# CHAPTER 17

## Current Designs Excel Tutorials

**Using Excel**® **to Make Decisions at Current Designs**

**Topic(s):** **Standard Costs**

**Excel**® **Functions and Tools:  Cell/Range naming; Conditional formatting, Nested IF functions**

This document provides instructions that explain how to use Excel’s conditional formatting and cell/range naming tools, and to create nested IF functions to solve the Current Designs problem that appears in the Chapter 17 worksheet template. A **What-if** question at the end of the solution will help you see how changes in one section of the worksheet can affect accounting information in other sections of the worksheet. Download the Excel file containing the Chapter 17 Excel Templates from the Wiley resources. It includes an Excel Template to use to solve the Current Designs problem.

### Problem Statement

The executive team at Current Designs has gathered to evaluate the company’s operations for the last month. One of the topics on the agenda is the special order from Huegel Hollow, which was presented in CD12. Recall that Current Designs had a special order to produce a batch of 20 kayaks for a client, and you were asked to determine the cost of the order and the cost per kayak.

Mike Cichanowski asked the others if the special order caused any particular problems in the production process. Dave Thill, the production manager, made the following comments: “Since we wanted to complete this order quickly and make a good first impression on this new customer, we had some of our most experienced type I workers run the rotomold oven and do the trimming. They were very efficient and were able to complete that part of the manufacturing process even more quickly than the regular crew. However, the finishing on these kayaks required a different technique than what we usually use, so our type II workers took a little longer than usual for that part of the process.”

Deb Welch, who is in charge of the purchasing function, said, “We had to pay a little more for the polyethylene powder for this order because the customer wanted a color that we don’t usually stock. We also ordered a little extra since we wanted to make sure that we had enough to allow us to calibrate the equipment. The calibration was a little tricky, and we used all of the powder that we had purchased. Since the number of kayaks in the order was fairly small, we were able to use some rope and other parts that were left over from last year’s production in the finishing kits. We’ve seen a price increase for these components in the last year, so using the parts that we already had in inventory cut our costs for the finishing kits.”

### Instructions

1. Based on the comments above, predict whether each of the following variances will be favorable or unfavorable. If you don’t have enough information to make a prediction, use “NEI” to indicate “Not Enough Information.”

| 1. | Quantity variance for polyethylene powder. |
| --- | --- |
| 2. | Price variance for polyethylene powder. |
| 3. | Quantity variance for finishing kits. |
| 4. | Price variance for finishing kits |
| 5. | Quantity variance for type I workers. |
| 6. | Price variance for type I workers. |
| 7. | Quantity variance for type II workers. |
| 8. | Price variance for type II workers. |

Diane Buswell examined some of the accounting records and reported that Current Designs purchased 1,200 pounds of pellets for this order at a total cost of $2,040. Twenty (20) finishing kits were assembled at a total cost of $3,240. The payroll records showed that the type I employees worked 38 hours on this project at a total cost of $570. The type II finishing employees worked 65 hours at a total cost of $796.25. A total of 20 kayaks were produced for this order. The actual activity has been placed in the following table.

| Actual activity for Huegel Hollow order: |  |  |
| --- | --- | --- |
| Purchases of polyethylene powder | 1,200 | pounds |
| Finishing kits assembled | 20 | kits |
| Type I labor hours | 38 | hours |
| Type Il labor hours | 65 | hours |
| Cost of polyethylene powder purchases | $2,040 |  |
| Cost of assembling finishing kits | $3,240 |  |
| Total type I labor cost | $570 |  |
| Total type Il labor cost | $796.25 |  |
| Number of units produced | 20 | kayaks |

The standards that had been developed for this model of kayak were used in CD12 and are reproduced here. For each kayak:

| Standards for each kayak: |  |  |
| --- | --- | --- |
| Pounds of polyethylene powder | 54 | pounds |
| Finishing kits | 1 | each |
| Type I labor hours | 2 | hours |
| Type II labor hours | 3 | hours |
| Cost of polyethylene power | $1.50 | per pound |
| Cost of finishing kits | $170.00 | per kit |
| Type I labor rate | $15.00 | per hour |
| Type II labor rate | $12.00 | per hour |

Calculate the eight variances that are listed in part (a) of this problem.

### What-If Question

Perform what-if analysis to answer the following:

Suppose the number of kayaks ordered by Huegel Hollow was 21 instead of 20. Identify which variances made no change in dollar amounts from the original kayaks produced. Explain why these variances remained the same.

### Solution Tutorial

Follow the following steps below to learn how to use Excel’s range naming tool, conditional formatting tool, and nested IF functions to aid variance analysis for Current Designs’ managers. Save your file frequently while working.

#### Part 1

##### Use sheet tab CD17 Part 1.

**Step 1:** Open the worksheet template file in Microsoft Excel. Save the file on your computer’s desktop. The data area which appears in rows 46 to 55 and 58 to 66 contain the information provided by Current Designs.

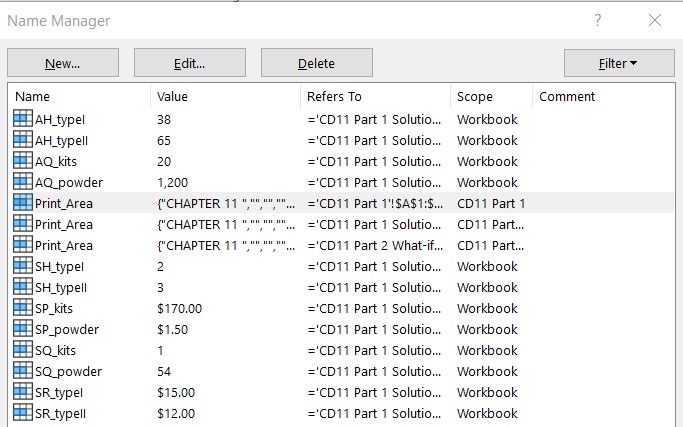
**Step 2:** In cells H79 through H86, predict whether each of the variances will be favorable or unfavorable by selecting your response form the drop-down lists. For those variances for which you do not have enough information, select “ NEI ” as your response.

**Step 3:** Assign the following range names to the components in the data area:

| Cell Location | Cell/Range Name |
| --- | --- |
| H47 | AQ\_powder |
| H48 | AQ\_kits |
| H49 | AH\_typeI |
| H50 | AH\_typeII |
| H59 | SQ\_powder |
| H60 | SQ\_kits |
| H61 | SH\_typeI |
| H62 | SH\_typeII |
| H63 | SP\_powder |
| H64 | SP\_kits |
| H65 | SR\_typeI |
| H66 | SR\_typeII |

**Hint:** Individual cells or groups of cells can be assigned a name to make formulas easier to understand and maintain. Range names should be descriptive and may not contain spaces. The range names you are assigning are based on the standard notation of SP for standard price, AP for actual price, SQ for standard quantity, AQ for actual quantity, AH for actual hours, SH for standard hours, SP for standard price, and SR for standard rate, and are each followed by respective type of material or labor.

1. To assign a range name, first select cell H47. Right click your mouse and select **Define Name** from the drop-down list that displays the range names for the current worksheet.
2. Type the “ AQ\_powder ” label and click **OK**.
3. Select cell H47 again and examine the **Name** box which appears as a white field just above the row numbers and columns A and B, and you will see the name you just assigned to cell H47.
4. Perform a similar procedure to name the other ranges listed in the table in Step 3.
5. To view and verify the range names, Choose the **Formulas** tab from the menu ribbon, followed by clicking the Name Manager icon in the **Defined Names** group. You will see a dialog box displaying all of the named ranges in your Excel file as well as three print ranges which were previously set up so that your worksheets are ready to print if desired. If you are missing any range names, complete step 3 again.



**Step 4:** In cell D91, type the “ = ” (equals) sign.

**Step 5:** Begin typing AQ\_powder label. As you type AQ, a drop-down list will appear and will display the ranges that begin with AQ. Select AQ\_powder by double clicking this label from the list. Some versions of Excel may not display a drop-down list and instead require you to type the entire range name.

**Step 6:** Immediately type an “ \* ” (asterisk), followed by typing “ SP ” to display a list of the range names that begin with SP. Select SP\_powder from the drop down list by double clicking this label from the list.

**Step 7:** Press the **Enter** key. The formula in cell D91 should be:

=AQ\_powder\*SP\_powder

**Step 8:** In cell F91, type “ =SQ ” and select SQ\_powder from the drop down list. Immediately type an “ \* ” (asterisk). Select cell H55 and type another asterisk. Type “ SP ” and select SP\_powder from the drop down list. Press **Enter**.

**Hint:** The ‘standard quantity’ (SQ) component of the variance calculation must be calculated based on the standard quantity allowed of 54 pounds for *each* of the 20 kayaks produced, i.e., there are two components of the SQ amount. The formula in cell F91 should be:

=SQ\_powder\*H55\*SP\_powder

**Step 9:** Input similar formulas using the respective range names to calculate the components of the following:

1. The price variance for polyethylene powder in cells D96 and F96
2. The quantity variance for finishing kits in D101 and F101
3. The price variance for finishing kits in D106 and F106
4. The quantity variance for type I workers in D111 and F111
5. The price variance for type I workers in D116 and F116
6. The quantity variance for type II workers in D121 and F121
7. The price variance for type II workers in D126 and F126

**Step 10:** Because variances should be displayed as positive amounts so consider this as you are entering formulas or use the ABS function presented in an earlier chapter tutorial. To use the ABS function, select cell H91.

1. From the **Formulas** menu tab, choose **Math & Trig** functionsfrom the **Functions Library** group.
2. From the drop-down menu, choose **ABS** to display the **ABS** function dialog box.
3. Place your mouse pointer in the **Number** field, and immediate select cell D91.
4. Then press the “ – “ minus key and immediately select cell F91.
5. Click **OK** to close the dialog box. The absolute value of $180 will appear in the cell.

**Step 11:** Copy the contents of cell H91 to cell H96, H101, H106, H111, H116, H121, and H126 to subtract the two adjacent components to calculate each of the respective absolute variances.

**Step 12:** Use conditional formatting in each cell ranging from H91 to H126 that contains a variance amount. Be sure to only select the cells with variances, those shaded in yellow.

**Hint:** Conditional formatting allows you to highlight cells that contain data that satisfies specific criteria.

1. Select cells H91, H96, H101, H106, H111, H116, H121, and H126.
2. On the **Home** menu ribbon, select the **Conditional Formatting** option from the **Styles** group. A drop-down menu will appear.
3. Select the **Data Bars**option to display a second drop-down menu.
4. Select the red **Gradient Fill** option. Each cell containing a variance amount will display as a data bar based on the relative amount of each variance.

**Step 13:** Use the IF function in the cell in column I immediately to the right of each variance amount to denote whether each respective variance is favorable, unfavorable, or zero.

**Hint:** Nested IF functions enable you to test the contents of a cell for more than two conditions.

1. Select cell I91.Select the **Formulas** menu option, then select the **Logical** option to display a drop-down menu.
2. Select the **IF** function to display the **IF** function wizard.
3. Place your cell pointer in the **Logical\_test** field and select cell F91, type the ‘ > ‘ (greater than) symbol and immediately select cell D91.
4. Type Unfavorable into the **Value\_if\_true** field.
5. Type Favorable into the **Value\_if\_false** field. Excel automatically places parentheses around the labels. This function tests if the value in D91 is greater than that of F91 and if so, displays ‘Unfavorable’. If the test is false, it displays ‘Favorable’. Verify your input matches the input in the dialog box that follows.

"An illustration shows the IF Function Arguments dialog box with three fields.
The first field is logical test with the contents as: D81 is greater than F91. 
The second field is Value if true, with the contents as Unfavorable in quotes. 
The third field is Value if false with the contents as Favorable in quotes.
The text below the fields reads, Checks whether a condition is met, and returns one value if True, and another value if False; Logical test is any value or expression that can be evaluated to True or False." 


1. Click **OK** and the label ‘Unfavorable’ should appear in cell I91.

**Step 14:** Copy and paste the contents of cell I91 to each yellow shaded cell from I91 to I126 adjacent to each variance amount.Compare your work to the solution that follows.

**"An illustration shows an Excel spreadsheet labeled part b. There are four columns with the variance name, the amounts used to calculate the variance, and the variance amount of whether favorable or unfavorable. The information includes: 
Quantity variance for polyethylene powder, Item 1: (A Q times S P), $1,800; (S Q times S P), $1,620; Variance, $180; Unfavorable.
Item 2, Price variance for polyethylene powder: (A Q times A P), $2,040; (A Q times S P), $1,800; Variance, $240; Unfavorable.
Item 3 Quantity variance for finishing kits: (A Q times S P), $3,400; (S Q times S P), $3,400; Variance, zero.
Item 4, Price variance for finishing kits: (A Q times S P), $3,400; (A Q times S P), $3,400; Variance, 140, Favorable.
Item 5, Quantity variance for Type 1 workers: (A Q times S P), $570; (A Q times S P), $600; Variance, 30; Favorable.
Item 6, Price variance for Type 1 workers: (A Q times S P), $570; (A Q times S P), $570; Variance, zero Favorable.
Item 7, Quantity variance for Type 2 workers: (A Q times S P), $780; (A Q times S P), $720; Variance, 60; Unfavorable.
Item 8, Price variance for Type 2 workers: (A Q times S P), $796.25; (A Q times S P), $780; Variance, 16.25; Unfavorable."
**

### What-if Solution

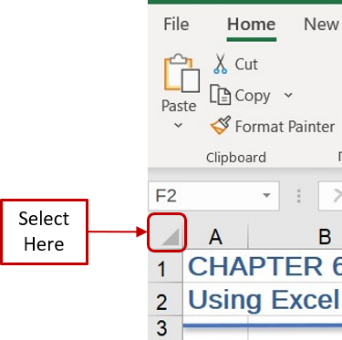
Once worksheet formulas are set up in Excel, you can perform what-if analysis to see the impact of the change under different scenarios.

#### Part 2

##### Use sheet tab CD17 Part 2 What-if.

**Step 1:** A blank worksheet named CD17 Part 2 What-if has been created for you. After completing part 1, copy the worksheet containing your solution and paste to the blank worksheet. To copy:

1. On the worksheet that contains your solution, select the small triangle that appears to the left of the row A label and just above the label for row 1. You will see the entire worksheet dimmed to denote that the entire worksheet is selected.



1. Right click your mouse to display a list of options. Select **Copy**.
2. Select the **CD17 Part 2 What-if** worksheet tab.
3. Place your cell pointer in the same location on this blank worksheet as you did to copy in step **a** above—i.e., the triangle to the left of the column A label and to the right of the label for row 1. Right click your mouse and select the first icon under the **Paste** options, labeled as **Paste (P)**,to paste the contents. The worksheet should look identical to your original worksheet.

**Step 2:** Change the number of kayaks in cell H55 to 21 in the data area.

**Step 2:** Examine the amounts of each of the variances and identify the variances that differ compared to those when 20 kayaks were produced.

**Step 3:** Compare your work to the solution that follows.

**"An illustration shows an Excel spreadsheet labeled part b. There are four columns with the variance name, the amounts used to calculate the variance, and the variance amount of whether favorable or unfavorable. The information includes: 
Item 1, Quantity variance for polyethylene powder: (A Q times S P), $1,800; (S Q times S P), $1,701; Variance, $99; Unfavorable.
Item 2, Price variance for polyethylene powder: (A Q times A P), $2,040; (A Q times S P), $1,800; Variance, $240; Unfavorable.
Item 3, Quantity variance for finishing kits: (A Q times S P), $3,400; (S Q times S P), $3,570; Variance, 170; Favorable.
Item 4, Price variance for finishing kits: (A Q times S P), $3,240; (A Q times S P), $3,400; Variance, 160; Favorable.
Item 5, Quantity variance for Type 1 workers: (A Q times S P), $570; (A Q times S P), $630; Variance, 60; Favorable.
Item 6, Price variance for Type 1 workers: (A Q times S P), $570; (A Q times S P), $570; Variance, Nil; Favorable.
Item 7, Quantity variance for Type 2 workers: (A Q times S P), $780; (A Q times S P), $756; Variance, 24; Unfavorable.
Item 8, Price variance for Type 2 workers: (A Q times S P), $796.25; (A Q times S P), $780; Variance, 16.25; Unfavorable."
**

**Decision Analysis:** Notice the conditional formatting that displays red shading beginning at the left of each cell in which the formatting was applied. As the amount of variance gets larger, the more shading that is displayed in a cell. The shading places no distinction of the nature of the variance—favorable or unfavorable—as all significant variances are invested regardless if favorable or unfavorable.All four price variances remained the same when production increased to 21 kayaks, while all four quantity variances changed. The price variances did not change because the price paid for both materials and labor stayed the same per unit of material or per labor hour. The quantity variances changed because more materials were allowed to be used and more hours were allowed to be worked with the production of one additional kayak.

You may want to try some alternative changes in number of kayaks, standards, or actual amounts to see how each change affects the variances.