Exercise 12-4 (20 minutes)

1. The lowest acceptable transfer price from the perspective of the selling division is given by the following formula:

$$\text{Transfer price} \geq \begin{matrix}\text{Variable cost} \\ \text{per unit}\end{matrix} + \frac{\begin{matrix}\text{Total contribution margin} \\ \text{on lost sales}\end{matrix}}{\text{Number of units transferred}}.$$

There is no idle capacity, so each of the 40,000 units transferred from Division X to Division Y reduces sales to outsiders by one unit. The contribution margin per unit on outside sales is $20 (= $90 – $70).

$$\text{Transfer price} \geq (\$70 - \$3) + \frac{\$20 \times 40{,}000}{40{,}000}$$

$$= \$67 + \$20 = \$87$$

The buying division, Division Y, can buy a similar unit from an outside supplier for $86. Therefore, Division Y would be unwilling to pay more than $86 per unit.

$$\text{Transfer price} \leq \text{Cost of buying from outside supplier} = \$86$$

The requirements of the two divisions are incompatible and no transfer will take place.

2. In this case, Division X has enough idle capacity to satisfy Division Y's demand. Therefore, there are no lost sales and the lowest acceptable price as far as the selling division is concerned is the variable cost of $60 per unit.

$$\text{Transfer price} \geq \$60 + \frac{\$0}{40{,}000} = \$60$$

The buying division, Division Y, can buy a similar unit from an outside supplier for $74. Therefore, Division Y would be unwilling to pay more than $74 per unit.

$$\text{Transfer price} \leq \text{Cost of buying from outside supplier} = \$74$$

In this case, the requirements of the two divisions are compatible and a transfer hopefully will take place at a transfer price within the range:

$$\$60 \leq \text{Transfer price} \leq \$74$$