Math 107 Probability Hw #2 Solutions
1.

|   | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| 3 | 1 | 2 | 3 | 3 | 3 | 3 |
| 4 | 1 | 2 | 3 | 4 | 4 | 4 |
| 5 | 1 | 2 | 3 | 4 | 5 | 5 |
| 6 | 1 | 2 | 3 | 4 | 5 | 6 |

b) 11/36, 3/36

2. a) 119/335    b) 46/93        c)183/335

3. $\frac{1}{6} * 1 + \frac{1}{6} * 2 + \frac{1}{6} * 3 + \frac{1}{6} * 4 + \frac{1}{6} * 5 + \frac{1}{6} * 6 = 3.5.$
   If you paid $5 to play you would lose -$1.5 per game, so no, this is not fair.

4. -5*1+1*12/20+5*4/20+10*3/20+20*1/20=-$0.90.  No, this carnival fair game is not a fair game.

5. 450*1+-100,000*.004=$50.  On 1000 policies they would expect to earn $50,000.

6. 35*1/38+-1*37/38 = -2/38. On 1000 games you would expect to lose -2000/38 or $52.63.

7. a) 750*1+-2000*10/1000+-10,000*2/1000=$710
   b) On average, the insurance company will make $710 on each policy the underwrite.
   c) 10,000*710= $7,100,000

8. 8*12/36+-2*24/36=48/36.  No this is not a fair game.