

Review of Cost based Price Setting

General Equations

- The Basic Profit Equation
- $Z = PQ - VQ - F$
converts to
- The Basic Cost Based Pricing Formula
- $P = V + F/Q + Z/Q$
where
- $V + F/Q$ = average cost per unit or breakeven price
- Z/Q = the desired profit per unit

The Key

- Remember that all cost based pricing systems assume you have
- 1) A normal profit that you expect earn
- 2) A normal sales volume that you expect to get
- 3) A normal set of costs that you expect to pay

Cost based pricing assumes that the You have a normal Operating statement

- Quantity you normally sell = 20,000
- Normal Cost per unit = \$4 per unit
- Normal Gross Profit Contribution = \$80,000
- Normal markup of 60%
- Operating Costs = \$50,000 for the period
- Profit you normally earn = \$70,000
Normal return on Sales of 35%

Expected Operating Statement

Revenue, $R = P \times Q$ Price per unit x 20,000	\$?????	
CoGS (total variable cost) \$4 per unit x 20,000	\$80,000	
Gross Profit	\$120,000	Markup = 60%
Fixed Costs \$50,000/20,000 = \$2.5 per unit	\$50,000	
Profit \$70,000/20,000 = \$3.5 per unit	\$70,000	ROS = 35%

Find the price

- Revenue = Total Cost + Net Profit
- Revenue = CoGS+Overheads + Net Profit
- Revenue = \$80,000+\$50,000+\$70,000
- Revenue = \$200,000
- Revenue = Price x Quantity
- \$200,000 = Price x 20,000
- Price = \$10 per unit

Expected Operating Statement

Revenue, $R = P \times Q$ Price per unit x 20,000	?????	
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Operating Statement

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Cost-Plus (profit) Equations

Manufacturer's use normal Return on Sales as their target profit

- Basic Cost-Plus Pricing Formula
- $P = V + F/Q + Z/Q$
- $P = \$4 + \$50,000/20,000 + \$70,000/20,000$
- $P = \$4 \text{ per unit} + \$2.50 \text{ per unit} + \3.50 per unit
- $P = \$10 \text{ per unit}$

Classic Cost-Plus (profit) price Setting

- You normally expect a profit that gives you a Return on Sales of 35%.
- Your normal sales volume is 20,000 units
- Your normal variable cost is \$4 per unit
- Your normal fixed operating costs for the period are \$50,000
- What price must you charge to get a 35% return on sales?

Expected Operating Statement

Revenue, $R = P \times Q$ Price per unit x 20,000		
CoGS (total variable cost) \$4 per unit x 20,000		
Gross Profit		
Fixed Costs	\$50,000	
Profit		ROS = 35%

Classic Cost-Plus (profit) Price Setting

- You normally expect a profit that gives you a Return on Sales of 35%.
- Your normal sales volume is 20,000 units
- Your normal variable cost is \$4 per unit
- Your normal fixed operating costs for the period are \$50,000
- What price must you charge to get a 35% return on sales?
 - Price = $BEP/(1-ROS)$
 - Price = $(V + F/Q)/(1-ROS)$
 - Price = $(\$4 + \$50,000/20,000)/(1-0.35) = \10

Operating Statement

Revenue \$10 per unit x 20,000	\$200,000	
CoGS (total variable cost) \$4 per unit x 20,000	\$80,000	
Gross Profit	\$120,000	Markup = 60%
Fixed Costs \$50,000/20,000 = \$2.5 per unit	\$50,000	
Profit \$70,000/20,000 = \$3.5 per unit	\$70,000	ROS = 35%

Can derive from the basic profit equation

- $Z = PQ - VQ - F$
- expected profit $Z = 35\%(\text{Revenue})$
 $0.35(PQ) = PQ - VQ - F$
- $PQ - 0.35PQ = VQ + F$
- $P(1-0.35) = V + F/Q$
- $P = (V + F/Q) / (1-0.35)$
- $P = (\text{Breakeven Price}) / (1-ROS)$

Classic Cost-Plus (profit) Equations

Retailers Use their normal Markup as their target profit

Classic Cost-Plus (profit) Price Setting

- You normally expect a profit that gives you a 60% markup on price
- Your normal sales volume is 20,000 units
- Your normal variable cost is \$4 per unit
- Your normal fixed operating costs for the period are \$50,000
- What price must you charge to get a normal 60% markup?

You don't need this for the problem

- Your normal sales volume is 20,000 units**
- Your normal variable cost is \$4 per unit
- Your normal fixed operating costs for the period are \$50,000**
- What price must you charge to get a normal 60% markup?

Operating Statement

Revenue		
Price per unit		
CoGS (total variable cost)		
\$4 per unit		
Gross Profit		Markup = 60%
Fixed Costs		
Profit		

Classic Cost-Plus (profit) Price Setting

- You normally expect a profit that gives you a markup of 60%
- Your normal variable cost is \$4 per unit
- What price must you charge to get a 60% markup
- Price = $V/(1-Mp)$
- Price = $\$4/(1-0.6) = \$4/0.4 = \$10$

- If you need to complete the operating statement, then you need
- the expected sales volume = 20,000
- The expected fixed costs = \$50,000

Operating Statement

Revenue	\$200,000	
\$10 per unit x 20,000		
CoGS (total variable cost)	\$80,000	
\$4 per unit x 20,000		
Gross Profit	\$120,000	Markup = 60%
Fixed Costs		
Profit		

Operating Statement

Revenue	\$200,000	
\$10 per unit x 20,000		
CoGS (total variable cost)	\$80,000	
\$4 per unit x 20,000		
Gross Profit	\$120,000	Markup = 60%
Fixed Costs	\$50,000	
\$50,000/20,000 = \$2.5 per unit		
Profit	\$70,000	ROS = 35%
\$70,000/20,000 = \$3.5 per unit		

The definition of markup is important.

Markup is always **Markup on Price** unless otherwise stated.

Dollar Markup = Selling price - Cost per unit

Markup on price is the ratio of the dollar markup over the price

$$Mp = (P-V)/P$$

- A boy buys and sells wagons. He has to charge a 60% markup on his selling price to make a normal profit. He buys a wagon for \$24. What price must he sell the wagon for to earn a 60% markup?

- Markup on price = $(P-V)/P$
- $Mp = (P-V)/P$
- $P = V/(1-Mp)$
- $P = \$24/(1-0.6) = 24/0.4 = \60

Boy's Operating Statement

Revenue \$60 per unit x 1 wagon	\$60	
CoGS (total variable cost) \$24 per unit x 1 wagon	\$24	
Gross Profit	\$36	Markup = 36/60 = 60%
Normal Fixed Costs	\$????	
Normal Profit	\$????	

Any Questions?