**Problem 1:**

Market Survey Inc (MSI) specializes in evaluating consumer reaction to new products. A client has recently asked MSI to conduct 1000 door-to-door personal interviews to obtain response from households with children and households without children to a new product. MSI can do both day and evening interviews with the following costs per interview:

|  |  |  |
| --- | --- | --- |
|  | Day | Evening |
| Children | $20 | $25 |
| No Children | $18 | $20 |

Interview Costs

In addition, the following quota guidelines are required by the client:

1. Interview at least 300 evening interviews
2. At least 40% of the day interviews must be from households with children.

MSI should now determine the best household, time-of-day interview plan that minimizes interview costs. Develop a spreadsheet and find the optimal number of interviews of each type.

**Problem 2:**

Beaver Creek Pottery Company is a small crafts operation run by a Native American tribal council. The company employs skilled artisans to produce clay bowls and mugs. The three primary resources used by the company are special pottery clay, dryer machine and skilled labor. The company desires to know the daily production mix for the two products to maximize profit. The resource requirements for production and profit per item are given below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Resource Requirements | | | | |
| Product | Labor  (HR./UNIT) | Dryer Machine  (HR./UNIT) | Clay  (LB/UNIT) | Profit  ($/UNIT) |
| Bowl | 1 | 0.1 | 4 | 40 |
| Mug | 2 | 0.3 | 3 | 50 |

There are 40 hours of labor, 120 pounds of clay and 12 hours of dryer-machine time available each day for production.

Use spreadsheet modeling and find the optimal number of bowls and mugs to produce in order to maximize total profit.