Stat 160 Fall 2008
(Brief) Solutions to Assignment #5

**10.8 (a)** Yes, since (i) all probabilities are between 0 and 1, and (ii) their sum is 1.

**10.8 (b)** $0.20 + 0.15 = 0.35$

**10.9 (a)** The ? should be replaced by 0.11 since the sum of all probabilities must be 1.

**10.9 (b)** $P(\text{not English}) = 1 - 0.59 = 0.41$

**10.10** Model 1 is NOT legitimate since the sum of the probabilities is not 1. Model 2 is legitimate since all probabilities are between 0 and 1, and they add up to 1. Model 3 is NOT legitimate since the sum of the probabilities is not 1. Model 4 is NOT legitimate since not all probabilities are between 0 and 1 (as well, the sum of the probabilities is not 1).

**10.12 (a)** Notice that (i) all probabilities are between 0 and 1, and (ii) their sum is 1.

**10.12 (b)** $P(X < 7) = 0.43$ and represents the probability that a randomly chosen young person did not watch television every day in the past week.

**10.12 (c)** $P(X \geq 1) = 0.96$

**10.37 (a)** $\frac{4176000}{9094000} = \frac{4176}{9094} = 0.4592039$

**10.37 (b)** $1 - \frac{4176}{9094} = 0.5407961$

**10.38 (a)** This is a legitimate probability assignment since (i) all probabilities are between 0 and 1, and (ii) their sum is 1.

**10.38 (b)** $P(\text{not studying English}) = 1 - 0.59 = 0.41$

**10.38 (c)** $0.09 + 0.03 + 0.26 = 0.38$

**10.39 (a)** $1 - (0.18 + 0.17 + 0.15 + 0.12 + 0.11 + 0.11) = 0.16$

**10.39 (b)** $1 - (0.18 + 0.17) = 0.65$

**10.40 (a)** $1 - (0.14 + 0.13 + 0.20 + 0.13 + 0.16) = 0.24$

**10.40 (b)** $1 - 0.13 = 0.87$

**10.40 (c)** $0.14 + 0.20 + 0.13 = 0.47$

**10.45 (a)** We will abbreviate by first initial, (A)bby, (D)eborah, (M)ei-Ling, (S)am, (R)oberto, so that all possible simple random samples of size 2 are

$$(A, D), (A, M), (A, S), (A, R), (D, M), (D, S), (D, R), (M, S), (M, R), (S, R).$$

Note that order does NOT matter so that $(A, D)$ and $(D, A)$ are the same.

**10.45 (b)** $\frac{1}{10}$

**10.45 (c)** There are 4 pairs that contain $M$ so that the probability Mei-Ling is chosen is $\frac{4}{10}$.

**10.45 (d)** There are 3 pairs that contain neither $S$ nor $R$ so that the required probability is $\frac{3}{10}$.

**10.46** Done in class on September 30.