(≈ Example 6.3)

Flip a fair coin 3 times. Write

X = number of tails in the **first flip**

Y = number of tails **total**

X \ Y	0	1	2	3
0	HHH	HTH, HHT	HTT	
1		THH	THT, TTH	TTT

Suppose you receive **one dollar** for each tails, and an **extra dollar** if the first flip is tails – so your winnings are $\$(X+Y)$ dollars.

(a) What is $P(X+Y \leq 1)$?

(b) What is $E(X+Y)$?

(a) $P(X+Y \leq 1) = P(X=0 \cap Y=0) + P(X=1, Y=0) + P(X=0 \cap Y=1)$

$= \frac{1}{8} + \frac{2}{8} = 3/8$

(b) $(0+0)\cdot\frac{1}{8} + (0+1)\frac{2}{8} + (0+2)\frac{1}{8} + (0+3)\cdot 0$

$+ (1+0)\cdot 0 + (1+1)\frac{1}{8} + (1+2)\cdot\frac{2}{8} + (1+3)\cdot\frac{1}{8} = \frac{13}{8}$