

# Marketing Price Math Worksheet

## Market Share:

Market share is a firm's percentage of the total sales volume generated by all competitors in a given market. Businesses constantly study their market share to see how well they are doing with a given product in relation to their competitors.

Based on the following Hypothetical sales figures for a camera company, determine the market share for each competitor and show that information in a pie chart.

Market Position	Competitor	1995 Sales (in billions)
1.	Cannon	\$139.9
2.	Minolta	\$104.8
3.	Vivitar	\$ 87.3
4.	Pentax	\$ 76.2
5.	Nikon	\$ 65.4
6.	Olympus	\$ 63.1
7.	Kodak	\$ 48.5
8.	Samsung	\$ 10.7

Market shares:

Cannon	___23.5%___	Nikon	___11.0%___
Minolta	___17.6___	Olympus	___10.6___
Vivitar	___14.6___	Kodak	___8.1___
Pentax	___12.8___	Samsung	___1.8___

Draw a Pie graph to illustrate the market share.

## RETURN ON INVESTMENT (ROI):

Return on investment is a calculation used to determine the relative profitability of a product. The formula for calculating return on investment is as follows:

$$\frac{\text{PROFIT}}{\text{INVESTMENT}}$$

(cost of making, buying, and marketing the product)

Two young entrepreneurs, Rush and Josh, open a lemonade stand in front of their house. It cost them 25 cents to make one glass of lemonade. They sell the lemonade for 35 cents a glass.

What is their ROI? 40% (.35-.25=.10 divided by .25 =.40)

Lauren Started her own business stitching sports figures on sweatshirts to sell at the homecoming game. It costs her \$9.00 for the sweatshirt, \$3.50 for the canvas, and \$1.50 for the special thread. If she sells the shirts for \$30.00 what is their return on investment each shirt?

114% (\$30-\$14+\$16 divided by \$14=1.14)

A retail buyer purchases 50,000 shirts at \$12.50 each. Advertising and promotional expenses attributed to the shirts total \$1,250.00. If half (1/2) the shirts sell for \$25.00, one-fifth (1/5) sell for \$20.00, one-eighth (1/8) sell for \$17.50, and the remainder sell for \$13.00, what is the ROI for the shirts?

67% (\$1,038,125-\$626,250=421,875 DIVIDED BY \$626,250=.67)

## BREAK-EVEN POINT

The break-even point is the point at which sales revenues equals the costs and expenses of making and distributing a product. After reaching the break-even point , a firm begins to make a profit. The formula for determining break-even point is as follows:

$$\frac{\text{Total amount of cost and expenses}}{\text{Selling Price}}$$

A firm expects to sell 60,000 pairs of pants at \$12.50 each. The cost of manufacturing and marketing them is \$10.00 each. Calculate the break-even point for the pants.

48,000

A firm expects to sell 2,000,000 gum drops at \$.25 each. The cost of manufacturing and marketing them is \$.20 each. Calculate the break-even point for the gum drops.

1,600,00

A Firm expects to sell 30,000 cameras at \$12.00 each. The cost of manufacturing and marketing them is \$9.00 each. Calculate the break-even point for the cameras.

\_\_\_\_\_22,500\_\_\_\_\_

Rooms at Mimi's Hideaway Inn go for go for \$79.00 a night. At least 25 rooms a night must be filled to cover costs. For a class reunion the rates are dropped to \$60.00 as a special.

How much does the hotel need to take in a night to cover costs? \_\_\_\_\_\$1,975\_\_\_\_\_

How many rooms must it fill for the reunion to break even? \_\_\_\_\_33\_\_\_\_\_

Yearbooks sell for \$35.00 each. The organization selling the yearbooks must pay \$25.00 for the first 100 yearbooks, and then it only pays \$10.00 for any additional yearbooks over 100. At present it has orders for 150 yearbooks. Will the organization break-even? What is the break-even point?

\_\_\_\_\_YES, BECAUSE THE BREAK-EVEN POINT IS 86 YEARBOOKS\_\_\_\_\_

## MARKUP PRICING

Markup is the difference between the price of an item and its cost. It is generally expressed as a percentage. The markup in dollars is added to the cost to determine the price:

$$\begin{aligned}\text{Cost} + \text{markup} &= \text{Price} \\ \$25 + \$15 &= \$40.00\end{aligned}$$

Your school store buys a watch for \$7.50 and sells it for \$16.00. How much is the markup?

\$ \_\_\_\_\_\$8.50\_\_\_\_\_

Jimbo buys a gold ring for \$50.00. He then makes it up to \$150. What is the retail price of the ring?

\$ \_\_\_\_\_200\_\_\_\_\_

Cheryl buys a new blouse for \$20.00. If its markup was \$7 , what did the retailer pay for the blouse?

\$ \_\_\_\_\_13\_\_\_\_\_

The cost of copier paper is \$28.00 a ream. The school store sells it for \$37.95. What is the markup?

\$ \_\_\_\_\_9.95\_\_\_\_\_

## COST-PLUS PRICING

In cost-plus pricing, all costs and expenses are calculated and then the desired profit is added to arrive at a price.

A research company adds the following costs to arrive at an estimate for a market research project: finding research participants, payment for each participant, costs involved with developing and analyzing the questions that will be used, the moderator's fee, cost of refreshments, and intended profit. Use the figures below to determine the price (estimate) for a market research company's customer requesting this service.

Costs and expenses:	\$ AMOUNT
Phone solicitation to get participants - \$10/hr x 40 hours	___400.00_____
20 participants x \$25./hr x 2 hours each	___1,000.00_____
Questionnaire design and analysis	
Design -- 30 questions @ \$15.00 a question	___450.00_____
Analysis – 12 hours @ \$145.00/ hour	___1,740.00_____
Moderator's fee --- \$75.00 x 5 hours	___375_____
Refreshments – 25 people x \$4.50 each	___112.50_____
Intended profit – 20% to total expenses	___815.50_____
Total / estimated price for customer	___4,893.00_____

Calculation area

## PRICE LINING

Price lining is a special pricing technique that requires a store to offer all merchandise in a given category at certain prices. For example, a store might price all of its shirts at \$30, \$45, and \$60. In this case, the actual markup is adjusted upward or downward so that all shirts are priced in these three prices.

Example: A shirt that is supposed to retail for \$45.00 under the price lining policy should cost the retailer \$18 if the retailer's markup is 60 percent of the retail price.

(\$45 x 60% = \$27; \$45 - 27 = \$18)

A buyer has an average markup on retail of 60% and a price lining policy for sports equipment at \$20, \$35, and \$50. Determine the three cost prices that would be ideal for the sports equipment, respectively.

- a. cost price for the \$20 price line      \_\_\_\_\_\$8\_\_\_\_\_
- b. cost price for the \$35 price line      \_\_\_\_\_\$14\_\_\_\_\_
- c. cost price for the \$50 price line      \_\_\_\_\_\$20\_\_\_\_\_

The average markup on retail is 55%. The price lining policy for the costs is \$139.99, 169.99, and 199.99. What is the ideal cost to the retailer for these three price lines?

- cost price for the \$139.99 price line      \_\_\_\_\_\$63.00\_\_\_\_\_
- cost price for the \$169.99 price line      \_\_\_\_\_\$76.50\_\_\_\_\_
- cost price for the \$199.99 price line      \_\_\_\_\_\$90.00\_\_\_\_\_

## RETAIL PRICE

Wholesales and retailers calculate their prices by using a markup system. Markup is the difference between the retail or wholesale price and cost of an item. For simplicity, retail price will be used in all formulas. The basic formula for calculating the price is as follows:

$$\text{Cost (C)} + \text{Markup (MU)} = \text{Retail Price}$$

There are two variations of this formula:

$$\text{RP} - \text{C} + \text{MU} \text{ and } \text{RP} - \text{MU} = \text{C}$$

## Retail Price Con't

An article cost a business \$5.50 and has a markup of \$2.00. What is the retail price?

\$ 7.50

The RP of an article is \$14.00, and the cost is \$6.00. Determine the MU. \$ 8.00

The RP of an article is \$35, and the initial MU is \$17.  
Determine the cost of the item. \$ 18.00

The MU on an article is \$6.89, and its RP is \$16.89.  
Determine the cost of the item. \$ 10.00

A blouse cost the business \$20 and has a MU OF \$10. What is RP? \$ 30.00

A pen cost the school store \$12.50 and has a MU of \$15.50. What is the RP? \$ 28.00

## PERCENTAGE MARKUP

A markup percentage may be calculated on either the retail price or the cost of an item. The formula to determine the markup percentage on cost is:

$$\text{MU}(\$) / \text{RP} = \text{MU}(\%) \text{ on retail}$$

$$4 / \$10 = 40\%$$

The formula to determine the markup percentage on cost is:

$$\text{MU}(\$) / \text{C} = \text{MU}(\%) \text{ on cost}$$

$$\$4 / \$6 = 66.67\%$$

For the following problems calculate the dollar markup and the markup percentages on both the retail price and cost price.

ITEM	RETAIL PRICE	COST	MU(\$)	MU (%) ON RETAIL	MU(%) ON COST
A	\$1.00	\$.80	<u>.20</u>	<u>20%</u>	<u>25%</u>
B	\$6.00	\$4.50	<u>1.50</u>	<u>25</u>	<u>33.33</u>
C	\$24.00	\$16.00	<u>8.00</u>	<u>33.33</u>	<u>50</u>
D	231.99	144.99	<u>87.00</u>	<u>37.5</u>	<u>60</u>
E	464.50	278.70	<u>185.80</u>	<u>40</u>	<u>66.67</u>
F	10.00	5.00	<u>5.00</u>	<u>50</u>	<u>100</u>

The RP of an article is \$75, and the cost is \$45.00. Determine the MU (%) on cost 66.67% and on retail 40%.

### COST METHOD FOR DETERMINING RETAIL PRICE

When a marketer knows only the cost of an item and the markup percentage on cost, he or she can use the cost method to determine the retail price. Here is the two-step formula:

$$\begin{array}{l} \text{Step 1} \quad C \times \text{MU}(\%) = \text{MU}(\$) \\ \quad \quad \quad \$20 \times 50\% = \$10 \end{array}$$

$$\begin{array}{l} \text{Step 2} \quad C \times \text{MU}(\$) = \text{RP} \\ \quad \quad \quad \$20 \times \$10 = \$30 \end{array}$$

Calculate the dollar markup and retail price for the following:

ITEM	COST	MU(%) On cost	MU(\$)	Retail Price
Sweater	\$15	75%	<u>\$11.25</u>	<u>\$26.25</u>
CD	5	60	<u>3.00</u>	<u>8.00</u>
Coat	55	100	<u>55.00</u>	<u>110.00</u>
Pants	30	66.67	<u>20.00</u>	<u>50.00</u>
DVD movie	25	40	<u>10.00</u>	<u>35.00</u>
Table	150	80	<u>120.00</u>	<u>270.00</u>

### RETAIL METHOD FOR DETERMINING RETAIL PRICE

The retail method is another way to calculate the retail price when only cost and markup percentage on retail are known. The retail method is based on changing the information you have into retail figures. Here is a two-step formula:

Step 1 Determine what percentage of the retail price is equal to cost?

$$\begin{array}{l} \text{RP}(\%) - \text{MU}(\%) \text{ ON RETAIL} = \text{C}(\%) \\ 100\% - 40\% = 60\% \end{array}$$

step 2 Determine the retail price, divide the cost in dollars (\$30) by the decimal equivalent of the percentage calculated in step 1 (.60)

$$\begin{array}{l} \text{C}(\$) / \text{decimal equivalent} = \text{RP} \\ \$30 / .60 = \$50 \end{array}$$

Determine the percentage of the retail price that is equivalent to cost and the retail price for the following items.

ITEM	MU% ON RETAIL	% OF RP EQUAL TO COST	COST	RP
Boom box	45%	___55___	\$62	___112.73___
DVD movie	30	___70___	28	___40.00___
Textbook	27	___73___	44	___60.27___

A pair of socks cost \$1.30 and the retail markup is 60 percent. Determine the retail price \_\_\_\$3.25\_\_\_ and the dollar markup \_\_\_\$1.95\_\_\_.

## MARKDOWNS

Markdowns, which are reductions in the retail price, are computed on the retail price and generally result in a sale price. A basic method for calculating markdowns and new sales prices involves following these two steps:

Step 1 determine the dollar amount of the markdown by multiplying the retail price by the percentage of markdown.

Step 2 Subtract the markdown from the retail price to determine the sale price.

Determine the dollar markdown and the sale price (SP) for these items:

ITEM	RETAIL PRICE	MD(%)	MD(\$)	SALE PRICE
T-shirt	\$4.50	20%	___\$.90___	___\$3.60___
Boom box	60.00	25%	___15.00___	___45.00___
Table	119.99	30%	___36.00___	___83.99___
Car stereo	388.00	40%	___155.20___	___232.80___
Plane ticket	575.00	15%	___86.25___	___488.75___



## FASTER WAY

Step 1 subtract the markdown percentage from 100 percent to find the equivalent percentage calculated in step 1. If the markdown was 20 percent, the equation would look like this:

$$\begin{array}{rcl} \text{RP}(\%) - \text{MD}(\%) & = & \text{SP} \\ 100\% - 20\% & = & 80\% \end{array}$$

Step 2 Then multiply the retail price by the decimal equivalent of the percentage calculated in step 1. For example: Retail price was \$69.99, the equation would look like this

$$\begin{array}{rcl} \text{RP} \times \text{SP}(\%) & = & \text{SP} \\ \$69.99 \times .80 & = & \$55.99 \end{array}$$

Use the faster method to do the following:

A dress that sells for \$150.00 is to be marked down 40%. What is the new price? \_\_\$90.00\_\_\_\_\_

A store is running a one day sale. All merchandise will be marked down 20% off the ticketed price. The ticket price for one SONY sound system is \$785. What is the new price? \_\_\$628.00\_\_\_\_\_

## DISCOUNTS

A discount is simply a reduction in the price of goods or services. Common discounts offered by manufacturers and distributors include trade discounts, quantity discounts, seasonal discounts, promotional discounts, and cash discounts. Some employers offer their employees discounts. To calculate a discount follow these simple steps:

Step 1 Multiply the price by the discount percentage [D(%)] to get the dollar amount of the discount [D(\$)].

$$\text{Price} \times \text{D}(\%) = \text{D}(\$)$$

Step 2 Subtract the discount from the price to get the net price (NP), or the amount that the customer will actually pay

If you are asked for only the net price (NP), you can use the following two steps.

Step 1 Subtract the discount percentage from 100 percent. For example, if the discount is 30%, you would do the following:

$$100\% - 30\% = 70\%$$

Step 2 Multiply the original price of the item by the result of the step 1 calculation to get the net price. In the example above, that would mean multiplying by 70%, or .70.

Calculate the following trade discounts and net amounts. Round to nearest cent

Total Purchases	Trade Discount	Dollar discount	Net amount
\$2,389.35	30%	___\$716.81___	___\$1,672.54___
\$9,712.50	20%	___1,942.50___	___7,770.00___
\$ 555.50	25	___138.88___	___416.62___
\$1,236.90	40	___494.76___	___742.14___

## CASH DISCOUNTS

A cash discount is offered to encourage speedy payment of an invoice. A cash discount is subtracted from the amount due after all other discounts have been deducted on invoices.

Determine the cash discount, if any, and the net amount payable on the invoice dates and the dates for payment.

INVOICE AMOUNT	INVOICE DATE	TERMS	PAYMENT TERMS	DISCOUNT	AMOUNT PAYABLE
\$9,245.50	MARCH 25	2/10NET30	APRIL 3	___\$184.91___	___\$9,060.59___
\$10,873.90	APR 10	2/10NET30	APR 19	___217.48___	___10,656.452___
\$30,575.50	MAY 30	2/10NET 30	JUN 11	___0___	___30,575.50___

A wholesaler takes all cash discounts, determine the net amount payable for \$9,565.50 invoice with 40 percent and 10 percent trade discounts, a 5 percent early bird special discount, and dating terms of 3/10net30.

The net amount payable is \_\_\_\$4,758.40\_\_\_

## DISCOUNT FOR EMPLOYEES

Employee discounts are a form of a fringe benefit. They range from 10 to 30 percent on average.

Step- 1 To calculate the purchases of employees, first multiply the price by the discount % to get the dollar amount of the discount.

Step – 2 subtract the discount from the price to get the net price, or the amount the employee will pay

Calculate the net amount payable by the employee.

EMPLOYEE	DIC%	PURCHASE	NET PAYABLE
Billy	25%	97.29	____\$72.97_____
Cheryl	10	183.42	__165.08_____
Meg	15	321.67	____273.42_____
Will	20	89.50	____71.60_____
Steve	30	579.99	____405.99_____