

Quiz 10 name:**section time:**

Number of servers and value put on customer time (Real data--Observed for an application report)

MacDoggies has customers show up around lunch time at the rate of 87 per hour.

A cashier can service customers with an average rate of 30/hr.

Mac Doggies has three cashiers working during this time.

A) $I =$

B) $m =$

C) *Average number being served =*

D) $M =$

E) According to the queuing theory we used in class (use the tables) how long would the lines be, on average?

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|---------|----------------------|
| A. 2.9 | F. 29.0 |
| B. 3.0 | G. 30 |
| C. 8.7 | H. 87 |
| D. 10 | I. 0.3448 |
| E. 27.2 | J. None of the above |

F) If customer waiting time is worth \$10 per hour and cashiers cost \$6 per hour, what would the optimal number of cashiers be to minimize total cost?

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|------|----------|
| A. 1 | F. 6 |
| B. 2 | G. 7 |
| C. 3 | H. 8 |
| D. 4 | I. 8.576 |
| E. 5 | J. -3 |

G) There are extra cash registers. If MacDoggies decides to have three cashiers instead of four, what is the imputed value (per hour) of customer waiting time? (hint: a fourth cashier costs \$6 per hour--what difference does this make in the number of people waiting? How much is that per person per hour?)

imputed value of customer time waiting, per hour:

- | | |
|---------|--------------------------|
| A. \$24 | F. \$3.24 |
| B. \$18 | G. less than 25 cents |
| C. \$7 | H. The value is negative |
| D. \$6 | I. None of the above |
| E. \$5 | |