Math 1040 Worksheet 7 – Chapter 7 **Name**_____
Trygstad

Solutions are included at the end of the worksheet. This worksheet is optional and will not be turned in, but may be helpful in reviewing material and studying for exams.

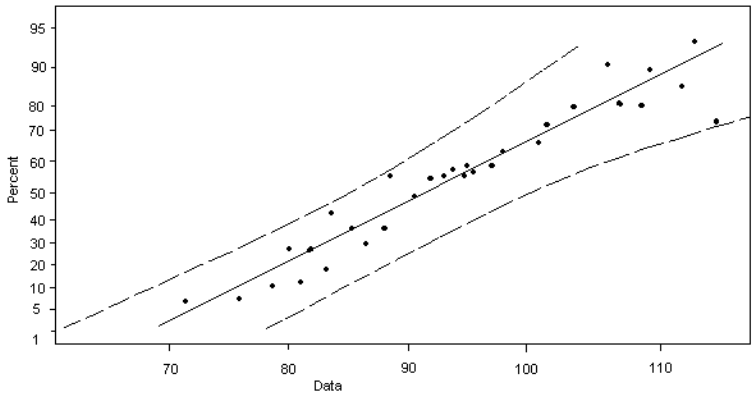
1) Approximately ____% of the area under the normal curve is between $\mu - 3\sigma$ and $\mu + 3\sigma$.
A) 99.7 B) 50 C) 68 D) 95

2) A physical fitness association is including the mile run in its secondary–school fitness test. The time for this event for boys in secondary school is known to possess a normal distribution with a mean of 460 seconds and a standard deviation of 60 seconds. Find the probability that a randomly selected boy in secondary school can run the mile in less than 322 seconds.

3) The amount of corn chips dispensed into a 12–ounce bag by the dispensing machine has been identified as possessing a normal distribution with a mean of 12.5 ounces and a standard deviation of 0.2 ounce. What chip amount represents the 67th percentile for the bag weight distribution?

4) The analytic scores on a standardized aptitude test are known to be normally distributed with mean $\mu = 610$ and standard deviation $\sigma = 115$.
(a) Draw a normal curve with the parameters labeled.
(b) Shade the region that represents the proportion of test takers who scored less than 725.
(c) Suppose the area under the normal curve to the left of $X = 725$ is 0.8413. Provide two interpretations of this result.

5) Determine whether the following normal probability plot indicates that the sample data could have come from a population that is normally distributed.



6) For a standard normal curve, find the z–score that separates the bottom 90% from the top 10%.

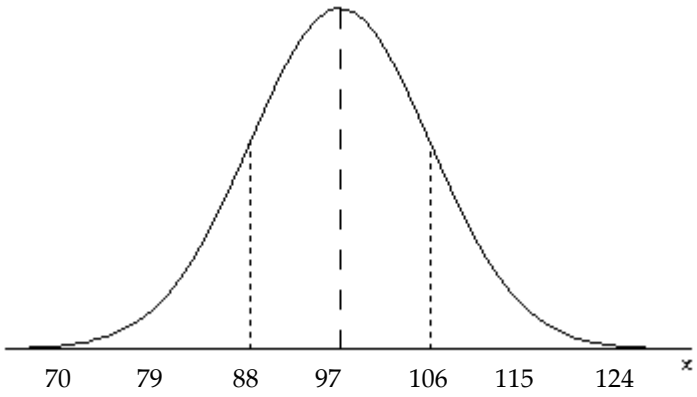
7) Find the sum of the areas under the standard normal curve to the left of $z = -1.25$ and to the right of $z = 1.25$.

8) Compare a graph of the normal density function with mean of 0 and standard deviation of 1 with a graph of a normal density function with mean equal to 0 and standard deviation of 0.5. The graphs would
   A) Have the same height but one would be shifter 4 units to the left.
   B) Have no horizontal displacement but one would be steeper that the other.
   C) Have no horizontal displacement but one would be flatter than the other.
   D) Have the same height but one would be shifted 4 units to the right.

9) High temperatures in a certain city for the month of August follow a **uniform** distribution over the interval 65°F to 87°F. What is the probability that a randomly selected August day has a high temperature that exceeded 70°F?

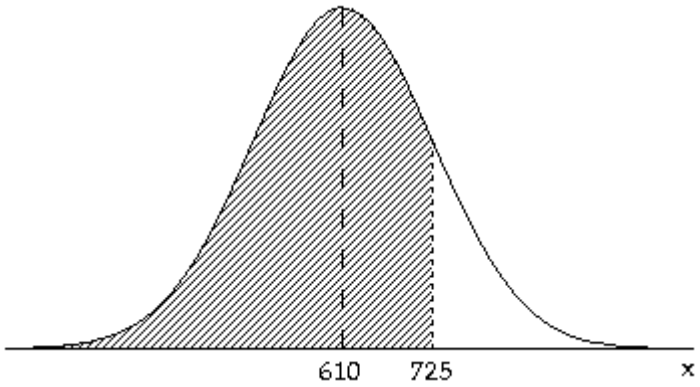
10) Scores on a standardized test are normally distributed with a mean of 100 and a standard deviation of 12. An individual's test score is found to be 125. Find the z–score corresponding to this value.

11) The graph of a normal curve is given. Use the graph to identify the value of μ and σ.



12) A random variable X is normally distributed with $\mu = 60$ and $\sigma = 4$. Convert the value of $X = 45$ to a z–score.

1) A
2) 0.0107
3) 12.59 oz
4) (a), (b)



(c) The two interpretations are: (1) the proportion of test takers who scored less than 725 is 0.8413 and (2) the probability that a randomly selected test taker has a score less than 725 is 0.8413.

5) normally distributed
6) 1.28
7) 0.2112
8) B
9) 0.7727
10) 2.08
11) $\mu = 97, \sigma = 9$
12) –3.75