CASE SCENARIO

Two years ago, Jacob Byrd searched for a playset for his four-year-old daughter, Baylee. After spending several months visiting toy and discount stores looking for just the right playset and not finding the perfect one, he decided to custom build a playset for Baylee. The custom-built playset soon became the talk of the town, and Mr. Byrd found himself building playsets for friends and neighbors.

The custom-built playsets are widely recognized throughout the community and in neighboring towns and are an impressive sight. The playsets are made of redwood and equipped with a wave slide, fort, fireman's pole, chin-up bar, safety step ladder, tube slide, bridge, 6' by 6' platform, and two swings.

Last year, Baylee Byrd Playsets, Inc., sold 85 units at $999.99 per unit and generated $84,999.15 in revenue. However, after expenses and taxes were deducted, the business's net income was only $4,183.50. Mr. Byrd would like to improve his net income, and he wonders what he needs to do to achieve this objective. Mr. Byrd needs to evaluate his cash flow to determine areas for improvement and has requested your help.

Design Specifications

After speaking with Mr. Byrd and evaluating his information needs, you decide that an Income Analysis worksheet will help him with his decision-making activities. The Income Analysis worksheet provides Mr. Byrd with several tools for analyzing his business's operating performance. The Income Analysis worksheet enables Mr. Byrd to input the number of units sold, revenue per unit, desired target income, and costs. Once the data are entered, the Income Analysis worksheet provides Mr. Byrd with an income statement, computes financial ratios, performs breakeven analysis, and updates the one-variable data tables.

You determine that the Income Analysis worksheet needs both input and results sections. Figure 1 shows a tentative sketch for the input section. The input section enables Mr. Byrd to input data about the number of units sold, revenue per unit, desired target income, and costs. Table 1 summarizes the company's sales and costs for the previous year. As you study Table 1's contents, you notice that the costs are separated into two categories: fixed and variable. From a previous business course, you recall that fixed costs remain constant and do not vary with sales volume. Fixed costs for Baylee Byrd Playsets, Inc., include such items as fixed overhead, selling expenses, administrative expenses, and depreciation. In contrast, variable costs change in direct proportion to the sales volume. Variable costs include such items as marketing and sales, labor, variable overhead, variable selling, and variable administrative.

Figure 1: Input Section Sketch

Input Section For Income Analysis Worksheet	
Sales and Cost Summary	
Number of Units Sold	
Revenue Per Unit	
Desired Target Income	
Variable Costs (per unit)	
Marketing and Sales	
Labor	
Variable Overhead	
Variable Selling	
Variable Administrative	
Fixed Costs	
Fixed Overhead	
Selling Expenses	
Administrative Expenses	
Depreciation	

Table 1: Sales and Costs for Previous Year

Income			Fixed Costs	
Units Sold	85		Fixed Overhead	$4,652.11
Price Per Unit	$999.99		Selling Expenses	$2,500.00
Desired Target Income	$30,000.00		Administrative Expenses	$2,399.99
			Depreciation	$7,000.00
Variable Costs (Per Unit)				
Marketing and Sales	$15.24			
Labor	$150.00			
Variable Overhead	$514.72			
Variable Selling	$25.83			
Variable Administrative	$23.75			

The results section uses the data from the input section to produce an income statement, compute financial ratios, and perform breakeven analysis. The results section will also display your one-variable data tables. (Descriptions for the one-variable data tables are provided in subsequent sections.) Figures 2 and 3 provide sketches for the income statement and ratios.

Figure 2: Income Statement

Baylee Byrd Playsets, Inc. Income Statement (Current Date)	
Sales	
Variable Expenses	
Marketing and Sales	
Labor	
Variable Overhead	
Variable Selling	
Variable Administrative	
Total Variable Expenses	
Contribution Margin	
Fixed Expenses	
Fixed Overhead	
Selling Expenses	
Administrative Expenses	
Depreciation	
Total Fixed Expenses	
Operating Income	
Income Taxes	
Net Income	

Figure 3: Ratios

Ratios	
BEP	
BEP with Target Income	
Contribution Margin Ratio	
Operating Margin Ratio	
Net Margin Ratio	

Information Specifications

The Income Analysis worksheet provides Mr. Byrd with information about his business's income, calculates several financial ratios, performs breakeven analysis, and displays one-variable data tables. Therefore, the Results section of the Income Analysis worksheet will have income statement, ratio, and data table result areas.

As Figure 2 shows, the income statement section of the worksheet summarizes the business's revenues and expenses, allowing Mr. Byrd to examine the company's overall operating performance. As you study the income statement outline, you realize that many of your calculations will reference the data contained in the Input section of the worksheet, requiring Mr. Byrd to input the data only once. Mr. Byrd provides you with the formulas shown in Figure 4.

Mr. Byrd wants to examine the impact that various target income levels have on the breakeven point. For instance, Mr. Byrd knows that a target income of $15,000 requires 117 playsets in order to break even. He would like to see what impact $20,000, $25,000, $30,000, $35,000, and $40,000 target incomes have on the breakeven point. Although he can change the target income cell value for each of the desired target income levels, you recommend that he use a one-variable data table. By creating a one-variable data table, the target income values and their associated breakeven points are arranged in a table, enabling Mr. Byrd to view and compare all the target income values and their associated breakeven points at the same time. (You may wish to use your system's online help feature to review one-variable data tables at this point.)

Figure 4: Required Formulas

Income Analysis Worksheet Formulas	
Breakeven Point	$\frac{\text{Fixed Costs}}{\text{Revenue Per Unit – Variable Cost Per Unit}}$
Breakeven Point with Target Income (Operating Income)	$\frac{\text{Fixed Costs + Target Income}}{\text{Revenue Per Unit – Variable Cost Per Unit}}$
Contribution Margin	Sales – Total Variable Expenses
Contribution Margin Ratio	$\frac{\text{Sales – Variable Cost}}{\text{Sales}}$
Income Taxes (Assume a 35 percent tax rate)	Operating Income * Income Tax Rate
Net Income	Operating Income – Income Taxes
Net Margin	$\frac{\text{Net Income}}{\text{Net Sales}}$
Operating Income	Contribution Margin – Total Fixed Expenses
Operating Margin	$\frac{\text{Operating Income}}{\text{Net Sales}}$
Variable Cost Per Unit	$\frac{\text{Total Variable Costs}}{\text{Number of Units Sold}}$

Mr. Byrd wants to see how different scenarios impact the business's net income. In addition to the current scenario, Mr. Byrd wants to evaluate two other possible scenarios. In the first scenario, he wants to increase the number of units sold to 150, decrease revenue per unit to $950, and decrease variable costs per unit by $20. (You can choose which variable cost to reduce.) In the second scenario, he wants to increase the number of units sold to 100, increase revenue to $1,650 per unit, and increase labor by $50. Using Scenario Manager,

you prepare the three scenarios. The first scenario uses the original values, and the remaining two scenarios use the data that Mr. Byrd has just given you. After you create the three scenarios, you generate a scenario summary report based on the three scenarios.

Mr. Byrd needs answers to the following questions. Using your newly designed Income Analysis worksheet, provide Mr. Byrd with answers to his questions.

1. Mr. Byrd wants a net margin ratio of 15 percent. Using Solver, adjust the values for the revenue and number of units sold. Revenue per unit cannot exceed $1,100, the number of units sold cannot exceed 250, and total variable expenses cannot exceed $110,000. In order to have a net margin of 15 percent, how many playsets will Mr. Byrd need to sell? What price should he charge? Generate an answer report. (As a starting point for this answer, reset your worksheet's values back to the original values in Table 1, and then make the changes requested in this question.)

2. Assume that fixed overhead costs are $7,500, variable overhead is $375, labor is $200, and depreciation is $8,500. If Mr. Byrd wants a net income of $30,000, what price should Mr. Byrd charge for his playsets? How many playsets should Mr. Byrd sell? (As a starting point for this answer, reset your worksheet's values back to the original values in Table 1, and then make the changes requested in this question.)

3. Mr. Byrd wants a net income of $55,000. How many playsets should Mr. Byrd sell? What price should he charge? (As a starting point for this answer, reset your worksheet's values back to the original values in Table 1, and then make the changes requested in this question.)

4. Mr. Byrd needs a 3-D pie chart that compares the business's fixed costs.

Implementation Concerns

For this case, you will design a worksheet to facilitate Mr. Byrd's analysis of his business. When designing the worksheet, you will apply basic cell and worksheet formatting principles, create formulas, perform what-if analysis by using Goal Seek and Solver, create several scenarios, generate a chart, and create two one-variable data tables. Based on your what-if analysis, you will prepare several reports, including an answer report and a scenario summary report.

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

In several locations, the case references target income. Keep in mind that the target income does not reflect income taxes. Therefore, as it is used in this case, the target income is a better reflection of operating income, as opposed to net income.

Baylee Byrd Playsets, Inc.

Test Your Design

Mr Byrd wants to identify the breakeven point and breakeven with target income for varying price levels. Prepare a one-variable data table that shows this information. The pricing levels range from $1000 to $2500 in $50 increments. If Mr. Byrd does not want to sell more than 120 playsets and wants to have a $60,000 target income, how many units must he sell? What prices should he charge? (As a starting point for this answer, reset your worksheet's values to the original values in Table 1, and then make the changes requested in this question