

# CASE

# 1

## Milligan's Backyard Storage Kits

Spreadsheet Case

Difficulty Rating: ★

### SKILLS CHECK

You should review the following areas:

#### SPREADSHEET SKILLS

- |                           |                               |
|---------------------------|-------------------------------|
| ✓ <b>AVERAGE Function</b> | ✓ <b>NOW Function</b>         |
| ✓ <b>Cell Formatting</b>  | ✓ <b>Sort</b>                 |
| ✓ <b>Chart</b>            | ✓ <b>SUM Function</b>         |
| ✓ <b>MAX Function</b>     | ✓ <b>Worksheet Formatting</b> |
| ✓ <b>MIN Function</b>     |                               |

### CASE BACKGROUND

Milligan's Backyard Storage Kits, a mail order company, sells a variety of backyard storage unit kits and landscaping decorations to its customers. Although the company makes a profit, David Milligan, the company's owner, realizes that he can improve his company's operations if he better manages his inventory. Mr. Milligan requests your help in preparing an Inventory Analysis worksheet. The Inventory Analysis worksheet provides Mr. Milligan with information about his annual sales, cost of goods sold, gross profit, markup, inventory turnover, and days in inventory for his products. Preparing the worksheet for Mr. Milligan requires you to insert columns, use several functions, and apply proper formatting to the worksheet and cells.

### CASE SCENARIO

Ten years ago, David Milligan was short on storage space. After shopping around for a backyard storage unit and not finding one that met his specifications, Mr. Milligan built his own storage unit for his backyard. Realizing that many homeowners had similar storage needs, Mr. Milligan began selling a backyard storage unit kit via mail order. He felt that given good instructions, pre-cut lumber, and the necessary hardware, just about anyone could assemble a storage unit. His idea proved popular, and he now stocks and sells 35 different items, including storage barn, gazebo, and landscaping decoration kits.

## CASE 1: Milligan's Backyard Storage Kits

Mr. Milligan does not use a formal, consistent inventory tracking system. Periodically, Mr. Milligan or his staff visually checks to see which kits are in stock. Although he does try to keep a certain level of each kit in stock, the lack of a formal inventory tracking system has led to the overstocking of some items and understocking of still other items. In fact, on occasion, a customer will request a particular kit, and it is only then that Mr. Milligan realizes that the kit is out of stock. If a kit is not available, Mr. Milligan must tell the customer that he is currently out of stock, and then hope that the customer will wait for a kit to become available.

Lately, Mr. Milligan has become concerned with his inventory management methods. He now wants to better manage his inventory. As a starting point, he wants to examine costs, sales, markup percentages, gross profits, inventory levels, inventory turnover, and days in inventory for his products. He asks you to review his inventory and make suggestions for improvement. He provides you with the data contained in Figure 1 and asks you to prepare an Inventory Analysis worksheet.

**Figure 1: Inventory Data**

<b>Milligan's Backyard Storage Units</b>					
Inventory Data					
Item No.	Description	Unit Cost	Unit Sales Price	Average on Hand	Average Unit Sales/Year
A00100	8' x 6' Aluminum Shed	\$148.14	\$199.99	48	475
A00110	10' x 8' Aluminum Shed	\$185.17	\$249.99	50	400
A00120	12' x 20' Aluminum Shed	\$1,393.56	\$1,950.99	32	65
A00130	6' x 4' Aluminum Shed	\$346.36	\$519.59	50	241
A00140	8' x 4' Aluminum Shed	\$424.58	\$620.75	50	215
A00150	10' x 14' Aluminum Shed	\$650.99	\$1,200.00	20	250
A00210	8' x 10' Aluminum Barn	\$840.47	\$1,050.59	75	202
A00310	12' x 8' Double Door Aluminum Shed	\$1,043.57	\$1,304.47	80	302
A00320	16' x 10' Double Door Aluminum Shed	\$1,141.84	\$1,507.24	12	50
A00410	8' x 10' Wood Barn	\$541.33	\$804.49	50	700
A00420	8' x 12' Wood Barn	\$751.87	\$999.99	48	140
A00430	10' x 16' Wood Barn	\$808.26	\$1,074.99	10	67
A00510	8' x 10' Picnic Table	\$269.28	\$399.99	26	299
A00520	3' x 7' Picnic Table	\$207.42	\$299.99	77	850
A00530	8' Child's Picnic Table	\$210.59	\$350.99	44	157
A00610	10' Octagon Cedar Gazebo	\$2,499.99	\$2,999.99	71	144
A00620	12' Cedar Octagon Gazebo	\$2,963.99	\$3,430.99	15	39
A00710	4' x 6' Cedar Shed	\$333.33	\$500.00	80	200
A00720	8' x 10' Cedar Shed	\$1,135.32	\$1,702.99	72	75
A00730	6' x 10' Cedar Garden Hut	\$1,135.00	\$1,350.00	80	175
A00740	8' x 10' Cedar Cabana Shed	\$1,148.56	\$1,607.99	75	136
A00750	6' x 6' Cedar Garden Hut	\$879.99	\$950.78	114	325
A00810	6' x 20' Covered Bridge	\$1,250.00	\$1,400.99	42	75
A00820	8' x 40' Covered Bridge	\$2,509.72	\$4,700.00	2	2
A00910	Wagon Planter	\$11.42	\$15.99	237	702

## CASE 1: Milligan's Backyard Storage Kits

A00920	Mailbox Planter	\$21.02	\$27.99	230	845
A00930	4' Windmill	\$30.66	\$45.99	275	201
A00940	6' Windmill	\$43.99	\$65.99	300	278
A00950	6' Wishing Well	\$53.32	\$79.99	300	780
A00960	12' Wishing Well	\$130.66	\$195.99	25	147
A01100	Monroe Wooden Trellis	202.30	\$252.87	10	25
A01110	Majesty Copper Trellis	379.29	\$505.72	14	35
A01120	Boston Folding Trellis	145.92	\$207.56	12	42
A01130	Miniature Folding Trellis	48.00	\$54.87	20	100
A01140	Milligan's Superior Trellis	764.81	\$899.78	1	7

### Design Specifications

Mr. Milligan asks you to determine the cost of average inventory, annual sales, cost of goods sold, annual gross profit, gross margin ratio, markup percentage, inventory turnover, and days in inventory for each inventory item. The determination of these values requires you to add columns to the Inventory Analysis worksheet. Mr. Milligan asks you to use the formulas shown in Figure 2.

As Mr. Milligan will use the Inventory Analysis worksheet during a presentation, he wants the worksheet to have a professional appearance. To enhance the worksheet's appearance, you include an appropriate header and format to the worksheet, column, and row labels. The header should display the name of the business, the name of the worksheet, and the current date. As you construct the worksheet, you use the currency format for all columns containing dollar values. Also, for any column that contains a percentage, you use the percentage format and format the data to two decimal places.

**Figure 2: Inventory Analysis Worksheet Formulas**

Inventory Analysis Worksheet Formulas	
Annual Gross Profit	Annual Sales - Cost of Goods Sold
Annual Sales	Unit Sales Price * Average Unit Sales Per Year
Cost of Average Inventory	Unit Cost * Average Units on Hand
Cost of Goods Sold	Unit Cost * Average Unit Sales Per Year
Gross Margin Ratio	$\frac{\text{Annual Gross Profit}}{\text{Annual Sales Per Unit}}$
Markup Based on Cost	$\frac{\text{Unit Sales Price} - \text{Unit Cost}}{\text{Unit Cost}}$

## CASE 1: Milligan's Backyard Storage Kits

Inventory Turnover	$\frac{\text{Cost of Goods Sold}}{\text{Cost of Average Inventory}}$
Days in Inventory	$\frac{365}{\text{Inventory Turnover}}$

### Information Specifications

For the cost of average inventory, annual sales, cost of goods sold, annual gross profit, gross margin ratio, and markup percentage values, Mr. Milligan wants the average, minimum, and maximum value for each. Mr. Milligan wants to know the maximum unit cost, unit sales price, inventory turnover, and days in inventory values, as well as the minimum unit cost, unit sales price, inventory turnover, and days in inventory values. He also wants to know the total cost of average inventory, total annual gross profit, total cost of goods sold, and the total annual sales.

Mr. Milligan also needs answers to the following questions. Using your newly designed Inventory Analysis worksheet, provide Mr. Milligan with answers to his questions.

1. Mr. Milligan wants a markup of at least 30 percent on all items. Which items have markups less than 30 percent?
2. In terms of annual sales, which item has the lowest annual sales?
3. In terms of annual sales, what were Mr. Milligan's biggest selling items last year? Identify the top five.
4. What are the company's total annual sales?
5. What is the company's annual gross profit?
6. Based on average unit sales, which five items had the lowest sales? Based on average unit sales, which five items had the highest sales?
7. Mr. Milligan wants a column chart that compares the top five selling items. Based on annual sales, prepare the column chart for Mr. Milligan.
8. Which items have an inventory turnover greater than 12?
9. Which items have days in inventory values greater than 150 days?

### Implementation Concerns

Although you are free to work with the design of your worksheet, the worksheet should have a consistent, professional appearance. Also, you should use appropriate formatting for the cells and worksheet. For instance, dollar values should display a dollar sign and be formatted to two decimal places.

## CASE 1: Milligan's Backyard Storage Kits

### Test Your Design

After creating the Inventory Analysis worksheet, you should test your design. Perform the following steps. Keep in mind that you may need to insert additional rows and columns to provide Mr. Milligan with this information.

1. Add the following six items to the Inventory Analysis worksheet.

Item No.	Description	Unit Cost	Unit Sales Price	Average on Hand	Average Unit Sales/Year
A01020	10' x 20' Aluminum Carport	\$999.99	\$1,789.95	27	45
A01030	12' x 24' Aluminum Carport	\$1,199.99	\$1,888.72	25	50
A01040	14' x 20' Aluminum Carport	\$1,307.84	\$2,500.99	15	27
A02010	8' x 12' Arbor Roof	\$1,326.42	\$1,550.42	4	10
A02020	12' x 20' Arbor Roof	\$2,787.96	\$4,100.00	10	12
A00160	6' x 6' Aluminum Shed	\$370.11	\$458.93	75	150

2. For each inventory item, Mr. Milligan wants to know what percentage of the company's total annual sales the item generated.
3. What is the gross margin per unit for each inventory item? Which inventory item(s) has (have) the largest gross margin per unit? Least?
4. Prepare a bar chart that compares the age of inventory for the trellis items.
5. Based on inventory turnover, which five items are held the longest in inventory?
6. Mr. Milligan wants to reduce his inventory by \$200,000. Which items would you recommend that he remove from his inventory? Why?

### CASE DELIVERABLES

In order to satisfactorily complete this case, you should build the worksheet(s) as described in the case scenario and then prepare both written and oral presentations. Unless otherwise specified, submit the following deliverables to your professor.

1. A written report discussing any assumptions you have made about the case and the key elements of the case. Additionally, what features did you add to make the worksheet(s) more functional? User friendly? (Please note that these assumptions cannot violate any of the requirements specified above and must be approved by your professor.)
2. A printout of the worksheet(s).
3. A printout of each worksheet's formulas.
4. An electronic, working copy of your worksheet(s) that meet the criteria mentioned in the case scenario and specifications sections.

5. RESULTS IN MEMO FORMAT