

Waiting Line Systems Exercises

1. Develop an EXCEL template that can solve M/M/1 models. For inputs of lambda (λ) and mu (μ), the model should compute L, L_q , W and W_q . Use the results in figure 14.5 (p. 65 McGraw-Hill [p. 592] custom text) to verify your model.

| | A | B | C | D |
|----|--|---|----------|-------|
| 1 | M/M/1 Model | | | |
| 2 | Arrival rate, per time period (lambda) | | | 3 |
| 3 | Service rate, per time period (mu) | | | 4 |
| 4 | L_q , Mean number in line | | | 2.25 |
| 5 | L, Mean number in system | | | 3.00 |
| 6 | W_q , Mean wait in line (time periods) | | | 0.75 |
| 7 | W, Mean time in system (time pds) | | | 1.00 |
| 8 | Probability of no one in system | | | 25% |
| 9 | Rho, Utilization of facility | | | 75% |
| 10 | | | | |
| 11 | Prob W (Wait) More than t days | | | 0.368 |
| 12 | | | when t = | 1 |
| 13 | Prob W_q More than t days | | | 0.276 |
| 14 | | | when t = | 1 |

(note: see student M/M/1 template from web site.)