Economics 250 Midterm Test 1: Answer Guide

1. (a) $\overline{y} = 57$ and $\overline{h} = 62$.

(b) First we need the deviations from the mean:

$y - \overline{y}$	$h - \overline{h}$	$(y - \overline{y})^2$	$(h - \overline{h})^2$	$(y - \overline{y})(h - \overline{h})$
-25	-12	625	144	300
7	23	49	529	161
18	-11	324	121	-198

So $s_y^2 = 998/2 = 499$ and $s_y = 22.34$; $s_h^2 = 794/2 = 397$ and $s_h = 19.92$; $s_{yh} = 131.5.5$. Thus:

$$r_{yh} = \frac{131.5}{22.34 \times 19.92} = \frac{131.5}{445.01} = 0.295$$

2. (a) Composing the 2x2 table of joint probabilities and adding up the entries gives 0.05 + 0.18 = 0.23 or 23%

(b) The conditional probability is 0.05/.23 = 21.74%.

3. The mean is 4 degrees and the variance is 0.72.

4. (a) $1 - 0.6 = 0.4$ or 40%

(b) Our binomial tables have probabilities only up to 0.5, so we use the outcome of having a recession, which has probability 0.4. The probability of 5 or more avoiding a recession is the probability of 5 or less having a recession. From table 3 that is 0.834 or 83.4%. (Note: Some readers interpreted 'at least half' to mean 6 or more; there the answer would be 0.633, with a deduction.)