5.2 Review, Ch 4 Check-In 1 Review, Check-in 2 discussion
5.29, 5.39 (p 235)

5.29

	Y	0	1	4	6	Total
	$P(Y=y)$	0.36	0.28	0.16	0.20	
a)	$YP(Y=y)$	0	0.28	0.64	1.20	2.12
b)	Y^2	0	1	16	36	
	$y^2P(Y=y)$	0	0.28	2.56	7.20	10.04

Mean $\sum xP(X=x)$

$\mu = 2.12$

SD $\sigma = \sqrt{\sum(x-\mu)^2 P(X=x)}$

$= \sqrt{\sum[x^2P(X=x)] - \mu^2}$

$$\sigma = \sqrt{10.04 - 2.12^2}$$

$$= \sqrt{5.546}$$

$$= 2.355$$

5.39) Roulette: 38 numbers: 18 red, 18 black, 2 green

X = amount of \$ won on a \$1 bet

X	1	-1	
$P(X=x)$	0.474	0.526	
$XP(X=x)$	0.474	-0.526	-0.052

a) $\frac{18}{38} = 0.474$ $\frac{20}{38} = 0.526$

X → the values that X takes on will always be mutually exclusive

b) $\mu = -0.052$

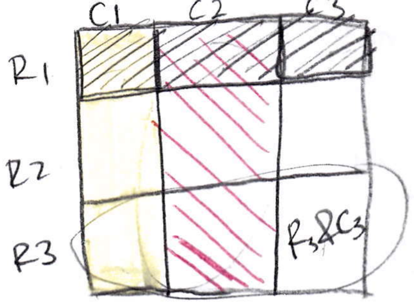
c) On average, we'll lose \$0.052 each time we bet \$1 on red.

d) If we do this 100 times

$100 \times (-0.052) = -5.20$

$1000 \times (-0.052) = -52.00$

4.121



R → breaking up into mutually exclusive categories R1, R2, R3

C → same idea

Mutually exclusive

$$P(R_3) = P(C_1 \& R_3) + P(C_2 \& R_3) + P(C_3 \& R_3) \ *$$

$$P(R_1 \& C_1) + \ldots + P(R_2 \& C_2) + \ldots + P(R_3 \& C_3) = 1$$

P(A or B) if mutually exclusive P(A) + P(B)

c) $P(R_1) = P(R_1 \& C_1) + \ldots + P(R_1 \& C_n)$

Have $P(R_1) = P((R_1 \& C_1) \text{ or } (R_1 \& C_2) \text{ or} \ldots \text{ or } (R_1 \& C_n))$

$= P(R_1 \& C_1) + P(R_1 \& C_2) + \ldots + P(R_1 \& C_n)$