**2.3: The Pallas Sport Shoe Company**

**2.3.1 Problem Formulation** *Writer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Q1. Based on the information in Tables 2.3.1 and 2.3.2, predict what the optimal solution will be for this problem. Explain your reasoning.

Using the information in Table 2.3.1, write the objective function for The Pallas Sport Shoe Company.

Using the information in Table 2.3.2, write the constraint inequalities for The Pallas Sport Shoe Company. Use the following variable definitions:

|  |  |
| --- | --- |
| **Constraint** | **Inequality** |
| Stamping |  |
| Upper finishing |  |
| Insole stitching |  |
| Molding |  |
| Sole-to-upper joining |  |
| Inspecting |  |

You will set up an Excel spreadsheet to solve this problem. Turn to the template at the end of the packet.

**2.3.2 Problem Solution** *Writer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Q2. Use the “Objective Cell (Max)” section of the Answer Report you generated to answer the following:

1. Why is “$J$8” listed under “Cell?”
2. Why do you think the “Original Value” is 0?
3. What is the “Final Value” referring to?

Q3. Use the “Variable Cells” section of the Answer Report you generated to answer the following:

1. What are the “Original Value” and “Final Value” Columns referring to?
2. Interpret the information given in the “Final Value” column in terms of the problem context.
3. How do you think the production manager should handle the decimal values that appear in the “Final Value” column?

Q4. Use the “Constraints” section of the Answer Report you generated to answer the following:

1. Interpret the information given in the “Cell Value” column in terms of the problem context.
2. The first five constraints are binding and the sixth one is not. What does this mean in terms of the problem context?
3. How are the values in the “Slack” column calculated?
4. If you were only given the slack value for a constraint, how could you determine whether the constraint is binding?

Q5. Which of the six sport shoe lines should be produced, and at what daily rates, in order to maximize profit?

Q6.How does the Answer Report you generated the first time differ from the new one with the cutting constraint changed to 425?

Q7. Is the first constraint still binding? Do you think The Pallas Sport Shoe Company should add this extra five minutes of cutting time each day? Explain your reasoning.

Q8.How does the Answer Report you generated the first time differ from the new one with the cutting constraint changed to 415?

Q9. Is the first constraint still binding? Do you think The Pallas Sport Shoe Company should subtract five minutes of cutting time each day? Explain your reasoning.

Q10.How does the Answer Report you generated the first time differ from the new one with the cutting constraint changed to 550?

Q11. Is the first constraint still binding? Do you think The Pallas Sport Shoe Company should add this extra 130 minutes of cutting time each day? Explain your reasoning.

Q12.In terms of the problem, what does this change represent?

Q13. How does the Answer Report you generated the first time differ from the new one with the objective function coefficient for changed from 18 to 19?

Q14. Why may Pallas Sport Shoe Company not want this new optimal solution?

Q15. Explain, in your own words, the usefulness of Answer Reports.