**Unit 14- Stat WS 2**

**Suppose the heights of men are normally distributed. The heights of a sample of 30 men are shown below, in inches.**

**65, 83, 69, 67, 69, 67, 67, 72, 85, 68, 73, 65, 67, 65, 72, 71, 67, 73, 68, 72, 61, 75, 66, 78, 65, 71, 68, 76, 67, 68**

1. **Compute the mean and standard deviation of the sample.**
2. **Draw a normal curve that represents the distribution of adult male heights, based on the sample.**

**Suppose that the heights of adult women are normally distributed with** $μ=65 inches$ **and**

$σ=2.5 inches$**. Use the properties of the normal curve and the Empirical Rule to find the probability that a randomly chosen woman is within the given range.**

1. **Taller than 65 inches**
2. **Shorter than 67.5 inches**
3. **Between 62.5 inches and 67.5 inches**
4. **Between 60 inches and 70 inches**
5. **Between 57.5 inches and 67.5 inches**
6. **A student took two national standardized tests while applying for college. On the first test,** $μ=475$ **and** $σ=75$**, and on the second test,** $μ=32$ **and** $σ=6$**. If he scored 630 on the first test and 45 on the second, on which test did he do better?**
7. **Four students took a national standardized test for which the mean was 500 and the standard deviation was 100. Their scores were 560, 450, 640, and 530. Determine the z-value for each student.**
8. **If a student’s z-value was 1.75 on the test described in problem #9, what was the student’s score?**
9. **A sample of restaurants in a city showed that the average coast of a glass of iced tea is $1.25 with a standard deviation of $0.07. Three of the restaurants charge $0.95, $1.00, and $1.35. Determine the z-value for each restaurant.**
10. **If a new restaurant charges a price for iced tea that has a z-value pf -1.25**

**(see #11), then what is the iced tea’s actual cost?**

**Daytime high temperatures in New York in February are normally distributed with an average of 30.2° and a standard deviation of 8.5°.**

1. **Estimate the probability that the temperature on a given day in February is 39° or higher.**
2. **Estimate the probability that the temperature on a given day in February is 22° or lower.**
3. **Estimate the probability that the temperature on a given day in February is between 13° and 39°.**
4. **Estimate the probability that the temperature on a given day in February is between 25° and 30°.**
5. **Estimate the probability that the temperature on a given day in February is between 27° and 38°.**

**Answer Key:**

1. **70; 5.228**
2. **Normal curve sketch**
3. **0.5**
4. **0.84**
5. **0.68**
6. **0.95**
7. **0.8385**
8. **Second test**
9. **560 has 0.6 z-value, 450 has -0.5 z-value, 640 has 1.4 z-value, 530 has 0.3 z-value**
10. **675**
11. **0.95 has -4.29 z-value, 1.00 has -3.57 z-value, 1.35 has 1.43 z-value**
12. **$1.16**
13. **0.16**
14. **0.16**
15. **0.815**
16. **0.23**
17. **0.48**