**Task:**

at a recent concert, the 1,000-seat hall was full. Tickets bought in advance cost $30, and tickets at the door cost $40. Total ticket sales were 38,000. Write a system of two equations to represent this information

**Solution:**

Lets customers bought in advance $x$ tickets and bought at the door $y$ tickets. Amount of tickets sold is $x + y = 1000$ and the total cost of tickets sold is $30x + 40y = 38000$. So we have system of equations:

$$\begin{cases} x + y = 1000 \\ 30x + 40y = 38000 \end{cases}$$

Solve it: $\begin{cases} x + y = 1000 \\ 30x + 40y = 38000 \end{cases}$ $\begin{cases} x = 1000 - y \\ 30(1000 - y) + 40y = 38000 \end{cases}$

$\begin{cases} x = 1000 - y \\ 30000 - 30y + 40y = 38000 \end{cases}$ $\begin{cases} x = 1000 - y \\ 30000 + 10y = 38000 \end{cases}$ $\begin{cases} x = 1000 - y \\ 30000 + 10y = 38000 \end{cases}$

$\begin{cases} x = 1000 - y \\ 10y = 38000 - 30000 \end{cases}$ $\begin{cases} x = 1000 - y \\ 10y = 8000 \end{cases}$ $\begin{cases} x = 1000 - y \\ y = 800 \end{cases}$ $\begin{cases} x = 1000 - 800 \\ y = 800 \end{cases}$ $\begin{cases} x = 200 \\ y = 800 \end{cases}$

**Answer:** 200 tickets bought in advance, 800 tickets bought at the door.