Retail math is used daily in various ways by store owners, managers, retail buyers, and other retail employees to evaluate inventory purchasing plans, analyze sales figures, add-on markup, and apply markdown pricing to plan stock levels in the store. Although most accounting programs do the math for you, as a business owner or accountant you should know the most common retail math formulas that are used to track merchandise, measure sales performance, determine profitability, and help create pricing strategies.

Acid-Test Ratio

This is a measurement of how well a business could meet its short-term financial obligations if sales suddenly stopped. The purpose of this calculation is to determine how easily a company could be liquidated and helps financial institutions determine creditworthiness. The easier it is to liquidate, the less risk to the bank or financial institution. Retail stores may have very low acid-test ratios without necessarily being in danger. For instance, for the fiscal year ending January 2017, Walmart Inc.'s acid-test ratio was 0.22, while Target Corp.'s was 0.29, equating to ratios of 0.86 and 0.94, respectively.

Acid-Test Ratio = Current Assets - Inventory ÷ Current Liabilities

Average Inventory

This can be figured by taking an item price and subtracting discounts, plus freight and taxes. The average is found by adding the beginning cost inventory for each month plus the ending cost inventory for the last month in the period. If calculating for a season, divide by 7. If calculating for a year, divide by 13. Here's a cost example: If a clothing retailer has an average inventory of $100,000 and the cost of goods sold is $200,000, then you would divide $200,000 by $100,000 to give you a ratio of 2:1, which can be expressed simply as 2.

Average Inventory (Month) = (Beginning of Month Inventory + End of Month Inventory) ÷ 2

Break-Even Analysis

This is the point in your retail business where sales equal expenses. There is no profit and no loss. For example, for a retail store, rent is likely to be the same regardless of the number of units sold.

Break-Even ($) = Fixed Costs ÷ Gross Margin Percentage

Contribution Margin

This is the difference between total sales revenue and total variable costs. In retail, the gross margin percent is recognized as the contribution margin percent. This is useful information for deciding whether to add or remove products and make pricing decisions.

Contribution Margin = Total Sales - Variable Costs

Cost of Goods Sold

This is the price paid for a product, plus any additional costs necessary to get the merchandise into inventory and ready for sale, including shipping and handling. This method is pretty straight-forward, and very easy to use and implement in a low-volume, high-cost-per-item retail format.

Gross Margin

This is simply the difference between what an item cost and the price for which it sells. For example, if Store A and B have the same sales, yet Store A's gross margin is 50 percent and Store B's gross margin is 55 percent, it's easy to see which store is faring better.

Gross Margin = Total Sales - Cost of Goods

Gross Margin Return on Investment (GMROI)

GMROI calculations assist buyers in evaluating whether a sufficient gross margin is being earned by the products purchased, compared to the investment in inventory required to generate those gross margin dollars. For example, if your store has a sales volume of $1 million a year on an average inventory of $500,000, that would be pretty good. But $1 million on an average inventory of $200,000 (though uncommon) would be even better.

GMROI = Gross Margin $ ÷ Average Inventory Cost

Initial Markup

Initial markup (IMU) is a calculation to determine the selling price a retailer puts on an item in their store. Some of the things that affect initial markup are brand, competition, market saturation, anticipated markdowns, and perceived customer value, to name a few.

Inventory Turnover (Stock Turn)

Inventory turnover is how many times during a certain calendar period a retailer sells its inventory and replaces it.

Turnover = Net Sales ÷ Average Retail Stock

Margin

This is the amount of gross profit a business earns when an item is sold. For example, if you have to pay $15 for each sweater and you then sell it to customers for $39, your retail margin equals $24.

Margin % = (Retail Price - Cost) ÷ Retail Price

Net Sales

Net sales is the number of sales generated by a business after the deduction of returns, allowances for damaged or missing goods, and any discounts allowed.

Net Sales = Gross Sales - Returns and Allowances

Open to Buy

Open to Buy (OTB) is the difference between how much inventory is needed and how much is available. That includes inventory on hand, in transit, and any outstanding orders.

OTB (retail) = Planned Sales + Planned Markdowns + Planned End of Month Inventory - Planned Beginning of Month Inventory

Sales per Square Foot

The sales per square foot data is most commonly used for planning inventory purchases. This data can also roughly calculate return on investment and is used to determine rent at a retail location.

Sales per Square Foot = Total Net Sales ÷ Square Feet of Selling Space

Sell-Through Rate

This figure is a comparison of the amount of inventory a retailer receives from a manufacturer or supplier to what is actually sold and is typically expressed as a percentage.

Sell-Through % = Units Sold ÷ Units Received

Stock-to-Sales Ratio

Stock-to-sales ratio is the beginning-of-the-month-stock to the number of sales for the month. The key takeaway is that this ratio is a monthly metric.

Stock-to-Sales = Beginning of Month Stock ÷ Sales for the Month

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