

# Shutdown Decisions

## The Role of Variable and Fixed Costs

### Instructor Solutions

First off, students would need to identify the kinds of costs they are dealing with. Fixed costs are the building maintenance of \$3,050 a month. Further costs of employee salaries adding up to \$5,000 and equipment costs of \$1,000 each month. It is worthwhile to note that these costs are not the usual per unit costs - these costs are incurred independently of how many units of the good are produced as long as that number is not zero and are, therefore, fall into a category of semi-variable costs (they can be avoided if the output is at zero). Furthermore, students can think of the cost of having 7 tables on the patio as fixed costs of \$1,000 monthly in cold months. Finally, there is a cost of \$6 per sandwich made - these are the only “classic” variable costs. The total costs (aside from sandwich materials costs) in winter would be \$10,050 if the entrepreneur chooses to keep the patio open and \$9,050 if the patio is closed.

The demand is  $Q^D = 6,000 - 200P + 60T$ . To simplify the calculations, note that the quantity demanded is 5000 when the patio is open and 4580 when the patio is closed. The profit calculations are then as follows. With the open patio  $\pi = 5000 \cdot (8 - 6) - 10,050 = -50$ . With the closed patio,  $\pi = 4580 \cdot (8 - 6) - 9,050 = 110$ . If the cafe is closed for the winter months, the entrepreneur still has to incur fixed costs of \$3,050 every month. In this case, partially shutting down the facilities is the best option, followed by full operation, then followed by the option of exiting the market all together. Shutdown for the winter months is the worst possible option.