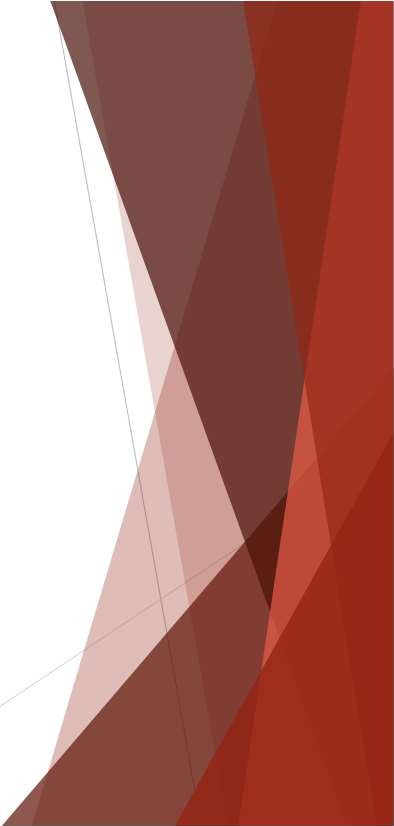


Business Analytics

Chapter 10 – Some Useful Functions for Modeling



Introduction

 Procter & Gamble

 Fortune 500 consumer good company

 Excellence in Business Analytics

 Must maintain inventory around the world.

 Not enough?

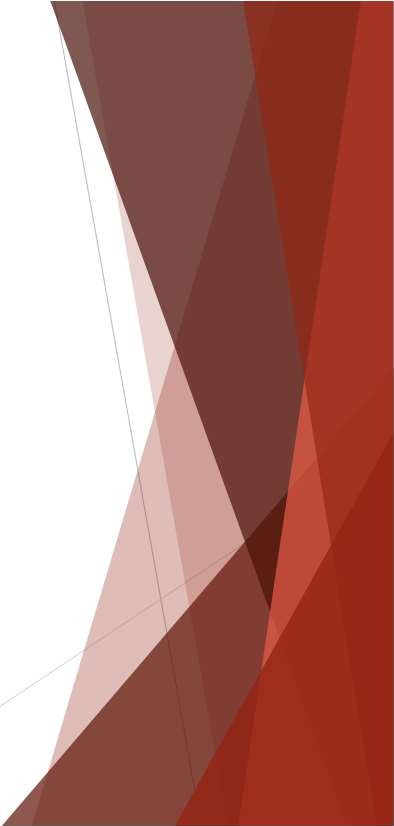
 Too much?

 Solution: Spreadsheet Models

 When and how much inventory to order

70% of P & G companies use these models 10% reduction in inventory

= $350 million in savings



Introduction

 What-if Analysis (Using Spreadsheet Models)

 Provide easy-to-use, sophisticated mathematical and logical functions.

 Allow for easy instantaneous recalculation for a change in model inputs.

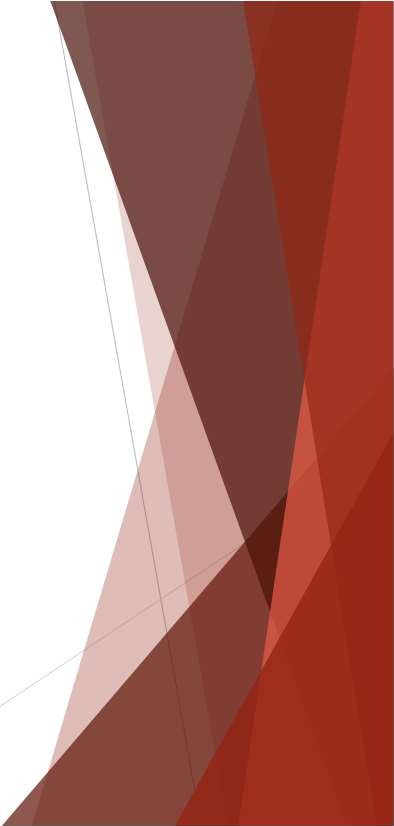
 Are fairly easy to use.

 The most used business analytics tool.

 Answer Questions Like:

 If the per unit cost is $4 what is the impact on profit?

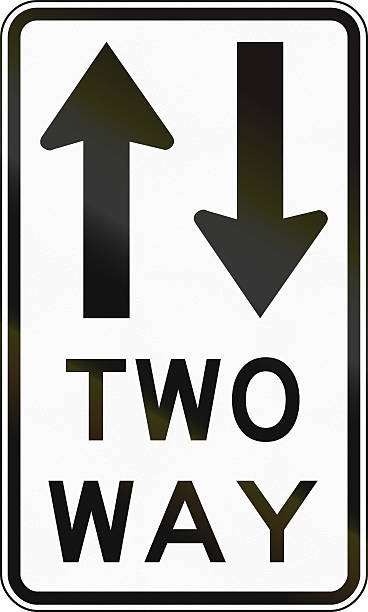
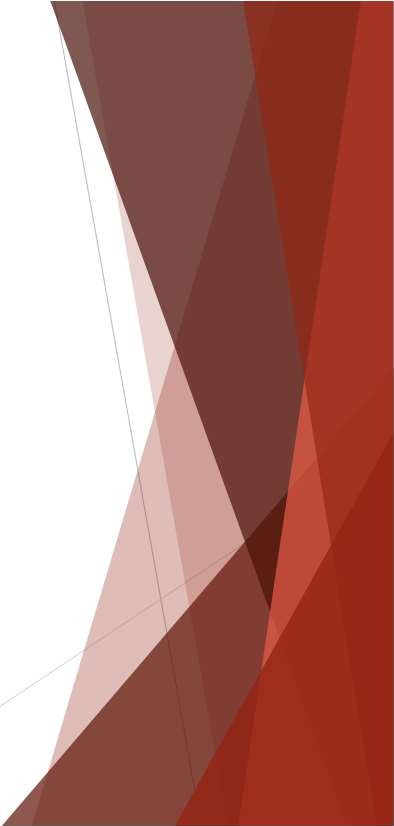
 May help you with your final projects!



Spread Sheet Models or What-If Analysis Tools

Data Tables Goal Seek

Scenario Manager



What-If Analysis

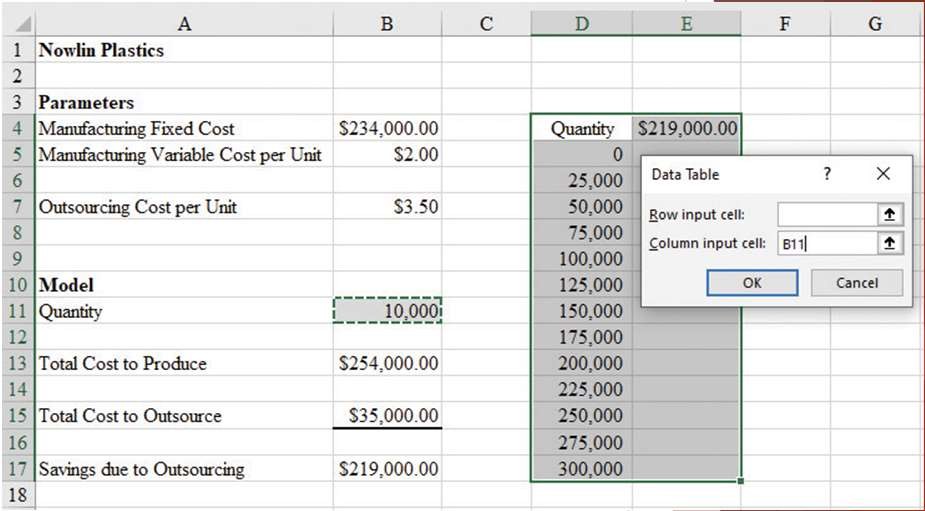
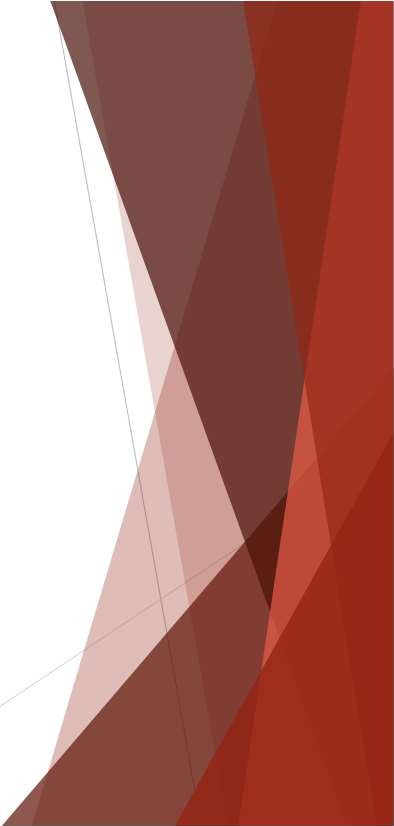
 **Data Tables:**

 Excel tool which quantifies the impact of changing the value of a specific input on an output of interest.

**One-way data table:**

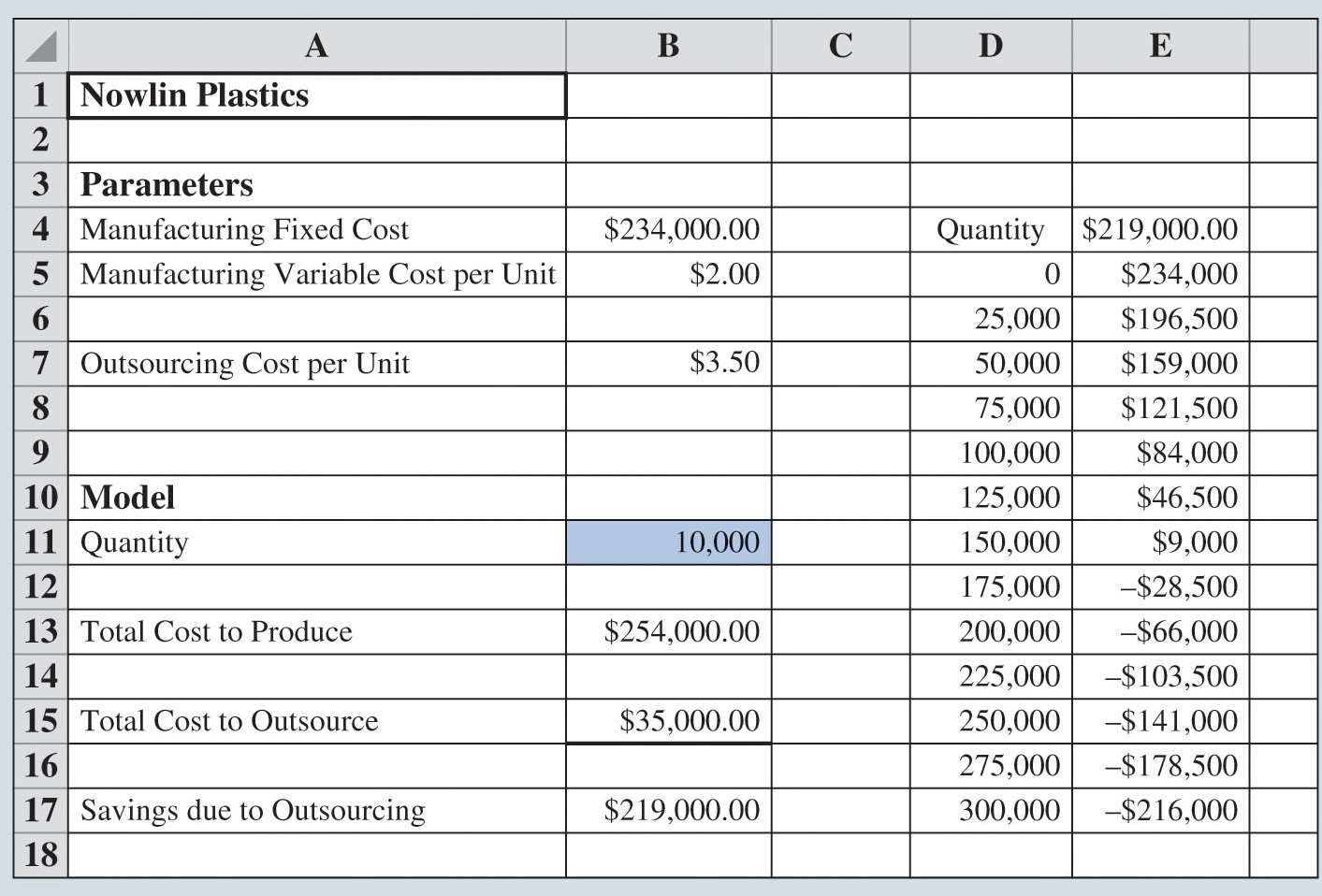
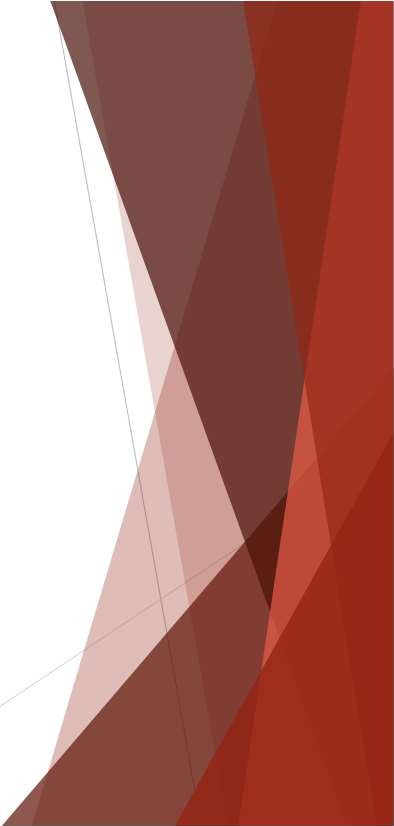
Summarizes a single input’s impact on the output.

**Two-way data table:** Summarizes two inputs’ impact on the output.



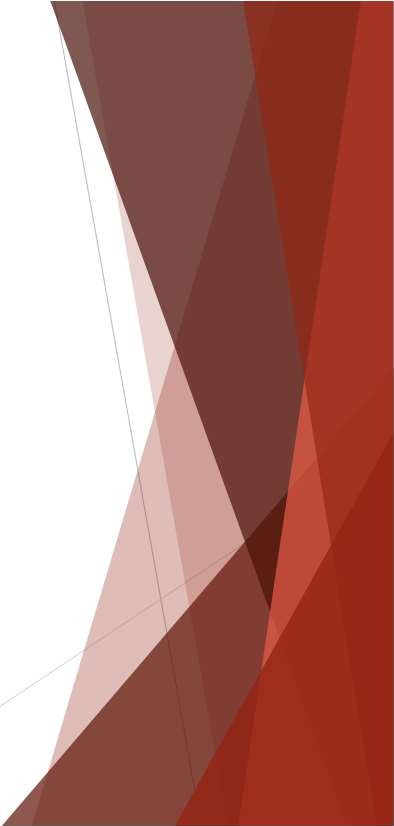
What-If Analysis

Figure 10.4: The Input for Constructing a One-Way Data Table for Nowlin Plastics



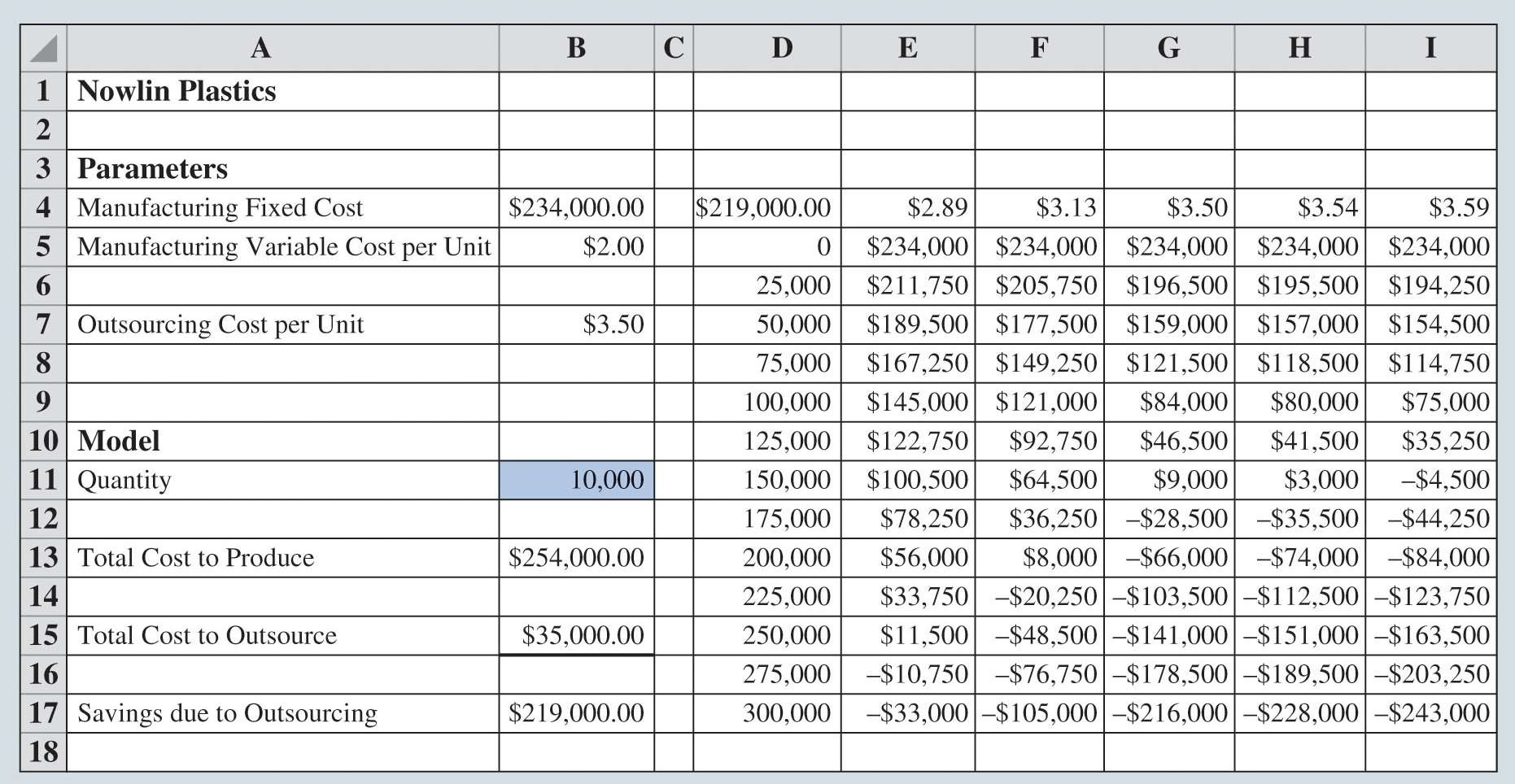
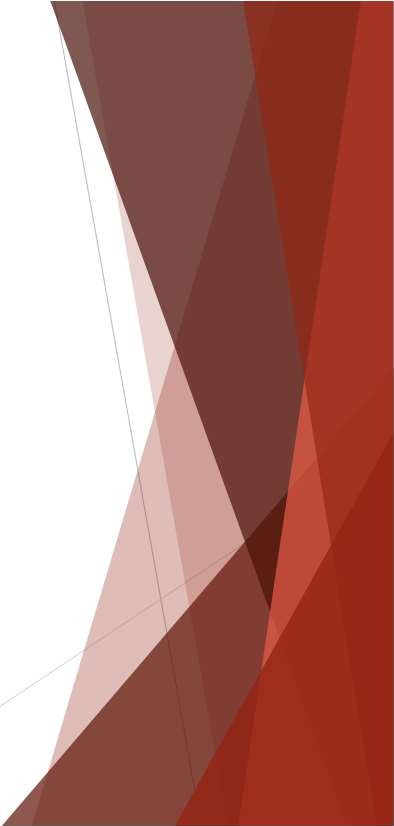
What-If Analysis

Figure 10.5 Results of One- Way Data Table for Nowlin Plastics



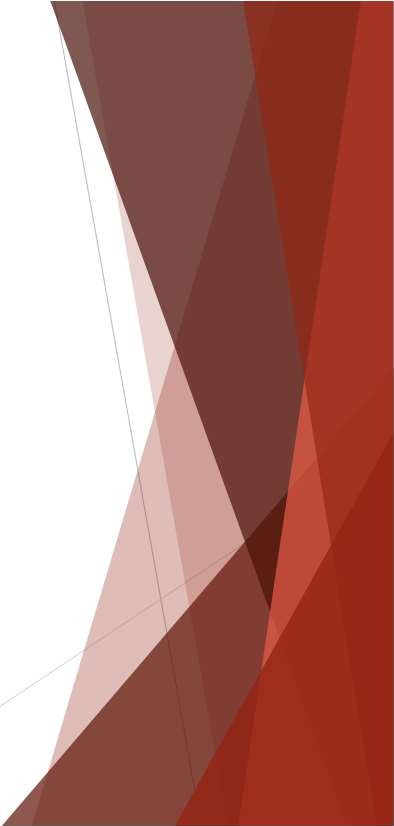
What-If Analysis

Figure 10.6: The Input for Constructing a Two- Way Data table for Nowlin Plastics



What-If Analysis

Figure 10.7: Results of Two-Way Data Table for Nowlin Plastics



What-If Analysis

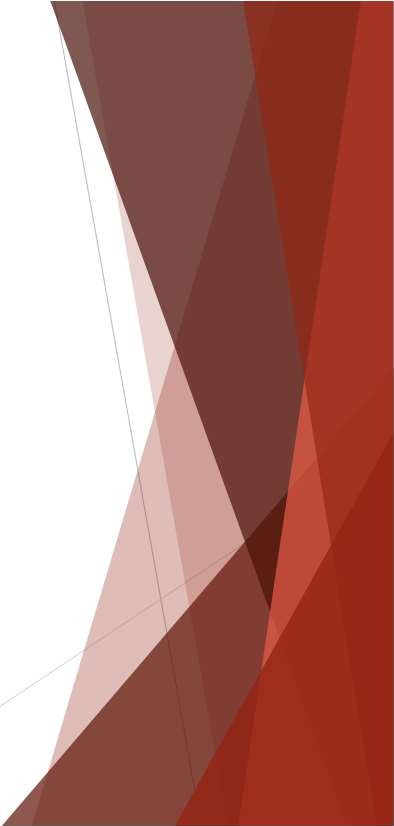
 **Goal Seek:**

 Excel tool that allows the user to determine the value of an input cell that will cause the value of a related output cell to equal some specified value (the goal).

 In the case of Nowlin Plastics:

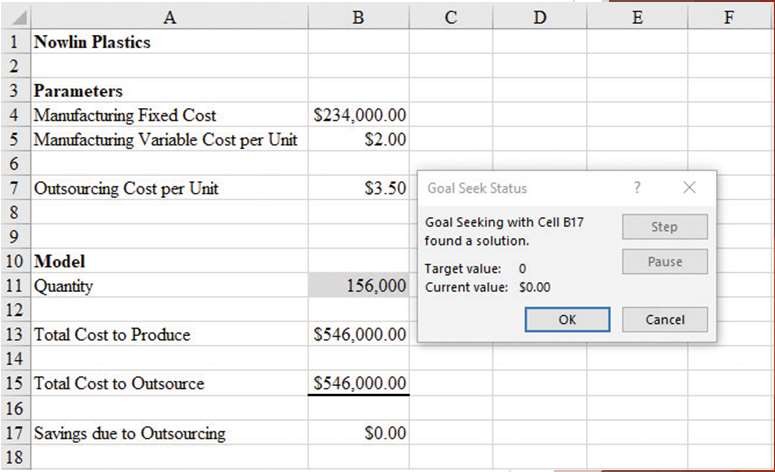
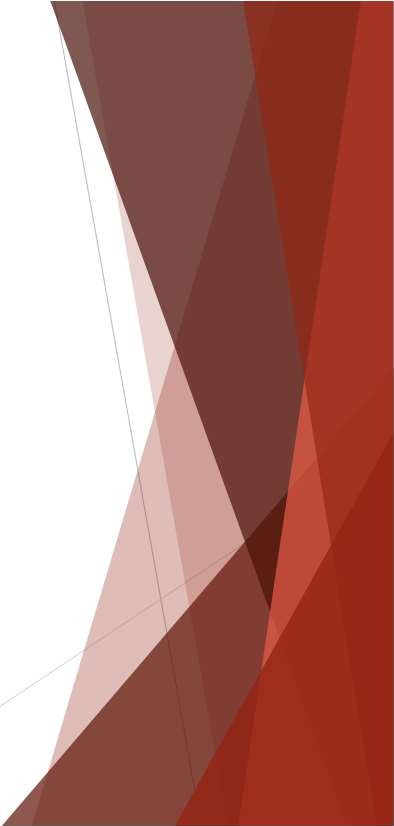
 Suppose we want to know the value of the quantity of phone cases where it becomes more cost effective to manufacture rather than outsource.

 Goal Seek will tell us!



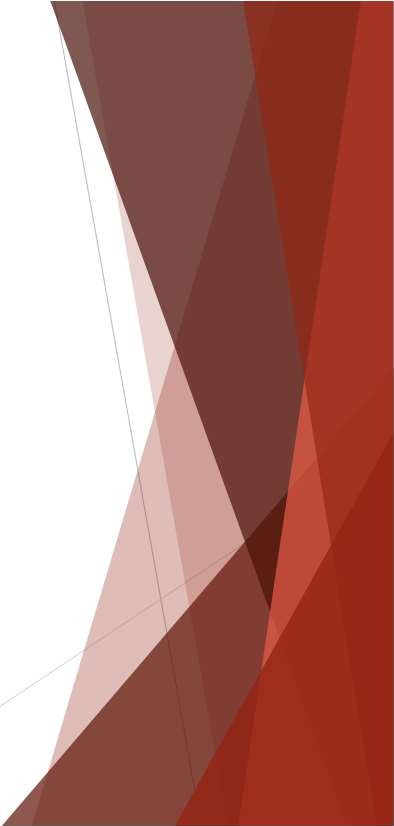
What-If Analysis

Figure 10.8: Goal Seek Dialog Box for Nowlin Plastics



What-If Analysis

Figure 10.9: Results from Goal Seek for Nowlin Plastics



What-If Analysis

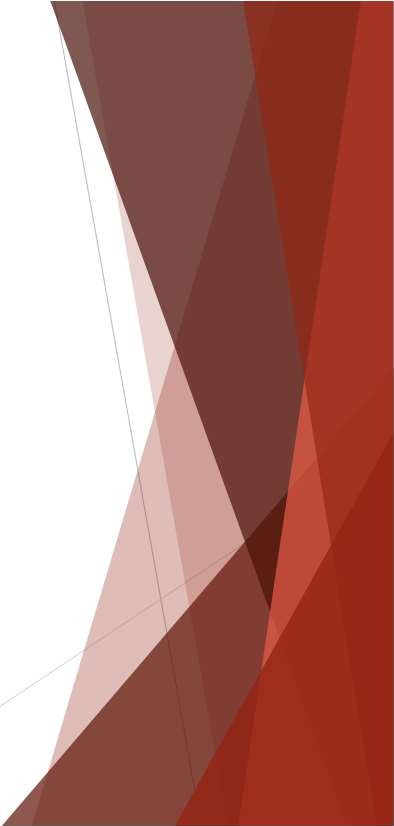
 **Scenario Manager:**

 Excel tool that quantifies the impact of changing multiple inputs on one or more outputs of interest.

 Scenario Manager extends the data table concept to cases:

 When you are interested in changing more than two inputs

 When you want to quantify the changes these inputs have on one or more outputs of interest.



Middletown Amusement Park

 Season Pass:

 Annual Membership

 No cost at gate

 $15 per person on food etc.

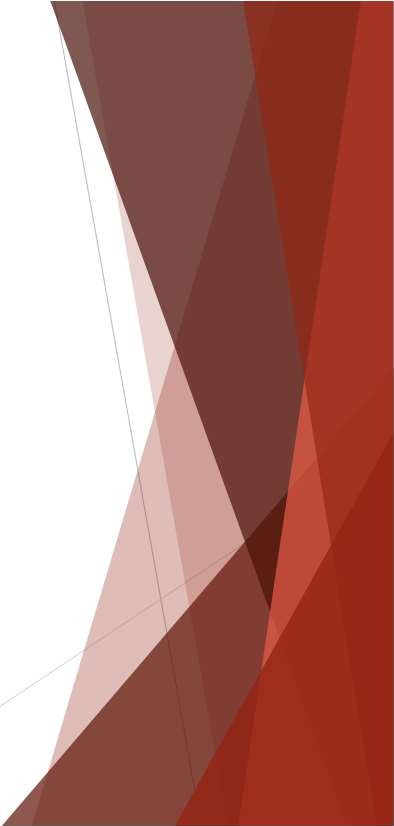
 No Season Pass

 $35 at gate

 $45 per person on food etc.

 Cost of Operations $33,000

 Cost of goods = 50% price of good



Middletown Amusement Park

 Profit:

 Dependent on Weather!

 Scenarios:

 1. Partly Cloudy

 2. Rain

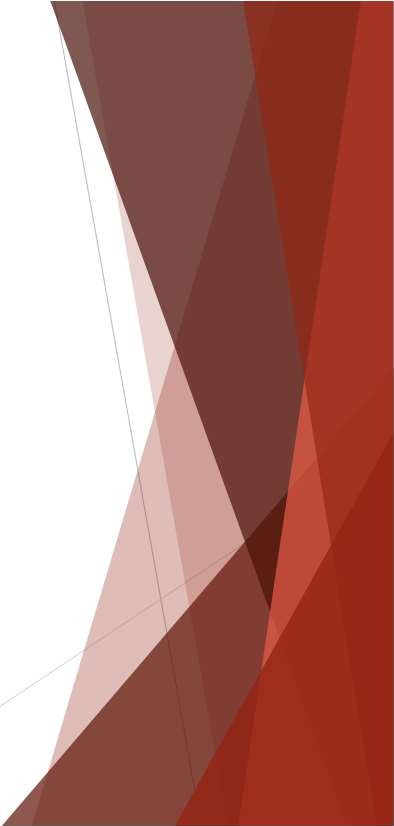
 3. Sunny

 Inputs Effected

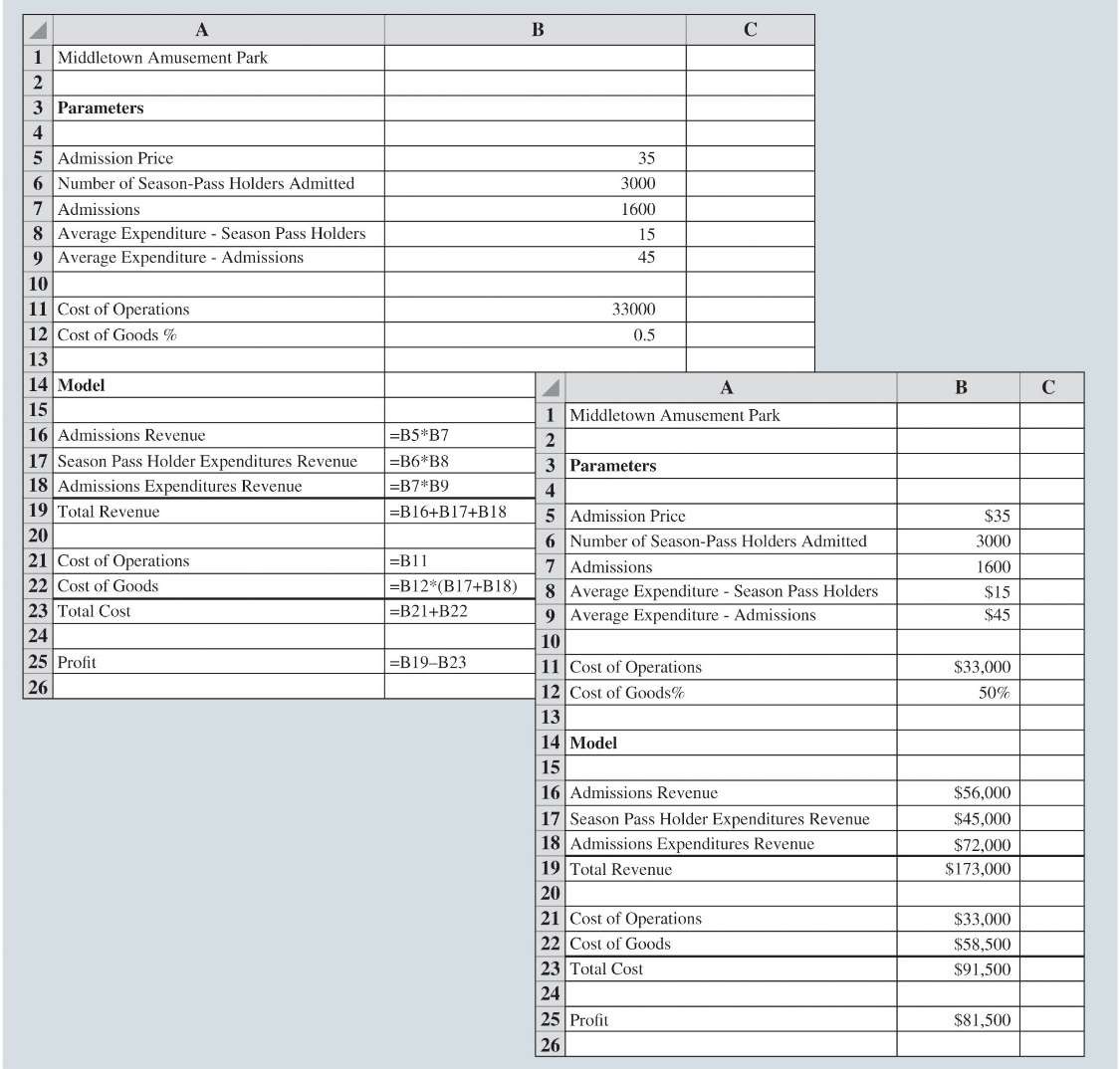
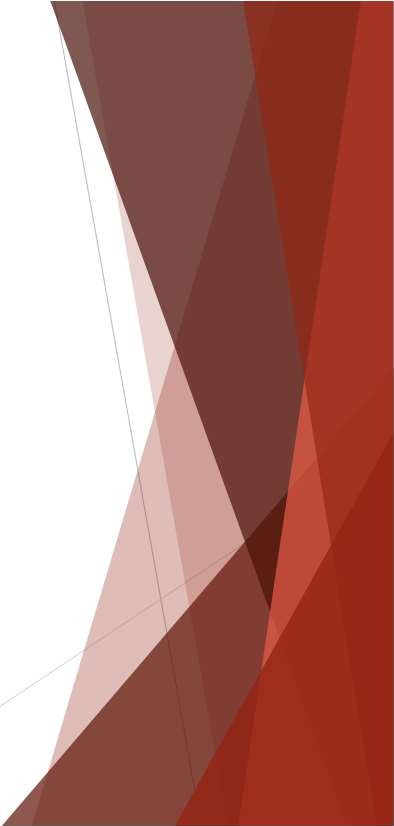
 Number of people in the park

 $ spent on food etc.

 Cost of operations

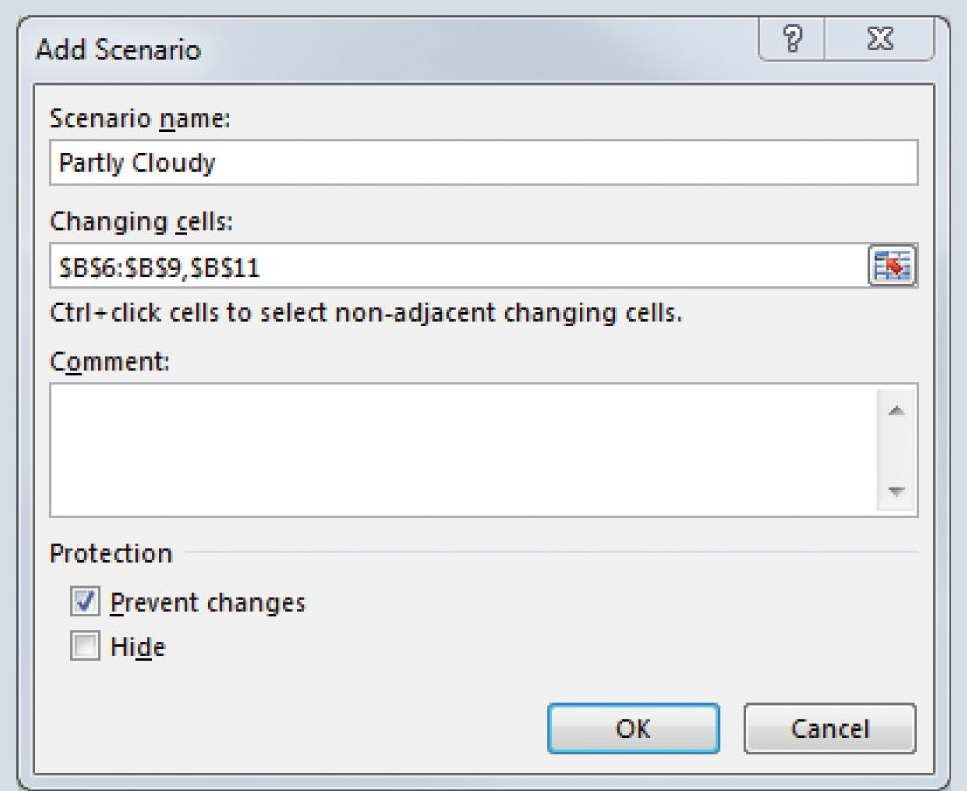
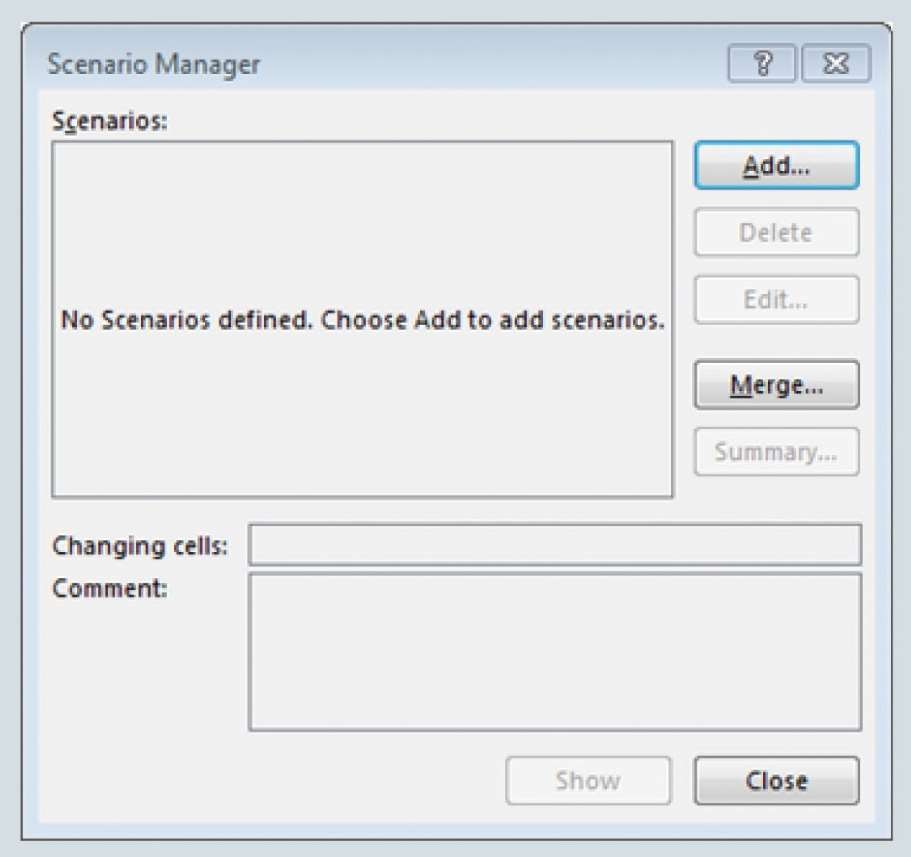
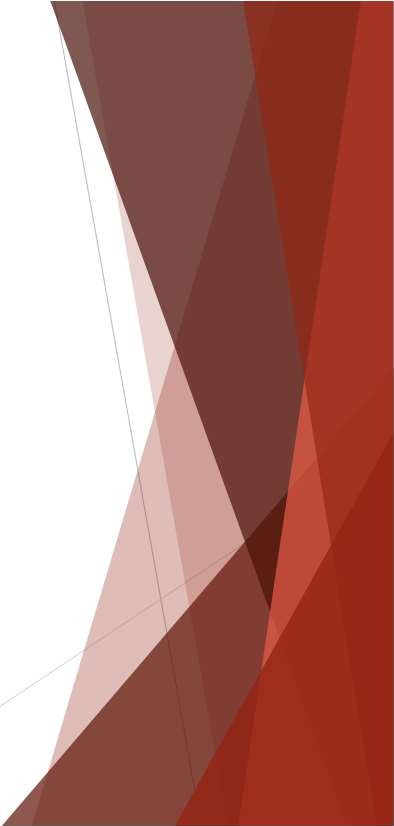


Middletown Amusement Park



What-If Analysis

Figure 10.10: Middletown Amusement Park Daily Profit Model

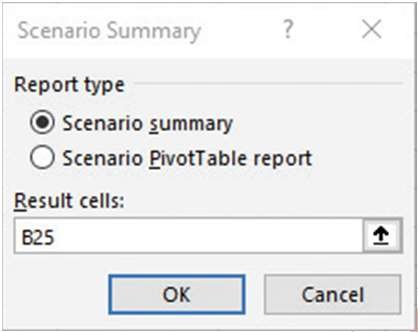
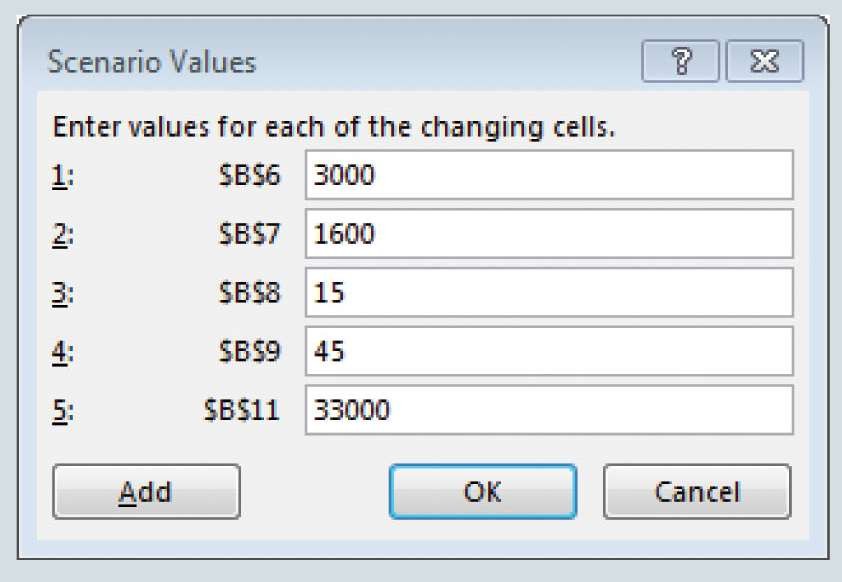
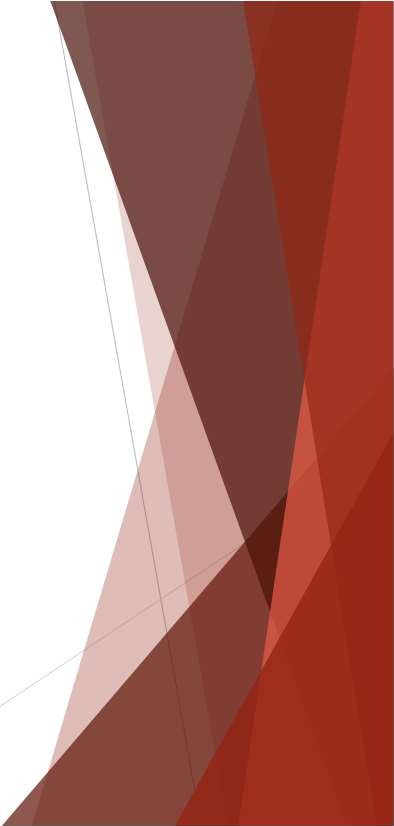


What-If Analysis

Figure 10.11: Scenario Manager Dialog Box

Figure 10.12:

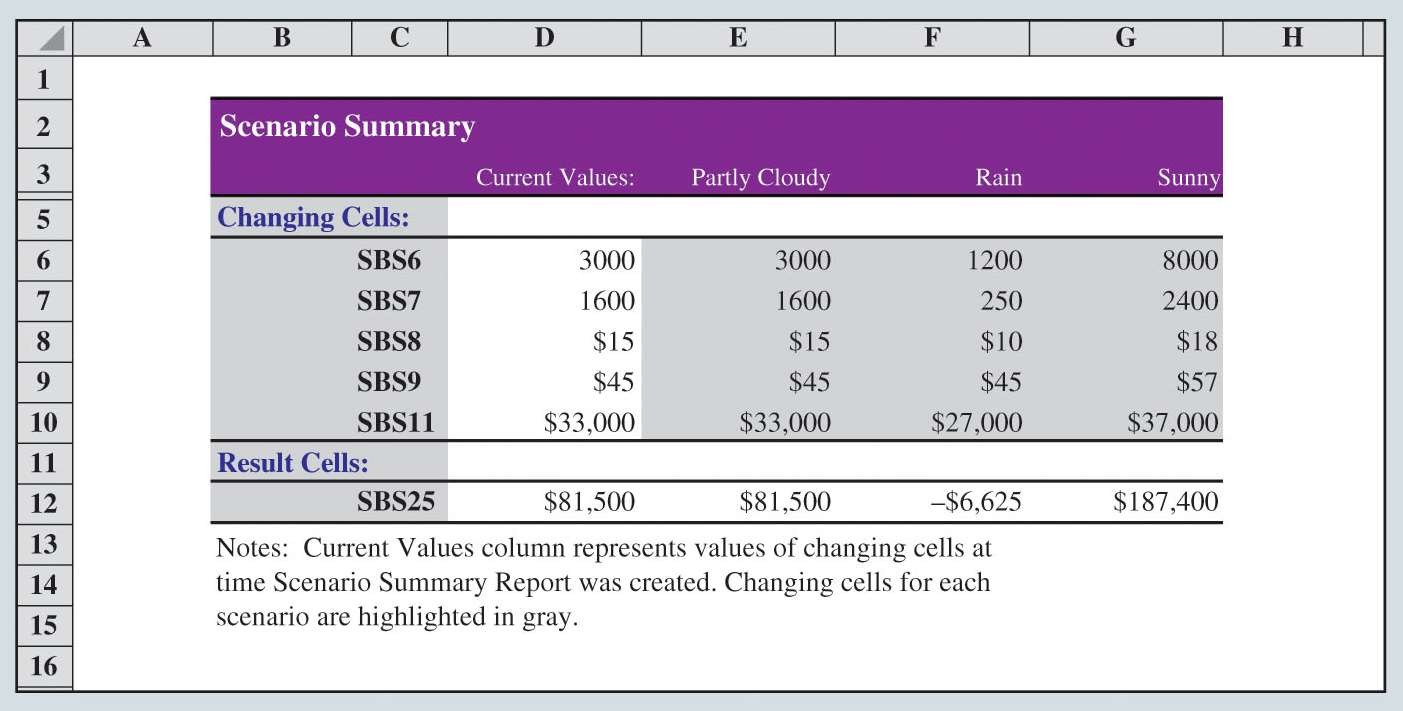
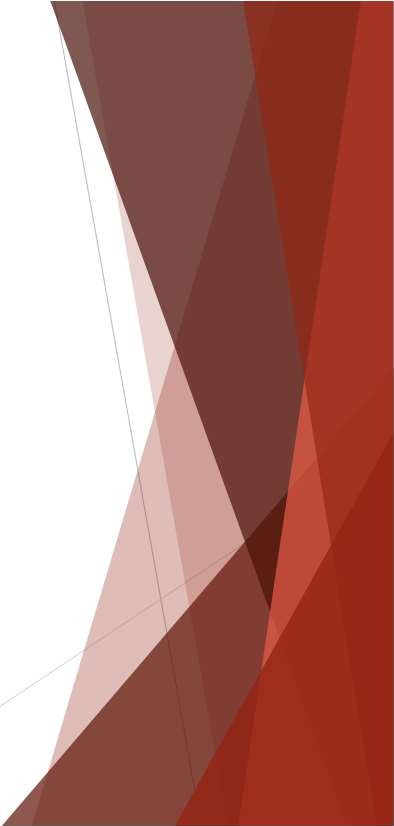
Add Scenario Dialog Box



What-If Analysis

Figure 10.13: Scenario Values Dialog Box

Figure 10.14: Scenario Summary Dialog Box



What-If Analysis

Figure 10.15: Scenario Summary for Middletown Amusement Park