Solution to Problem 2.5

Using the system state probabilities, we get

$$N = \frac{4}{16} + \frac{12}{16} + \frac{12}{16} + \frac{4}{16} = 2 \quad \text{and} \quad N_q = \frac{4}{16} + \frac{2}{16} = \frac{3}{8}$$

The effective arrival rate $l_{eff} = 2\left(\frac{15}{16}\right) = \frac{15}{8}$. Using this,

$$W = \frac{16}{15} \text{ and } W_q = \frac{1}{5}$$