MAP 4175 / 5177	Name:	
Tests 7		Date: October 16, 2019

Show all work for full credit, and use correct notation. Simplify answers completely.

Numbers 1 and 2 use the following data: In a mortality study on 100 dragons, all age 50, you are given:

- I. Between ages 50 and 51,
  - 20 dragons die
  - 30 dragons fly away
  - 10 dragons enter the study
- II. Between ages 51 and 52,
  - 30 dragons die
  - 10 dragons fly away
  - 20 dragons enter the study
- 1. Using the Kaplan-Meier approach, determine  $r_1$ , the size of the risk set at the first time at which dragons die, and  $r_2$ , the size of the risk set at the second time at which dragons die.

2. Using the Kaplan-Meier approach, determine the approximate value of S(2), the probability that a randomly selected dragon in the study survives at least two years.

3. Determine the value of  $T_{xy}$  if  $T_x + T_y = 67.7$  and  $T_x T_y = 830.5$ 

4. Given  $_{20}q_x=_{20}q_y=0.4$  and  $_{20}q_{xy}=0.64$ , determine  $_{20}p_{\overline{xy}}$ 

5. Given  $_t p_{xy} = 0.92^t$ , determine  $e_{xy}$ .