1. A search engine site claims that, on average, one out of five visitors clicks on an ad.

(a) If 7 users visit the site, what is the probability that at least one clicks on an ad?

(b) If 7 users visit the site, what is the probability that less than three of them click on an ad?

(c) If 700 users visit the site, would the probability that less than 300 click on an ad be higher or lower than the answer found in part (b)? Write a few sentences explaining your answer- computations are not required (or desired)

(d) Suppose 90 users visit the site during a particular minute, use the normal approximation to estimate the probability that more than 25 of them click on an ad.

(e) If 900 users visited the site, would the probability that more than 250 of them click on an ad be higher or lower than the answer found in part (d)? Write a few sentences explaining your answer- computations are not required (or desired)

2. A phone company has determined that the length of its customers' calls is normally distributed with a mean of 2.67 minutes and a standard deviation of 1.76 minutes.

Find: (a) the probability that a customer's call will last for more than 2 minutes.

(b) the probability that a customer's call will last between 2.1 and 2.99 minutes.

(c) the 21st percentile for the length of telephone calls (a time such that 21% of calls last less than that time).

(d) the probability that a random sample of 30 calls has a mean of more than 3.02 minutes.

3. The distribution of the number of credit cards held by students at Owealot college is shown below. Find:

X	P(x)
0	0.12
1	0.31
2	0.29
3	?
4	0.09
5	0.1
More than 5	0

(a) the probability that a student has more than 2 credit cards.

(b) the expected number of credit cards in total for a group of 200 students.

(c) the percent of all students at the college who have a number of credit cards that is more than one standard deviation above the expected value (for one student).

4. Suppose that, overall, 5% of all tax returns are audited by the IRS.

(a) If an accountant has 7 clients for whom she prepared tax returns, what is the probability that less than 3 will be audited?

(b) If the accountant has 25 clients, what is the probability that at least one is audited?

(c) Suppose the accountant prepares 350 returns, use the normal approximation to estimate the probability that more than 20 of the returns are audited.

5. Suppose the weight of eggs produced by Henly Farms has a normal distribution with a mean of 59.25 grams and a standard deviation of 3.39 g. Find the probability that a carton of a dozen (12) eggs will weigh less than 725 g.

6. In the game of roulette, a metal ball is dropped into a spinning wheel so that it lands in one of 38 compartments numbered 00,0,1,2,3, . . .36. 0 and 00 are colored green. 18 of the remaining compartments are colored red, and the other 18 compartments are colored black.

(a) If you bet $1 on black and the ball lands on a black compartment, your $1 is returned and you receive an additional $1. If the ball doesn't land on black, you lose your $1. What is the expected profit of a $1 bet on black?

(b) If you bet $1 on a specific number and the ball lands on that compartment, your $1 is returned and you receive an additional $35. If the ball doesn't land on that number, you lose your $1. What is the expected profit of a $1 bet on the number 00?

(c) Given the payoffs listed in (a) and (b) above, find the expected profit if you bet $10 on red and $2 on the number 27 (a red compartment) on the same spin of the ball.