Algebra 3-4 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per:\_\_\_\_\_

Statistics Day 7 Review Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**\*\*\* Complete all problems on a separate sheet of paper\*\*\***

1. Suppose Tom takes two tests in statistics. All of the scores on the tests are below:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test A** | 41 | 47 | 62 | 48 | 51 | 56 | 47 | 43 | 51 | 54 |
| **Test B** | 33 | 28 | 39 | 22 | 37 | 33 | 33 | 30 | 33 | 33 |

1. Find the mean and standard deviation of each test. Then sketch a normal distribution curve for each.
2. On the first test, Tom gets a 54 and on the second he gets a 37. On which test did Tom score better? Why?
3. Three students take equivalent stress tests. Which is the highest relative score (meaning: which has the largest z score value)?
	1. A score of 144 on a test with a mean of 128 and a standard deviation of 34.
	2. A score of 90 on a test with a mean of 86 and a standard deviation of 18.
	3. A score of 18 on a test with a mean of 15 and a standard deviation of 5.
4. White blood cell (WBC) count per cubic millimeter of whole blood has approximately the Normal distribution with mean 7500 and standard deviation 1750. The lowest 2% of all WBC counts are defined to be probable risks (z score of -3.4003). How low must one's WBC count be to fall in the at-risk group?

**Use the empirical rule to solve #4 and 5:**

1. The shelf life of a particular dairy product is normally distributed with a mean of 12 days and a standard deviation of 3 days.
	1. Sketch a normal curve.
	2. About what percent of the products last between 12 and 15 days?
	3. About what percent of the products last 6 days or less?
	4. About what percent of the products last 15 or more days?
2. The Floppy Disk Company makes 3.5 inch floppy disks for disk drives that are 3.7 inches wide. The size of a manufactures disk is normally distributed with a standard deviation of 0.1 inches. The company manufactures 1000 disks every hour.
	1. Sketch a normal curve.
	2. In one hour, how many disks would you expect to be between 3.4 inches and 3.7 inches?
	3. About how many disks will be unable to fit in the disk drive (3.7 inch won’t fit)?
3. Suppose that the IQ scores of students at a certain college follow a normal distribution with mean 115 and standard deviation 12.
	1. Sketch a normal curve.
	2. Use the normal model to determine the proportion of students with an IQ score below 100.
	3. Find the proportion of these undergraduates having IQs greater than 130.
	4. Find the proportion of these undergraduates having IQs between 110 and 130.
	5. If someone had an IQ of 95, what would the percentile would they be in?
	6. Determine how high one’s IQ must be in order to be in the top 1% of all IQs at this college.
4. A patient recently diagnosed with Alzheimer’s disease takes a cognitive abilities test and scores a 45. The mean on this test is 52 and the standard deviation is 5. What is the patient’s percentile rank?
5. Consider each of the following survey questions. For each one, explain any bias you can find. If you think the question is unbiased (or fair), explain why.
	1. Should we reduce violent crime by getting guns off the streets, or should we just lock people up longer?
	2. Because of the Columbine tragedy and other shootings, many people = feel that violent crime is worse today than it was 10 years ago. Do you = agree?
	3. Smoking is ok as long as you don't smoke around people that mind Right?
	4. Do you agree that drinking is ok as long as you are of age and that you don't get drunk?
	5. Do you agree with the National Students Rights Poll which says that Calvin has big enough bathrooms?
	6. What type of vehicle do you own?
		1. Van
		2. SUV
		3. Sedan
	7. How would you rate Frank’s Auto Repair Shop?
		1. Pretty good
		2. Great
		3. Fantastic
6. Trevor is outside a local car dealership taking a survey on the most popular car. He is asking everyone who enters what make of car is their favorite. Why is this biased?
7. Emil wants to find out the most popular football team at a game between the home team and the visiting team. Which of the following would give him the most accurate results?
	1. Surveying the cheerleaders from the home team
	2. Surveying people wearing hats for the visiting team
	3. Surveying a group of people standing in line for tickets
	4. Surveying people who do not live in the home team’s city
8. Refer to the box & whisker graphs below that show the average monthly high temperatures for Milwaukee, Wisconsin & Honolulu, Hawaii. Write a short paragraph comparing the temperatures in both cities.

**Average Monthly High Temperatures**

 Milwaukee

 26 35 57 73 80

 80 81 84 87 88 Honolulu

1. There are three different basketball teams and each has played five games. You have each team's score from each of its games.



* 1. Suppose you want to join one of the three basketball teams. You want to join the one that is doing the best so far. If you rank each team by their mean scores, which team would you join?
	2. Instead of using mean scores, you use the median score of each team to make your decision. Which team do you join?
	3. Pretend you are the coach of the Lions and you were being interviewed about your team for the local newspaper. Would it be better for you to report your mean score or your median score?