

ALGEBRA 2 REVIEW WORKSHEET: CALCULATING STANDARD DEVIATION, MEAN, MEDIAN, VARIANCE, BOX AND WHISKER PLOT, USE MEAN AND STANDARD DEVIATION OF A DATA SET TO FIT IT TO A NORMAL DISTRIBUTION AND TO ESTIMATE POPULATION PERCENTAGES. USE FIVE SUMMARY POINTS TO DRAW BOX AND WHISKER GRAPH.

NAME: _____ PER: _____ DATE: _____

A normal distribution has a mean of 50 and a standard deviation of 6. Find the probability that a value selected at random is in the given interval. (Questions 1 – 4)

1. From 36 to 55

2. Above 40

3. between 32 and 62.

4. Below 60.

5. On a math test the mean score is 85 with a standard deviation of 3. A passing score is 72 or greater. Choose a passing score that you would consider to be an outlier. Justify your choice.

6. A college only accepts students who score in the top 16% on the entrance exam. The exam scores are normally distributed, with a mean of 26 and a standard deviation of 3.5. To the nearest whole number, what is the least score you could earn and still be accepted to the college?

Sketch a normal curve to represent each of the following normal distributions.

7. The average weight of a tomato in a tomato garden is 10 oz. The standard deviation is 1.6 oz. Sketch a normal curve showing the tomato weights at one, two, and three standard deviations from the mean.
The average score on a math test is 76. The standard deviation is 6.2. Sketch a normal curve showing the test scores at one, two, and three standard deviations from the mean.

Draw a normal curve to solve the following problems.

8. A local bakery makes chocolate chip cookies. The number of chocolate chips in the cookies is approximately normally distributed, with mean 11.4 and standard deviation 1.3. What percent of the cookies have between 8.8 and 14 chocolate chips?

9. The bakery described in **Exercise 8** sold 200 chocolate chip cookies. How many of the cookies had less than 8.8 chocolate chips?

10 Reasoning One of the cookies sold by the bakery had 18 chocolate chips. Would this be considered an outlier? Explain why or why not.

Make a box-and-whisker plot for each set of values.

11. 26, 32, 27, 36, 28, 30, 31, 28

12. The list gives the average temperatures in January for several cities in the mid-South. Make a box-and-whisker plot of the data.

49.1, 50.8, 42.9, 44.0, 44.2, 51.4, 45.7, 39.9, 50.8,
6.7, 52.4, 50.4

Find the following percentiles of the data set displayed below.

27, 28, 29, 29, 30, 31, 32, 33, 34, 35, 36, 36, 37, 38, 39, 40, 40, 41, 42, 43

13. 45th percentile

14. 70th percentile

15. 25th percentile

16. 95th percentile

17. 80th percentile

18. 15th percentile

19. The table shows the number of shaved-ice servings sold during the first week of July.

Date	7/1	7/2	7/3	7/4	7/5	7/6	7/7
Number Sold	65	70	67	98	72	67	64

a. Make a box-and-whisker plot of the data for the number of shaved-ice servings sold.

b. Find any outliers. Remove them from the data set and make a revised box- and-whisker plot.

c. **Writing** How does removing the outliers affect the box-and-whisker plot? How does it affect the measures of central tendency?

Identify the sampling method. Then identify any bias in each method.

20. A teacher committee wants to find how much time students spend reading each week. They ask students as they enter the library.

21. The county road department wants to know which roads cause the most concern among the residents of the county. They ask the local restaurants to hand out survey forms for customers to return by mail.

Identify any bias in each survey question.

22. Do you believe that kids should go to school year-round because they are responsible for the rise in petty crime during the summer months?

23. Isn't our local government not aware of our current traffic problems?

24. Shouldn't our school do its part to end global warming by starting a recycling program?

25. A television show's website asks every 20th person who visits the site to name their favorite TV star.

a. What sampling method is the survey using?

b. Describe any bias in the sampling method.

When you take a random sample of size n from a large population, the sample has a *margin of error* of approximately $\pm \frac{1}{\sqrt{n}}$. Approximate the margin of error for each sample (Research this topic).

26. In a traffic survey, 42% of the 1287 drivers passing through the checkpoint were traveling more than 100 mi from home.

$$\text{Margin of Error} : \pm \frac{1}{\sqrt{1287}} = .027 \approx .03 \approx 3\%$$

27. In one lake, 30% of the last 323 fish caught have a certain chemical present in their body.