

# Sun-Maid® Quality Control Engineer Training

## Raisin Estimation: Graphing in Excel

### Welcome

We will begin today's training session with a lesson on estimation. Once you have been divided up into groups, you will be given a box of raisins. **Do not open the box until instructed to do so!**



### Estimating

- With your group members, make an estimate as to how many raisins are in your box. Record this number as your first estimate of raisins.

**1<sup>st</sup> Estimate of Raisins:** \_\_\_\_\_

- Open the lid, but do not take out any raisins. Looking only at the top layer of raisins, make another estimate as to how many raisins are in your box. Record this number as your second estimate of raisins.

**2<sup>nd</sup> Estimate of Raisins:** \_\_\_\_\_

- Remove all of the raisins and count the total number of raisins that were in your box. Record this number as the actual number of raisins.

**Actual Number of Raisins:** \_\_\_\_\_

### Graphing

Now that you have made your estimates and counted the number of raisins in your box, you will create a spreadsheet and graph your results.

#### Getting Started

- Open the document titled **RaisinTraining.xls** from the server.
- Enter your names in cell **B1**.
- Record your first estimate in cell **B4**.
- Record your second estimate in cell **D4**.
- Record the actual number of raisins in cell **F4**.

#### Creating a Bar Graph

- Click **Insert**. Select **Chart...** from the pull-down menu.
- Under Chart Type, select **Bar** and choose the Clustered Bar chart subtype. Click **Next**.
- Click in the **Data range box**. Then click on the **icon** to the right of the Data range box. On the worksheet, select your data by clicking on cell **B3** and dragging the cursor to cell **F4**. Your data range should contain 2 rows (3 and 4) and 5 columns (B through F). Click again on the **icon**.
- Under the Data range box, click the button for **Series in: Rows**. Click **Next**.

- Click on the **Gridlines** tab. In the **Value (Y) axis box**, put a check next to **Minor gridlines**. Click **Next**.
- In the Chart Location box, select **As object in: Sheet 1**. Click **Finish**.

### **Moving and Resizing Chart**

- To move your chart, click on the blank area around the graph until 8 squares appear around the border. Click again on the blank area and drag it to the desired position.
- To resize your chart, click on the blank area around the graph until 8 squares appear around the border. Move the cursor over one the squares, then click and drag to make the chart smaller or larger.

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### Analyzing Your Bar Graph

Using your bar graph, answer the following questions with your group members.

1. Was your second estimate higher or lower than your first estimate?

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2. How far apart were your estimates?

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3. Was your first or second estimate closer to the actual number of raisins in your box?

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4. How far was your closer estimate from the actual number of raisins in your box?

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### Estimation Strategies

Being able to make accurate estimates is an important part of being a Quality Control Engineer at Sun-Maid®. **Take a few minutes to reflect with your group members on the strategies you used to make your first estimate** (looking at the box from the outside) **and your second estimate** (looking at the top layer of raisins in your box). Write down these strategies and be prepared to share and discuss them with the class.

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### Class Comparison

Now that each group has graphed its estimates and actual raisin count, we will create a column graph and a line graph to compare these results. Using these graphs, be prepared to discuss the following questions with the class.

### Analyzing a Column Graph

1. What is the average number of raisins in each box?
2. Which box was **closest** to the average? Which box was furthest from the average? Did any box have **exactly** the average number of raisins?
3. Which box has the **most** raisins? **How many more** than the average did it have?
4. Which box had the **fewest** raisins? **How many fewer** than the average did it have?

### Analyzing a Line Graph

1. Which group's **first estimate** was the **highest**? Which was the **lowest**?
2. Which group's **first estimate** was closest to the **actual number** of raisins in their box? How far was it?
3. Which group made the **biggest change** from their first estimate to their second estimate? Was it **higher** or **lower**? By how much?
4. How did **opening the box** affect each group's **second estimate**? Which groups made a **better estimate** after they opened the box?



Each box was the same size and same weight.  
Why did they have **different numbers** of raisins?