Gila Shoes Exercise:
IF, MAX, & MIN Step-by-Step

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EXCEL REVIEW
2001-2002

Gila Shoes

The Exercise Background

Rob owns a Fast Feet running store in Carrboro. For a month-long promotion for his store's new location in Carr Mill Mall, Rob plans to offer the new Gila "marathon trainer XT" women's' running shoe to his customers at a discounted price. For a limited time, Rob can order the shoes directly from a wholesaler at $40 a pair. During his store promotion Rob plans to make this popular shoe available to his customers for $65 a pair, an attractive discount from the MSRP of $84, leaving Rob a profit of $25 each. To get the $40 price Rob must place his order two months in advance.

If customer demand *exceeds* the quantity Rob orders in advance, he must meet the excess demand by obtaining Gila shoes from another supplier at a higher cost, $55 a pair. However, if after the month-long promotion period is over, customer demand has fallen *short* of the quantity he ordered in advance, he'll be forced to list the over-stocked shoes on his store's website sale page at $35 a pair.

What to Build

Build a spreadsheet that captures the information above and allows Rob to change the values of **Quantity Ordered** and **Demand** in the model to see how revenues and costs are affected under different conditions.

For example, what happens if Rob orders 200 pairs of shoes but demand is only 50? Or, if he orders 100 pairs of shoes and demand is 150?

This exercise is meant to give you practice using the Excel functions IF, MAX, and MIN.

Calculate the quantity of

- Special supplier shoes sold
- Special supplier shoes unsold
- Regular supplier shoes sold

first using Excel's MAX and MIN functions and then Excel's IF function.

Building

Here's a view of how you might arrange what you know and the calculations to make.

	A	B	C	D	E	F	G	H	I
1									
2		**Gila Shoes**							
3									
4									
5									
6									
7		**Inputs and data**			**Calculations Using Excel's MAX and MIN Functions**				
8						Quantity	Revenue	Cost	Profit (loss)
9		Quantity Ordered	200		Special supplier shoes sold	50	$ 3,250	$ 2,000	$ 1,250.00
10					Special supplier shoes unsold	150	$ 5,250	$ 6,000	$ (750.00)
11					Regular supplier shoes sold	0	$ -	$ -	$ -
12		Demand	50		Result				$ 500.00
13									
14		**Data:**							
15		**Shoes from special supplier**							
16		Cost	$40.00						
17		Promotion Price	$65.00						
18		Salvage value	$35.00						
19									
20		**Shoes from regular suplier**							
21		Cost	$55.00						

	A	B	C
1			
2		**Gila Shoes**	
3			
4			
5			
6			
7		**Inputs and data**	
8			
9		Quantity Ordered	200
10			
11			
12		Demand	50
13			
14		**Data:**	
15		**Shoes from special supplier**	
16		Cost	$40.00
17		Promotion Price	$65.00
18		Salvage value	$35.00
19			
20		**Shoes from regular suplier**	
21		Cost	$55.00

Start by entering what you know. That is, the various shoe costs (to you) and shoe prices (to customers).

Enter **Quantity Ordered** and **Demand**, the values Rob can change. Put starting sample value in these cells.

Label and group your entries. Taking the time to do this makes it easier to work with the model later.

The Formulas

There are three scenarios involving sale quantities and results:

1. "Special supplier shoes sold"
   The quantity sold in the store during the promotion.

2. "Special supplier shoes unsold"
   The quantity not sold in the store so sold at salvage through the web.

3. "Regular supplier shoes sold"
   Any quantity that must be acquired from a more expensive source to meet unanticipated customer demand.

For each of these three cases, build a formulas section of the worksheet to show what happens to Revenue, Cost, and Profit at whatever **Quantity** is sold.

A possible organization:

|	Quantity	Revenue	Cost	Profit (loss)
Special supplier shoes sold	50	$ 3,250	$ 2,000	$ 1,250.00
Special supplier shoes unsold	150	$ 5,250	$ 6,000	$ **(750.00)**
Regular supplier shoes sold	0	$ -	$ -	$ -
Result				$ 500.00

The formulas for **Revenue**, **Cost**, and **Profit** are straightforward for each of the three possible scenarios.

However, the formulas for **Quantity** for each of the three scenarios are more complex. They're best built using either Excel's **MAX** and **MIN** or **IF** functions.

The syntax of these functions is:

Function	Syntax	Example	Result
MIN	=min(number1, number2, …)	=min(A5, 20) *where A5 holds 25*	20
MAX	=max(number1, number2, …)	=max(A5,20) *where A5 holds 25*	25
IF	=if(condition, value-if-true, value-if-false)	=if(10>9,"Yes",5)	5

To get more information about a built-in function, choose *Insert, Function* from Excel's menus or click the "Function" button on Excel's Standard toolbar. The "Paste Function" dialog opens.
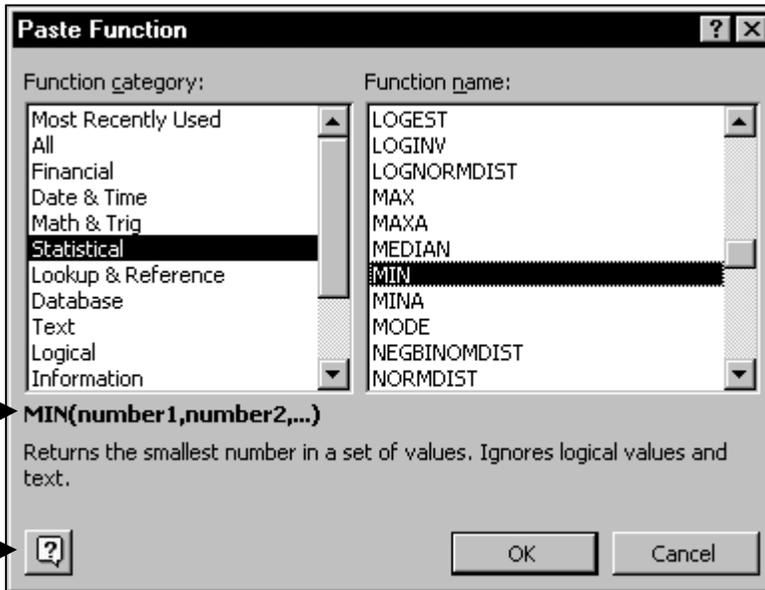
The "Paste Function" dialog lists all Excel's built-in function categories at left and the function names within a selected category at right.

Choose a function at right to see a short explanation and the function's syntax.

Click the "Help" button at the dialog's lower left for more information about the selected function.

Writing the Quantity Formulas using MAX and MIN *or* IF

	Quantity
Special supplier shoes sold	80
Special supplier shoes unsold	60
Regular supplier shoes sold	0

Write the **Quantity** formula for **Special supplier shoes sold** in either of these two ways:

Quantity of Special Supplier Shoes Sold Formula Options	Text Descriptions of the Formulas
= IF(C9>C12, C12, C9)	If Quantity Ordered is greater than Demand, return the Demand value into this cell. Otherwise return the Quantity Ordered value into this cell.
= MIN(C9, C12)	Return into this cell whichever is the smaller value: Quantity Ordered or Demand.

Either one of these formulas handles the case where the quantity ordered is either too little *or* too much relative to customer demand.

	A	B	C
1			
2		**Gila Shoes**	
3			
4			
5			
6			
7		**Inputs and data**	
8			
9		Quantity Ordered	200
10			
11			
12		Demand	50

If Rob ordered too many shoes then the formula for unsold shoes comes into play.

Write the **Quantity** formula for **Special supplier shoes unsold** in either of these two ways:

Quantity of Special Supplier Shoes Unsold Formula Options	Text Descriptions of the Formulas
= MAX(C9-C12, 0)	Return into this cell whichever is the larger value: Quantity Ordered less Demand or zero. (If not enough shoes were ordered, then zero – instead of the resulting negative number – is returned.)
= IF(C9>C12, C9-C12, 0)	If Quantity Ordered is greater than Demand, return into this cell the difference between the two. Otherwise, put a zero into the cell.

	A	B	C
1			
2		**Gila Shoes**	
3			
4			
5			
6			
7		**Inputs and data**	
8			
9		Quantity Ordered	200
10			
11			
12		Demand	50

The final formula is for the case where Rob doesn't order enough shoes for his in-store promotion. This formula should show how many extra pairs Rob needs to order from his more expensive source to satisfy the customers who visit his store for Gila shoes during the promotion.

Write the **Quantity** formula for **Special supplier shoes unsold** in either of these two ways:

Quantity of Regular Supplier Shoes Sold Formula Options	Text Description of the Formulas
= MAX(C12-C9, 0)	Return into this cell whichever is the larger value: Demand minus how many were ordered or zero. (If no additional shoes were ordered, then zero – instead of the resulting negative number – is returned.)
= IF(C12>C9, C12-C9, 0)	If not enough shoes were ordered, return into this cell how many additional pairs are needed. Otherwise, put a zero into the cell.

The Other Formulas (Revenue, Cost, and Profit or Loss)

The rest of the formulas are straightforward and are summarized below.

Revenue   = Quantity * Price to Customer
Cost   = Quantity * Price from Supplier
Profit (or Loss) = Revenue - Cost

End of Exercise