

Instructions for Using Inventory Control Formulas

All formulas have sample data in first rows. Fill in your data in blank fields in rows below sample data. For all formulas, fill in the blank cells to receive the calculation result in the pink cells. (Please ignore the weird #DIV/0! in some pink cells. This will be replaced by your calculated result when you fill in your data.) The explanations below will guide you in getting the numbers to plug in to the formulas.

ORDERING FORMULAS

Use these formulas to decide between ordering options. These formulas give you your Gross Margin Return on Investment, GMROI, for an order or items within an order. A higher GMROI is the better ordering option. For purposes of comparison, we assume no starting inventory and use a one month time interval.

Average Unit Sales per Month

We all know that unit sales for various inventory items can fluctuate dramatically, however since sales should be the same no matter what our margin is, we only need to get 'in the ballpark' for the purpose of comparing ordering options. In fact, if you have a pretty good idea that you sell around 3 of these a month, that's close enough.

If you have a computer system, there is probably a report that will show unit sales per month for various inventory types. If you do not have a computer system and feel a need to be more precise, you will need to calculate your average unit sales per month for various inventory types in your store. This is useful information, and once you have it, you will find yourself applying it in many ways.

Start with finding your average unit cost for a particular inventory type. The best way to get this is to go back to your last physical inventory and divide your inventory value by the total number of units for each type of inventory. For example, if you had 18,000 books in inventory valued at \$180,000 at cost, then your average unit cost is \$10.00.

If you are unable to use a physical inventory, then you can use a cross sampling of vendor invoices. From each invoice take the total cost of a particular inventory type and divide by the number of units. For example:

	\$ Cost	Units shipped	
Invoice A	\$432.00	45	
Invoice B	\$639.45	63	
Invoice C	\$748.25	79	
Etc.			
Average Cost per Unit	\$1819.70	187	\$9.73

(The larger the sampling, the more accurate your average cost per unit will be. Also, be sure your sampling is representative in the proportion of the number of orders you place with various suppliers at various discounts.)

Once you have your **average unit cost**, you calculate historical average unit sales per month by dividing monthly COGS for the inventory type by average unit cost.

Average Units Per Order and Number of Times to Order Month

If the minimum order is greater than your sales per month, then you will order the minimum and order only once in the month. If the minimum is less than your sales per month (always preferable), then you will order more than once in the month, and you will order just enough to cover your sales. For example, if an item sells 5 per month and you have no minimums, then you might order 2 the first 2 weeks and 1 the last two weeks. So you would order 4 times and your average units per order would be 1.5 units.

Average Shipping % of Cost

When shipping will be charged, use shipping charges from previous orders to calculate the anticipated shipping charge as a % of cost. This will give you the *effective discount* (discount from retail when shipping is factored into cost) or *effective margin* when pricing is based on markup. To get your Average Shipping % of Cost, take several sample invoices, total the product costs together, total the shipping costs and divide total shipping by total product. Using the previous table:

	\$ Cost	\$ Shipping	
Invoice A	\$432.00	\$19.25	
Invoice B	\$639.45	\$26.85	
Invoice C	\$748.25	\$37.50	
Etc.			
Average Shipping % of Cost	\$1819.70	\$83.60	4.59%

GMROI FOR SECTION OR PRODUCT LINE

If you do not have a computer system, the simplest will be to do this annually using your physical inventory for beginning and ending inventory.

Average Gross Margin % - This is usually simple for a product line in that you either use the same markup on everything or get the same discount. If not, review old invoices to determine an approximate average. For a section, if you know your sales and COGS, then your gross margin % = $1 - (\text{COGS} / \text{Sales})$.

Unit Sales / Month – See discussion under ORDERING FORMULAS.

COGS (Cost of Goods Sold) = Sales – Gross Margin

AVERAGE INVENTORY = (Beginning Inventory + Ending Inventory) / 2

GROSS MARGIN FROM MARKUP = $\text{MU} / (1 + \text{MU})$

MONTHLY BUDGET FOR INVENTORY INVESTMENT – All of these numbers come off of your monthly Profit & Loss (also called Income) Statement

INVENTORY TURN – Sales and Average Gross Margin come off of your P&L and Beginning and Ending Inventory come off of your balance sheet or from physical inventory.

