Name **MAT 340-Statistics for Behavioral Science**
Date **Assignment #6**

1. Use the following to answer questions (a)-(f):

The following table lists the probability distribution of a discrete random variable x:

x	0	1	2	3	4	5	6	7
$P(x)$	0.04	0.11	0.18	0.22	0.12	0.21	0.09	0.03

a. The probability of $x = 3$ is: 0.22
b. The probability that x is less than 5 is: 0.67
c. The probability that x is greater than 3 is: 0.45
d. The probability that x is less than or equal to 5 is: 0.88
e. The probability that x is greater than or equal to 4 is: 0.45
f. The probability that x assumes a value from 2 to 5 is: 0.34

2. Use the following to answer questions (a)-(b):

The following table lists the probability distribution of a discrete random variable x:

x	0	1	2	3	4	5	6	7
$P(x)$	0.04	0.11	0.18	0.22	0.12	0.21	0.09	0.03

a. The mean of the random variable x is:

3.5

b. The standard deviation of the random variable x is:

2.29

3. Eight percent of all college graduates hired by companies stay with the same company for more than five years. The probability, rounded to four decimal places, that in a random sample of 11 such college graduates hired recently by companies, exactly 3 will stay with the same company for more than five years is:

0.0434

4. Thirty-two percent of adults did not visit their physicians' offices last year. The probability, rounded to four decimal places, that in a random sample of 8 adults, exactly 3 will say they did not visit their physicians' offices last year is:

0.2668

5. All 10 of the orangutans at a certain zoo contract a very serious disease which claims 84% of its victims (if an orangutan contracts the disease, the probability that it will die is 0.84). What is the probability, rounded to four decimal places, that exactly 1 of the orangutans at this zoo will survive?

0.3331

1

a.) 0.22

b.) $0.04 + 0.11 + 0.18 + 0.22 + 0.12 = 0.67$

c.) $0.12 + 0.21 + 0.09 + 0.03 = 0.45$

d.) $1 - (0.09 + 0.03) = 0.88$

e.) $0.12 + 0.21 + 0.09 + 0.03 = 0.45$

f.) $0.22 + 0.12 = 0.34$

2

a.) $\frac{0+1+2+3+4+5+6+7}{8} = 3.5$

$$\sigma = \sqrt{\frac{\Sigma (xi - M)^2}{N}}$$

$$\sqrt{\frac{(0-3.5)+(1-3.5)^2+(2-3.5)^2+(3-35)^2}{8}}$$

$$\sqrt{\frac{42}{8}} = \sqrt{\frac{5.25}{8}} = \sqrt{5.25} = 2.29$$

3. $p = 0.08$

$P(X=3) = {}^{11}C_3 (0.08)^3 (1-0.08)^8 = 165 \cdot (0.08)^3 (0.92)^8 =$

0.0434

4. $p = 0.32 \quad n = 8$

$(P=3) = {}^{8}C_5 (0.32)(1+0.32)^{8-5}$

$\frac{8!}{3!5!}$

$(0.32)^3 (1-0.32)^5 = 0.26608$

5. $p = 0.84 \quad n = 10$

$P(X=1) \quad {}^{10}C_1 (0.84)^1 (1-0.84)^{10-1} = \frac{10!}{1!9!}$

$(0.84)(0.16)^9 =$

0.3331