Each problem is worth 10 points. Show all work for full credit, and use correct notation. Simplify answers completely. See other side for additional problems.

1. Given $t P_{xy} = e^{-0.04t}$, determine $e_{xy}$

2. Determine the value of $T_{xy}$ if $T_x + T_y = 40$ and $T_x T_y = 398.56$. 
3. Given mortality for (40) follows a DML(90) model, determine $\hat{e}_{40:10}$

4. Given $P_{xy} = (1.03)^{-t}$, determine $e_{x_{15}:15}$

5. Given $q_{80} = .10$ and $q_{81} = .11$ determine $e_{80:2}$