

NAME _____

MAT 130 Homework #2 (Chapters 4-5)

DUE: October 4th

#1.) Complete the PDF.

x	$P(X = x)$	$x \cdot P(X = x)$
0	0.3	
1	0.2	
2		
3	0.4	

Find the expected value.

#2.) Suppose that you are offered the following "deal." You roll a die. If you roll a 6, you win \$12. If you roll a 4 or 5, you win \$7. If you roll a 1, 2, or 3, you pay \$9.

a) In words, define the Random Variable X . Then list the values X may take on

b) Construct a PDF. (Enter your answers for $P(X = x)$ as fractions. Round your answers for $x \cdot P(X = x)$ to two decimal places.)

	X	$P(X = x)$	$x \cdot P(X = x)$
6			
4 or 5			
1, 2, or 3			

c) Over the long run of playing this game, what are your expected average winnings per game? (Round your answer to two decimal places.) Based on this value, should you take the deal?

#3.) A school newspaper reporter decides to randomly survey 14 students to see if they will attend Tet festivities this year. Based on past years, she knows that 25% of students attend Tet festivities. We are interested in the number of students who will attend the festivities.

- a) How many of the 14 students do we expect to attend the festivities? (Round your answer to the nearest whole number.)
- b) Find the probability that at most 6 students will attend. (Round your answer to four decimal places.)
- c) Find the probability that at least 4 students will attend (Round your answer to four decimal places.)

#4.) You are playing on the game show “Deal or No Deal” and there are only 5 cases left (including yours). The possible dollar amounts left for those cases are \$0.01, \$75, \$5000, \$400000 and \$500000. The banker offers you a deal of \$165000 so you can either accept the deal and take the cash, or keep playing.

a) Find the expected value for your case at this point in the game.

b) Explain what your calculations indicate about your long-term average profits and losses on this game (given your current case situation). Should you accept the bankers deal?

#5.) The speed of cars passing through the intersection of Morris Road and DeKalb Pike varies from 11 to 34 mph and is **uniformly distributed**. None of the cars travel over 34 mph through the intersection or travel below 11 mph.

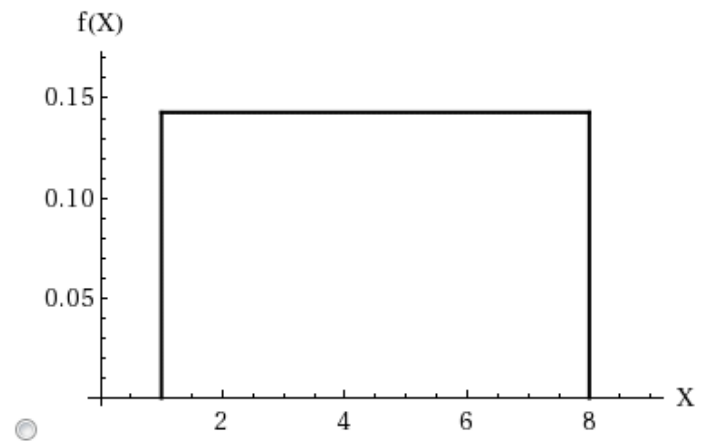
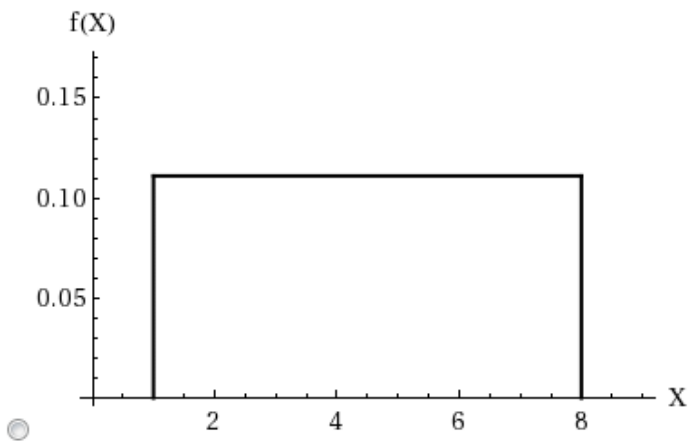
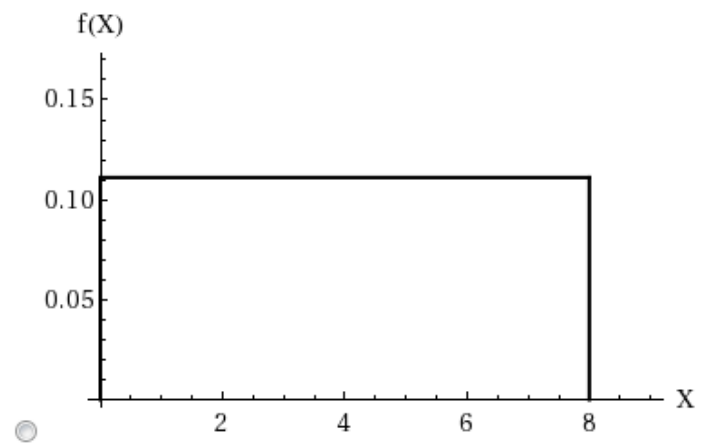
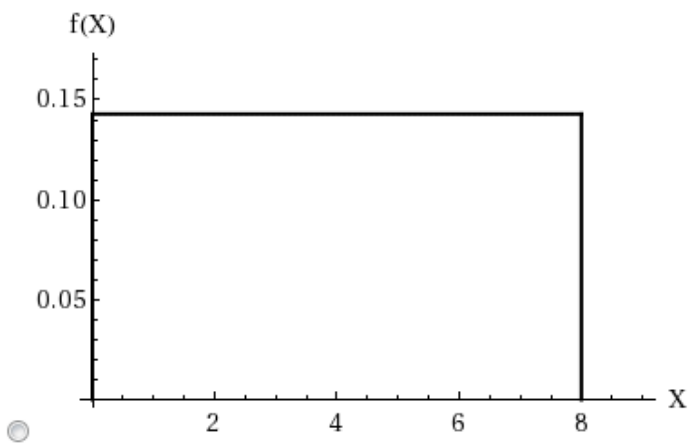
Enter answers as a decimal out to 2 places.

$\mu =$

$\sigma =$

#6.) A random number generator picks a number from **1 to 8** in a uniform manner.

a) Graph the probability distribution.



b) Enter an exact number as an integer, fraction, or decimal.

Find $P(3.25 < X < 7.75) =$