

# Statistics and Probability Practice Test

Name \_\_\_\_\_ Period \_\_\_\_\_

For problems 1 – 5, refer to Carolina High School, which consists of 455 freshmen, 524 sophomores, 518 juniors, and 503 seniors. For the following problems, find each theoretical probability.

1. P(junior or senior) 1. \_\_\_\_\_

2. P(not freshman) 2. \_\_\_\_\_

3. P(sophomore) 3. \_\_\_\_\_

4. P(freshman, then sophomore)  
without replacement 4. \_\_\_\_\_

5. P(junior, then senior)  
with replacement 5. \_\_\_\_\_

For problems 6 – 7, you roll one dice at a casino. Find each theoretical probability of each situation.

6. P(odd number or multiple of 4) 6. \_\_\_\_\_

7. P(even number, 2, or 7) 7. \_\_\_\_\_

8. A crate has 9 bottles of pop. Three are Pepsi, two are Coca-Cola, and four are Mountain Dew. What is the probability of picking two Pepsi bottles from the crate, assuming you do not return the first bottle? 8. \_\_\_\_\_

9. Which of the following pairs are **mutually exclusive**? Select A or B. Explain. 9. \_\_\_\_\_  
A. Being a mother and a grandfather  
B. Being a teacher and a parent

10. Which of the following pairs are **independent events**? Select A or B. Explain. 10. \_\_\_\_\_  
A. Picking two separate marbles out of a bag  
B. Picking a marble out of a bag, replacing it, and then picking another marble out of the bag

11. 55% of the American population votes, 20% of the American population smokes, and 15% of the American population votes and smokes. What percentage of the American population votes or smokes (P(votes or smokes))? 11. \_\_\_\_\_

For problems 12 – 13, determine how many passwords are possible. ***Show work or receive no credit.***

12. Three letters and five digits (0 – 9). Letters and digits can be repeated.

12. \_\_\_\_\_

13. Four letters and six digits (0 – 9). The first letter must be M, and the second letter must be G. Letters and digits cannot be repeated.

13. \_\_\_\_\_

For questions 14 – 15, ***show work or receive no credit.***

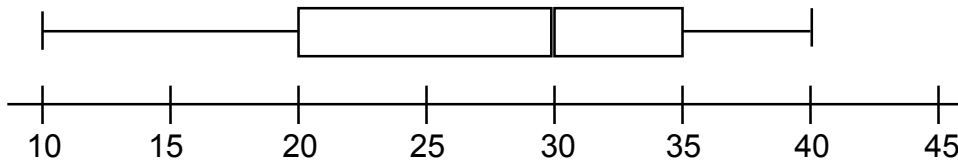
14. Mr. Schumann wants to choose groups of 2, 4, or 5 students out of a class of 20 students. How many groups of students can he pick?

14. \_\_\_\_\_

15. Mr. Geist is a compulsive gambler that bets on horses. He goes to a horse race where 8 horses are racing. How many different ways can the 8 horses win 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place?

15. \_\_\_\_\_

For questions 16 – 20, refer to the following box-and-whisker plot.



16. Find the interquartile range of the data. 16. \_\_\_\_\_

17. What does the interquartile range tell you about the data? 17. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

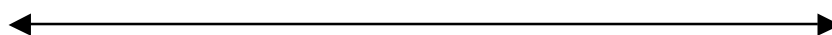
18. Find the range of the data. 18. \_\_\_\_\_

19. Find the median of the data. 19. \_\_\_\_\_

20. What percent of data is between 20 and 30? 20. \_\_\_\_\_

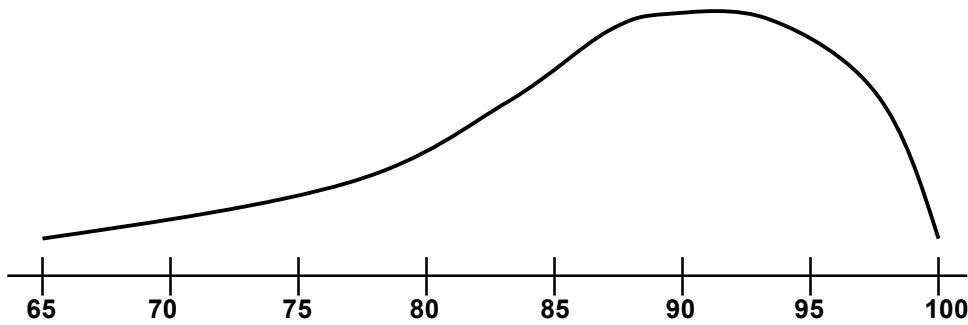
21. A classroom set of grades has a mean of 76% and a standard deviation of 7%.

A. Draw the normal curve for this distribution. Label the x-axis with the values that are one, two, and three standard deviations from the mean.



B. What percentage of the data has the value of 83% or above? B. \_\_\_\_\_

22. Below is a distribution of test scores from Mr. Geist's differentiated chemistry class. Are the scores positively skewed, negatively skewed, or normally distributed? Explain. Also explain how the mean is affected by this distribution.



Explanation: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

23. The salaries of teachers at a small rural school are shown below.

A. What is the mean, median, and mode of the salaries?

Salaries of teachers at the school:

\$28,000	\$34,000	\$36,000
\$28,000	\$34,000	\$38,000
\$28,000	\$34,000	\$70,000
\$34,000		

A. Mean: \_\_\_\_\_

Median: \_\_\_\_\_

Standard deviation: \_\_\_\_\_

- B. The local school board and teacher's union are preparing to meet about pay raises. If you were a teacher making the lowest salary, which of the following would you **NOT** use to justify a pay raise: the mean or the median? Why?

Explanation: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

- C. How would it impact the mean and the standard deviation if you removed the \$70,000 salary? Explain.

Mean: \_\_\_\_\_  
 \_\_\_\_\_

Standard deviation: \_\_\_\_\_  
 \_\_\_\_\_