I. Review finding areas under Uniform and Normal curve.

**Problem 1**

Assume that the time you wait in line at the DMV (without an appointment) is between 42 and 58 minutes and uniformly distributed. That is, the probability of the wait time running a length between 42 min and 58 min. is equally likely.

1. Shade the shape and find \( P(x > 44) \)

2. Shade the shape and find \( P(49 < x < 55) \)

**Problem 2**

Sketch and find the following normal probabilities.

1. \( P(z < 1.25) \)

2. \( P(z \geq -1.12) \)

3. \( P(-1.25 < z < 0.5) \)

Ans: \( \frac{1}{16} \)  
Ans: \( \)  
Ans: \( \)
Problem 3

Sketch a normal curve for each distribution. Label the $x$-axis values at one, two, and three standard deviations from the mean.

a. mean = 95; standard deviation = 12
b. mean = 100; standard deviation = 15

d. mean = 60; standard deviation = 6
c. mean = 23.8; standard deviation = 5.2

II. Find the probability of the following normal distribution.

In the following normal distribution problems, you'll need to identify the MEAN, the STD DEVIATION, and the X-VALUE. Next, Calculate the Z_SCORE to answer the question

Problem 4 Answer the following questions in a complete sentence.

The length of time that a new TV functions before breaking down is normally distributed with mean 40 months and standard deviation 8 months. Find the percent of TVs that:

a) Will work properly before the 36$^{th}$ month.
b) Will work properly after the 36$^{th}$ month.

Ans
Ans

c) Out of 500 TVs, how many will work properly between 12 to 36 months?

Ans:
**Problem 5** Answer the following questions in a complete sentence.
The number of bottles of shampoo sold monthly by a discount store is normally distributed with a mean of 212 bottles and standard deviation of 40 bottles. Find the probability that:

a) The next month’s sale will be more than 200 bottles.  
b) The next month’s sale will be less than 250 bottles.  
c) The next month’s sales will be between 200 and 250 bottles.

Ans:  
Ans:  
Ans:

[ use a separate sheet of paper for problem 6,7,8 ]

**Problem 6** Answer the following questions in a complete sentence.
The number of miles on a car when a certain part fails is normally distributed, with a mean of 60,000 miles and standard deviation of 5000.

a) Sketch the normal curve for the distribution. Label the x-axis values at one, two, and three standard deviation from the mean.  
b) What is the probability that the part will NOT fail between 55,000 and 65,000?

**Problem 7**
Use the data for average daily water usage of a family during the past 10 months. Find the mean and the standard deviation of the data. How many items in the data set fall within one standard deviation of the mean? Within two standard deviations?

| 124 gal | 113 gal | 152 gal | 545 gal | 150 gal | 490 gal | 442 gal | 207 gal | 124 gal | 147 gal |

**Problem 8** Answer the following questions in a complete sentence.
An internet retailer stocks a popular apple iPad at the warehouse. Every week, the retailer makes a decision about how many IPad to stock. Suppose that weekly demand for the Ipad is approximately normally distributed with a mean of 2,500 units and a standard deviation of 300 units. How many Ipads should be stocked so that 95% of the demands are met.