Instructions –You can use your calculator to help you along in the process. Also, you can use the formulas that we have used during lectures and homework. Box your answer, if there is a single numerical answer to the problem.

1. The height of Asian adult females is normally distributed with an average of 62 inches and a population standard deviation of 3.5 inches**. Draw a normal curve representing each problem. Clearly label µ, probabilities, and the position of "cut-lines".**

    a. Find the probability that an individual Asian female is between 60 and 65 inches tall? Draw the picture.

    b. Would you expect to meet many Asian adult female over 72 inches? Solve for the probability and show me the picture.

    c. What's the probability that an Asian adult female is less than 60 inches, or greater than 70 inches?   Draw the picture.

    d. Calculate the lowest height of an Asian adult female in the top 15%? Draw the picture.

    e. Calculate the lowest and highest number of heights for someone in the middle 95%? Draw the picture.

2. I understand this is touchy, but let's look at COVID-19. The governor of CA made a statement that 56% of Californians will contract the virus in an 8 week period. Let's say we randomly select 5 Californians.

    a. **Use the graphing calculator to Solve** for the probability distribution of the successes and the probabilities. Round to four decimal places.

X						
P(x)						

    b. What is the probability that exactly 3 people contract the virus?

    c. What is the probability that at least 3 contract the virus?

    d. What is the probability that at most 2 get the virus?

    e. What is the expected number (mean) of people out of 5 to get the virus?

    f. What are the two numbers that are one standard deviation from the mean?

3. A survey of Amazon.com shoppers have the following probability distribution for the number of purchases made per website visit:

# of purchases per website visit on Amazon.com
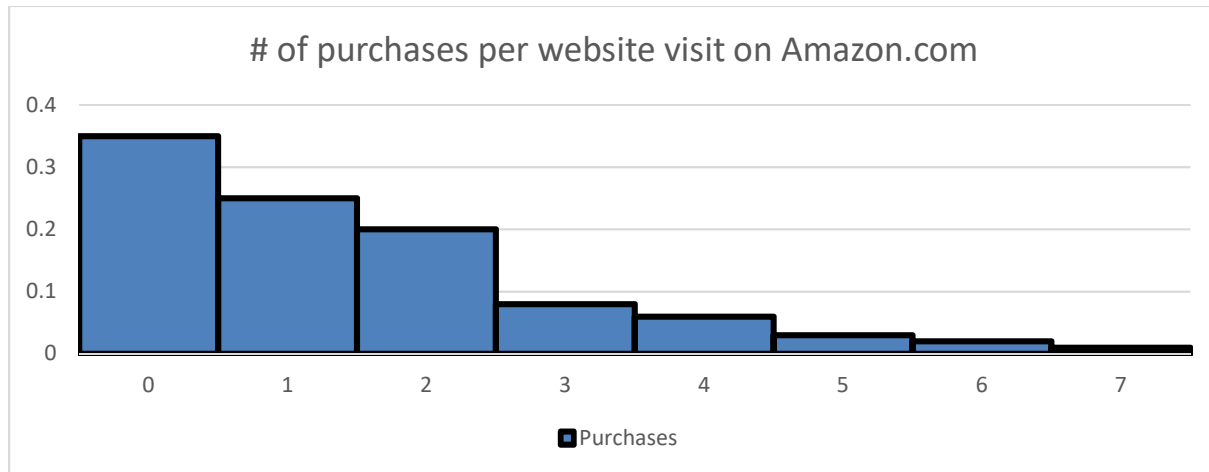
Purchases	0	1	2	3	4	5	6	7
Probability	.35	.25	.20	.08	.06	.03	.02	.01

$\mu=1.4272$, $\sigma=1.5223$

a. If you were to take a random sample of 1,000 data points from that population, and draw a histogram, what would it look like? Draw what you think sample distribution looks like.

b. You randomly select 30 data points and find the average. Then you repeat that process 1,000 times. Draw a histogram of the 1,000 points, for the sampling distribution.

c. What is the probability that an individual shopper purchases 3 or fewer items?

d. What is the probability that the average of 40 people purchase 3 or fewer items?

e. How many items would an individual purchase, if they are in the 97th percentile?

f. What is the average number of purchases items of 40 people, which represent the 60th percentile?

g. What is the normal range (1 standard deviation away) for an individual's purchased items?

h. What is the normal range of purchases for the average of 40 people?