ANSWER REPORT

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| **Microsoft Excel 16.0 Limits Report** | | |  |  |  |  |  |  |  |
| **Worksheet: [FINALCOPY.xlsx]QUESTION 2** | | |  |  |  |  |  |  |  |
| **Report Created: 2/7/2021 11:21:17 PM** | | |  |  |  |  |  |  |  |
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|  |  | **Objective** |  |  |  |  |  |  |  |
|  | **Cell** | **Name** | **Value** |  |  |  |  |  |  |
|  | $B$17 | COST FUNCTION REGULAR | 0 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  | **Variable** |  |  | **Lower** | **Objective** |  | **Upper** | **Objective** |
|  | **Cell** | **Name** | **Value** |  | **Limit** | **Result** |  | **Limit** | **Result** |
|  | $B$15 | OCCURRENCE REGULAR | 0 |  | 0 | 0 |  | 735 | 123480 |
|  | $C$15 | OCCURRENCE CONSECUTIVE WORKERS | 0 |  | 0 | 0 |  | 770 | 11550 |

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| **Microsoft Excel 16.0 Answer Report** | | |  |  |  |  |
| **Worksheet: [FINALCOPY.xlsx]QUESTION 3** | | |  |  |  |  |
| **Report Created: 2/7/2021 11:21:36 PM** | | |  |  |  |  |
| **Result: Solver found a solution. All Constraints and optimality conditions are satisfied.** | | | | | |  |
| **Solver Engine** | | |  |  |  |  |
|  | Engine: GRG Nonlinear | |  |  |  |  |
|  | Solution Time: 0.062 Seconds. | |  |  |  |  |
|  | Iterations: 5 Subproblems: 0 | |  |  |  |  |
| **Solver Options** | | |  |  |  |  |
|  | Max Time Unlimited, Iterations Unlimited, Precision 0.000001, Use Automatic Scaling | | | | |  |
|  | Convergence 0.0001, Population Size 100, Random Seed 0, Derivatives Forward, Require Bounds | | | | | |
|  | Max Subproblems Unlimited, Max Integer Sols Unlimited, Integer Tolerance 1%, Assume NonNegative | | | | | |
|  |  |  |  |  |  |  |
| Objective Cell (Min) | | |  |  |  |  |
|  | **Cell** | **Name** | **Original Value** | **Final Value** |  |  |
|  | $B$25 | TOTAL COST FUNCTION REGULAR CATS | 245 | -1485000 |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Variable Cells | | |  |  |  |  |
|  | **Cell** | **Name** | **Original Value** | **Final Value** | **Integer** |  |
|  | $B$21 | REGULAR CATS | 1 | 0 | Contin |  |
|  | $C$21 | OVERTIME CATS | 1 | 0 | Contin |  |
|  | $D$21 | HELD CATS | 1 | 33000 | Contin |  |
|  | $E$21 | CATS ON SHORTAGE | 1 | 33000 | Contin |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Constraints | | |  |  |  |  |
|  | **Cell** | **Name** | **Cell Value** | **Formula** | **Status** | **Slack** |
|  | $B$21 | REGULAR CATS | 0 | $B$21<=$C$17 | Not Binding | 30000 |
|  | $E$21 | CATS ON SHORTAGE | 33000 | $E$21<=$B$17 | Binding | 0 |
|  | $D$21 | HELD CATS | 33000 | $D$21<=$B$17 | Binding | 0 |
|  | $C$21 | OVERTIME CATS | 0 | $C$21<=$D$17 | Not Binding | 3200 |
|  | $D$21 | HELD CATS | 33000 | $D$21<=$B$17 | Binding | 0 |

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| **Microsoft Excel 16.0 Answer Report** | | |  |  |  |  |
| **Worksheet: [FINALCOPY.xlsx]QUESTION 4** | | | |  |  |  |
| **Report Created: 2/7/2021 11:21:55 PM** | | |  |  |  |  |
| **Result: Solver found a solution. All Constraints and optimality conditions are satisfied.** | | | | | | |
| **Solver Engine** | | |  |  |  |  |
|  | Engine: GRG Nonlinear | |  |  |  |  |
|  | Solution Time: 0.016 Seconds. | |  |  |  |  |
|  | Iterations: 0 Subproblems: 0 | |  |  |  |  |
| **Solver Options** | | |  |  |  |  |
|  | Max Time Unlimited, Iterations Unlimited, Precision 0.000001, Use Automatic Scaling | | | | | |
|  | Convergence 0.0001, Population Size 100, Random Seed 0, Derivatives Forward, Require Bounds | | | | | |
|  | Max Subproblems Unlimited, Max Integer Sols Unlimited, Integer Tolerance 1%, Assume NonNegative | | | | | |
|  |  |  |  |  |  |  |
| Objective Cell (Max) | | |  |  |  |  |
|  | **Cell** | **Name** | **Original Value** | **Final Value** |  |  |
|  | $B$15 | COST FUNCTION SET1 | 3418.5 | 3418.5 |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Variable Cells | | |  |  |  |  |
|  | **Cell** | **Name** | **Original Value** | **Final Value** | **Integer** |  |
|  | $B$3 | NUMBER TO MAKE COMPLETE | 129 | 129 | Contin |  |
|  | $C$3 | NUMBER TO MAKE WASTE | 0 | 0 | Contin |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Constraints | | |  |  |  |  |
|  | **Cell** | **Name** | **Cell Value** | **Formula** | **Status** | **Slack** |
|  | $H$9 | DOWEL NO. DECLARED | 1 | $H$9<=$F$9 | Not Binding | 128 |
|  | $H$10 | LENGTH(CM) DECLARED | 1 | $H$10<=$F$10 | Not Binding | 6026 |
|  | $B$3 | NUMBER TO MAKE COMPLETE | 129 | $B$3<=129 | Binding | 0 |
|  | $C$3 | NUMBER TO MAKE WASTE | 0 | $C$3<=129 | Not Binding | 129 |

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| **Microsoft Excel 16.0 Answer Report** | | | |  |  |  |
| **Worksheet: [FINALCOPY.xlsx]QUESTION 5** | | | |  |  |  |
| **Report Created: 2/7/2021 11:22:12 PM** | | | |  |  |  |
| **Result: Solver found a solution. All Constraints and optimality conditions are satisfied.** | | | | | | |
| **Solver Engine** | | |  |  |  |  |
|  | Engine: GRG Nonlinear | |  |  |  |  |
|  | Solution Time: 0 Seconds. | |  |  |  |  |
|  | Iterations: 0 Subproblems: 0 | |  |  |  |  |
| **Solver Options** | | |  |  |  |  |
|  | Max Time Unlimited, Iterations Unlimited, Precision 0.000001, Use Automatic Scaling | | | | | |
|  | Convergence 0.0001, Population Size 100, Random Seed 0, Derivatives Forward, Require Bounds | | | | | |
|  | Max Subproblems Unlimited, Max Integer Sols Unlimited, Integer Tolerance 1%, Assume NonNegative | | | | | |
|  |  |  |  |  |  |  |
| Objective Cell (Max) | | |  |  |  |  |
|  | **Cell** | **Name** | **Original Value** | **Final Value** |  |  |
|  | $D$12 | UNIT PROFIT Used | 218700 | 218700 |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Variable Cells | | |  |  |  |  |
|  | **Cell** | **Name** | **Original Value** | **Final Value** | **Integer** |  |
|  | $B$3 | Number to make Short | 0 | 0 | Contin |  |
|  | $C$3 | Number to make Long | 810 | 810 | Contin |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Constraints | | |  |  |  |  |
|  | **Cell** | **Name** | **Cell Value** | **Formula** | **Status** | **Slack** |
|  | $D$7 | Lathe Used | 5670 | $D$7<=$F$7 | Not Binding | 630 |
|  | $D$8 | Polisher Used | 1620 | $D$8<=$F$8 | Not Binding | 2380 |
|  | $D$9 | Grinder Used | 8100 | $D$9<=$F$9 | Binding | 0 |

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| **Microsoft Excel 16.0 Answer Report** | | | |  |  |  |
| **Worksheet: [DATAANALYSISF.xlsx]QUESTION 5** | | | |  |  |  |
| **Report Created: 2/9/2021 6:21:22 PM** | | | |  |  |  |
| **Result: Solver found a solution. All Constraints and optimality conditions are satisfied.** | | | | | | |
| **Solver Engine** | | |  |  |  |  |
|  | Engine: GRG Nonlinear | |  |  |  |  |
|  | Solution Time: 0.016 Seconds. | | |  |  |  |
|  | Iterations: 0 Subproblems: 0 | |  |  |  |  |
| **Solver Options** | | |  |  |  |  |
|  | Max Time Unlimited, Iterations Unlimited, Precision 0.000001, Use Automatic Scaling | | | | | |
|  | Convergence 0.0001, Population Size 100, Random Seed 0, Derivatives Forward, Require Bounds | | | | | |
|  | Max Subproblems Unlimited, Max Integer Sols Unlimited, Integer Tolerance 1%, Assume NonNegative | | | | | |
|  |  |  |  |  |  |  |
| Objective Cell (Max) | | |  |  |  |  |
|  | **Cell** | **Name** | **Original Value** | **Final Value** |  |  |
|  | $D$12 | UNIT PROFIT Used | 218700 | 218700 |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Variable Cells | | |  |  |  |  |
|  | **Cell** | **Name** | **Original Value** | **Final Value** | **Integer** |  |
|  | $B$3 | Number to make Short | 0 | 0 | Contin |  |
|  | $C$3 | Number to make Long | 810 | 810 | Contin |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Constraints | | |  |  |  |  |
|  | **Cell** | **Name** | **Cell Value** | **Formula** | **Status** | **Slack** |
|  | $D$7 | Lathe Used | 5670 | $D$7<=$F$7 | Not Binding | 630 |
|  | $D$8 | Polisher Used | 1620 | $D$8<=$F$8 | Not Binding | 2380 |
|  | $D$9 | Grinder Used | 8100 | $D$9<=$F$9 | Binding | 0 |