count Analysis**

The [breakout](https://www.investopedia.com/terms/b/breakout.asp) count method is used to find a bullish price objective must be used with an active P&F buy signal. There are four steps to this method.

First, the most active sell signal, known as a [Double Bottom](https://www.investopedia.com/terms/d/doublebottom.asp) Breakdown, must be found on the P&F chart, working from right to left. The second step involves working to the right of this signal to find the next buy signal or the [Double Top](https://www.investopedia.com/terms/d/doubletop.asp) Breakout. The column producing this signal is key because it becomes the measure column. Then, the height of the measure column must be calculated and multiplied by the box reversal amount. Finally, the total of this calculation must be added to the low of the column to the left of the measure column.

**Reversal Count Analysis**

The [reversal](https://www.investopedia.com/terms/r/reversal.asp) count method may be used to find [bullish](https://www.investopedia.com/terms/b/bull.asp) and [bearish](https://www.investopedia.com/terms/b/bear.asp) price objectives. There are three steps used to find bullish prices. The reversal count must be used with an active P&F buy signal. First, working from left to right, the most recent P&F sell signal must be found. The X column next to the sell signal becomes the measure column. Next, the height of the column must be calculated and multiplied by the box [reversal amount](https://www.investopedia.com/terms/r/reversalamount.asp). Then, the total must be added to the low of the column to the left of the measure column.

**Horizontal Count Analysis**

For the horizontal count method, a [congestion](https://www.investopedia.com/terms/c/congestion.asp) pattern or reversal must form on a P&F chart. The congestion pattern needs to be a minimum of five columns wide and must have a column that breaks the congestion. The columns in this pattern are to be counted. This is the width. After the breakout column occurs on the P&F chart, analysts can multiply the width by the [box size](https://www.investopedia.com/terms/b/boxsize.asp) and the reversal amount to estimate price extension. The extension is added to the low of the pattern for a price objective.

**Application in business**

Keeping an accurate count of your inventory allows you to have a watchful eye on multiple sales channels, while maintaining visibility into the quantity and location of your stock – even when it is housed in different warehouses.

**Quiz 2. Report**

A report is a bunch of facts written in a systematic way related to a specific business matter as per a set of standard protocols. It helps concerned stakeholders to get a thorough knowledge of the problems and how to overcome the problem.

**Importance of reports to an organization**

**Interpretation and Explanation of event:** Reports helps the users to understand the information easily. It explains and interprets the data to an understandable format.

**Making Decisions:** A report is a tool to help stakeholders take decisions. A report is the basic management tool for making decisions and to help solve problems.

**Communication with external stakeholders:** It helps to communicate information to not just the internal stake holders but also with external stakeholders.

**Development of knowledge base:** Reports also help in establishing a rich source of information base in an organization. It records all the activities of the business operations permanently which are archived for future references.

**Controlling:** Reports provide the required information to enforce controlling techniques.

**Recommending actions:** Reports not only provide information but also stands a source to provide solutions to problems.

**Gets everyone on the same page:** Business reports are critical and important source of information to all the stakeholders involved in the business. When there is a business plan, such reports play a vital role and it outlines the business finances, strategies and future plans and goals for future growth. It is a medium to communicate about the progress of the business.

**Ensures to make quality business decisions:** Reports are critical to showcase analytics of the business data which is crucial to take business decisions. There are effective software products available which helps to access crucial data through few clicks

**Helps to protects Your Interests:** The data reports can be saved for future purpose in case of any security breach or any other critical scenario. It is important to monitor backups on the company's servers would serve u from any unpredictable mishaps.

**Who reads reports in organization and who delivers the report**

Aside from the core financial community, reports are clearly also directed at in-house target groups and the general public.

Reports come from every department i.e marketing, customer service, IT, finance, sales, and operations. It is then communicated the head of organization through the medium of communication to the intended audience

**Importance of knowing audience in report writing**

* Knowing your audience helps you to make decisions about what information you should include, how you should arrange that information, and what kind of supporting details will be necessary for the reader to understand what you are presenting. It also influences the tone and structure of the document. To develop and present an effective argument, you need to be able to appeal to and address your audience.
* To effectively plan your assignment, you need to figure out who your audience is and what specific needs they might have. The best place to begin is your assignment description. Look to see if your instructor specified an intended audience. If not, you might ask your instructor if there is a particular intended reader for the assignment.
* Address your audience’s concerns – Addressing the individuals concerns of stakeholders in the room will go a long way toward winning your allies. Research past presentations and the outcomes to make sure you have your bases covered. You might also consider giving decision-makers a preview of your presentation ahead of time, and asking for their input. You can then salt their recommendations into your presentation, which will increase their investment in your success.
* Find the right medium for your message – Well-presented data can do wonders for persuading an audience. But overwhelming slides with needless detail or trotting out tired visuals will also quickly lose your favor. Think carefully about the message you want to convey. Does a bar graph, table, or pie chart more effectively present your position? Are you able to circulate documents ahead of time, which might affect the data you want to emphasize in the actual presentation? Or will a unique, more entertaining route be more persuasive?
* Don’t forget to connect – Making a human connection is the essential element of this whole process. It might also be worthwhile to use colorful metaphors, videos, or other multimedia to make your point stand out. But, very often, simpler can be better.
* **‘**Have an elevator pitch ready’ – time is of the essence, particularly in business. You have to make sure that somebody actually reads your complete message. So, it might be necessary to leave something out. You need to make sure that those are the least important points in your message.