1) Copy and complete the chart below, assuming a normal distribution for each situation.

Mean, μ	Standard Deviation, σ	Probability
12	3	$P(X < 9) =$
30	5	$P(X < 25) =$
5	2.2	$P(X > 6) =$
245	18	$P(233 < X < 242) =$

2) There have been some outstanding hitters in baseball. In 1911, Ty Cobb's batting average was 0.420. In 1941, Ted Williams batted 0.406. George Brett's 0.390 average in 1980 was one of the highest since Ted Williams. Batting averages have historically been approximately normally distributed with means and standard deviations as shown below. Compute z-scores for each of these three hitters. Can you rank the three hitters? Explain.

Decade	Mean, μ	Standard Deviation, σ
1910's	0.266	0.0371
1940's	0.267	0.0326
1970s-1980s	0.261	0.0317

3) The amount of annual rainfall in a certain region is known to be a normally distributed random variable with a mean of 50 inches and a standard deviation of 4 inches. If the rainfall exceeds 57 inches during the year, it leads to floods. Find the probability that during a randomly selected year there will be floods.

4) The weight of food packed in certain containers is a normally distributed random variable with a mean weight of 500 pounds and a standard deviation of 5 pounds. If a container is picked at random, find the probability that it contains:

    a) more than 510 pounds
    b) less than 498 pounds
    c) between 491 and 498 pounds

5) The diameter of a lead shot has a normal distribution with a mean diameter equal to 2 inches and a standard deviation equal to 0.05 inches. Find what diameter a circular hole should be so that only 3 percent of the lead shots can pass through it.

6) The nicotine content in a brand of king-size cigarettes has a normal distribution with a mean content of 1.8 mg and a standard deviation of 0.2 mg. Find the probability that the nicotine content of a randomly selected cigarette of this brand will be:

    a) less than 1.45 mg
    b) between 1.45 and 1.65 mg
    c) more than 2.15 mg.
    d) What value is needed so that 80 percent of the cigarettes will exceed it in their nicotine content?

7) The demand for meat at a grocery store during any week is approximately normally distributed with a mean demand of 5000 pounds and a standard deviation of 300 pounds.

    a) If the store has 5300 pounds of meat, what is the probability that they will run out during a random week?
    b) How much meat should the store have in stock per week so as to only run short 10 percent of the time?