Name_____

Period_____Date_____

**The weekly amount of money spent on cleaning and repairs at a large restaurant was observed to be normally distributed with a mean of $615 and standard deviation of $42.**

1.   If $646 is budgeted for next week, what is the probability the actual costs will exceed the budgeted amount?

2.   What weekly budget amount for cleaning and repairs would be at the top 5%?

**Suppose that the mean score of the SAT Math is normally distributed with a mean of 500 with a standard deviation of 100.**

3.   If a university only accepts students in the top 20% of scores, what is the minimum SAT math score a student needs to be accepted?

4.   An engineering school will only accept students in the top 10%.  What is the minimum SAT math score a student needs to be accepted?

5.   What is the probability that a randomly selected high school student has a SAT math score of more than 690?

6.   What is the probability that a randomly selected high school student has a SAT math score of less than 460?

7.   Find the **percentage** of students that have an SAT math score between 460 and 690.

**A company that makes car batteries advertises that the mean life of the battery is 45 months with a standard deviation of 8 months. (Assume the distribution is normally distributed.**

8.   If the company guarantees a full refund if the battery fails within the first 36 months, what **percentage** of its batteries will the company need to replace?

9.   What is the probability that a randomly selected battery will have a life span of more than 60 months?

10.  What is the probability that a randomly selected battery will have a life span of less than  24 months?

11.  Find the number of months separating the bottom 5% from the top 5% of the battery life.

**The resting heart rate for an adult horse should average about $\mu$ = 46 beats per minute with a standard deviation of 12 beats per minute. Assume that this distribution is approximately normally distributed.**

12.    What is the probability that the heart rate is less than 25 beats per minute?

13.    What is the probability that the heart rate is more than 60 beats per minute?

14.    A horse that has a heart rate in the upper 10th percentile may have a secondary infection or illness that needs treatment. What is the heart rate that corresponds to the upper 10% cutoff?

**Replacement times for CD players are normally distributed with a mean of 7.1 years and a standard deviation of 1.4 years.**

15.    Find the probability that a randomly selected CD player will have a replacement time of less than 8 years.

16.    If you want to provide a warranty so that only 2% of the CD players will be replaced, before the warranty expires, what is the time length of the warranty?

**Assume that heights of women are normally distributed with a mean of 63.6 in and a standard deviation of 2.5 in.**

17.    The U.S. Army requires women's heights to be between 58 in and 80 in. Find the **percentage** of women meeting that height requirement.

18.    The Beanstalk Club, a social organization for tall people, has a requirement that women must be at least 70 in. tall. What **percentage** of women meet that requirement?

19.    What woman's height is at the 99th percentile?

20.    What woman's height is at the 1st percentile?

Answers

1    .2296
2    $684.09
3    584
4    628
5    .0287
6.   .3446
7.   .6267
8.   12.9%
9.   .0301
10.  .0043
11.  31.84 and 58.16 months
12.  .0401
13.  .1210
14.  61.36 beats per minute
15.  .7389
16.  4.23 years
17.  98.7%
18.  .5%
19.  69.4 in
20.  57.8 in