**PART 1:**

Consider an entrepreneur running a bagel shop that opened in May and had a successful six months. The business consists of a building which houses the kitchen and storage area, as well as several tables and a bar with a few chairs, and a covered patio with more tables. The business faces strong competition in the form of other cafés in town, most of which have larger indoor sitting areas. With the approach of winter the entrepreneur has to decide whether she wants to install heating lamps on the patio to make it comfortable in the cold months, close the patio and keep only the building area operating, or completely shut down the business from November to late March. Finally, the entrepreneur has the option of completely closing down the sandwich shop and selling the building.

Rank the following options based on the likelihood of them being chosen (from most to least likely). Prepare to defend your ordering with well-organized arguments regarding potential costs and revenues.

1. Operate fully with the addition of multiple heating lamps on the patio.
2. Partially shut down, closing the covered patio.
3. Fully shut down until late March.
4. Close down the store.

**PART 2:**

Now, consider the numbers that the entrepreneur faces. The shop requires two employees, each of whom is paid $2,500 monthly. Equipment costs $1,000 monthly to maintain if it is in use. The building for the shop costs $3,050 monthly to maintain. These costs are incurred independently of the location being open or closed. The patio which contains 7 tables (out of 10 in the shop) costs nothing to maintain in the warmer months but would cost $1,000 monthly (for heat lamps) from November to March.

The monthly demand for sandwiches is

$$Q^{D}=6,000-200P+60T$$

Where $P$ is price per sandwich and $T$ is the number of tables available in the shop. Ingredients for each sandwich cost $6 and the market price for sandwiches in town has settled at $8. The information about costs and price is summarized below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Salary (x2) | $2,500 |  | Building Maintenance | $3,050 |
| Equipment Operation | $1,000 |  | Heat Lamps | $1,000 |
| Ingredients (per sandwich) | $6 |  | Price (per sandwich) | $8 |

Based on these numbers, what is the optimal strategy (from the list above) for the entrepreneur managing the sandwich shop?