Math 465   Class Exercises   **27 February 2017**

1. The table below and to the right is for the joint distribution for two discrete random variables; use it to find each of the following probabilities.

(a) $P(X = 3, Y = 2)$

(b) $P(X = 3 \text{ or } Y = 2)$

(c) $P(X = 3 \mid Y = 2)$

(d) $P(X + Y = 3)$

(e) $P(X - Y = 1)$

(f) $P(X \geq 2, Y \leq 2)$

(g) $P(X \geq Y + 1)$

			x		
	$f(x,y)$	1	2	3	4
	1	.13	.10	.06	.03
y	2	.07	.12	.09	.04
	3	.06	.09	.11	.10

2. The table below and to the right is for the joint distribution for two discrete random variables; use it to **give each of the following probabilities in term of the joint probability distribution** f.

(a) $P(X = 3, Y = 2)$

(b) $P(X = 3 \text{ or } Y = 2)$

(c) $P(X = 3 \mid Y = 2)$

(d) $P(X + Y = 3)$

(e) $P(X - Y = 1)$

(f) $P(X \geq 2, Y \leq 2)$

(g) $P(X \geq Y + 1)$

		x			
$f(x, y)$		1	2	3	4
	1	.13	.10	.06	.03
y	2	.07	.12	.09	.04
	3	.06	.09	.11	.10

3. The table below and to the right is for the joint distribution for two discrete random variables; use it to **give each of the following probabilities in term of the joint probability distribution** f **and the marginal distributions** $g(x)$ **and** $h(y)$.

(a) $P(X = 3)$

(b) $P(X = 3 \ or \ Y = 2)$

(c) $P(X = 3 \mid Y = 2)$

(d) $P(X = x \mid Y = y)$

(e) $P(Y = y \mid X = x)$

				x	
	$f(x,y)$	1	2	3	4
y	1	.13	.10	.06	.03
	2	.07	.12	.09	.04
	3	.06	.09	.11	.10