

**AP STATISTICS
UNIT 4 TEST REVIEW**

CHAPTER 13 TEST REVIEW

At JDHS, 31% of the student body are freshman, 28% are sophomores, 20% are juniors and the rest are seniors.

1. What percent of students are upperclassmen?
2. What is the probability that the next two students that walk in the main door are both freshman?
3. What percent of the time will a sophomore and senior walk in the door at the same time?
4. If there is a group of 5 students standing together, what is the probability that none of them will be freshman?
5. In a group of 5 students, what is the probability that at least one of them will be a senior?
6. In a group of 6 students, what is the probability that at least 1 of them will be freshman?

CHAPTER 14 TEST REVIEW

In the Junior class, 42% of students are in Honors Math, 48% in Honors English, and 18% in both Honors classes.

7. What percent of students take an Honors Math or English?
8. What percent of students are not taking Honors classes?
9. What percent of students take Honors Math, given they take Honors English?

In the Senior class, 62% of students are taking math and 48% of students are taking science. 85% of the students are taking math or science.

10. What percent of seniors are taking a Math and Science class?
11. What percent of students are not taking math or science?
12. What percent of students are only taking a math class?
13. What percent of students are taking a science class, given they are taking a math class?

The table below represents favorite color of elementary school students based on gender.

	Boy	Girl
Red	18	11
Green	22	7
Blue	30	15
Pink	4	32

14. What percent of Elementary students' favorite color is blue?
15. What percent of Elementary students are girls?
16. What percent of Elementary students were girls whose favorite color was blue?
17. What percent of boys' favorite color was green?
18. What percent of students' that favorite color was red are boys?
19. Are Gender and Favorite color independent?

At JDHS, 39% of students come to school in a car, 49% ride a school or city bus, and remaining students walk to school. For those that come in a car, they have a 22% chance of being late, while bus riders are late 8% of the time and walkers are late 34% of the time.

20. What percent of students took the bus to school and are on time?
21. What percent of students come to school late?
22. What percent of students that are late to school, ride the bus?
23. What percent of students walk to school, given that the student is on time?
24. What percent of the time will two late students both be bus riders?
25. What percent of the time that at least 1 of the 5 students late will be a car rider?

CHAPTER 15 TEST REVIEW

At a fundraiser, 8000 tickets are sold at \$10 each for four prizes: a new car worth \$30,000, a European vacation worth \$9000, a home theater system worth \$4000, and a cash prize of \$1000.

26. What is the expected value profit for each ticket sold for the fundraiser? **Show your work.**
27. What is the standard deviation for each ticket sold? What does the standard deviation tell you?

A company believes it has a 40% chance of being successful on bidding a contract that yields a profit of \$30,000. Assume it costs \$5,000 in consultant fees to prepare the bid.

28. What is the expected gain or loss for the company if it decides to bid on the contract? **Show your work.**
29. What is the standard deviation?

Juanita Johnson has just invested \$175,000 to open a new drive-up food store. If successful, she can expect an annual income of \$75,000. If unsuccessful, she will lose \$95,000. (The remaining \$80,000 can be recovered by selling the equipment.) If the probability of success is 0.85 for Juanita.

30. Ignoring the start-up cost, what is the expected profit or loss for Juanita after 1 year? **Show your work.**
31. What is the standard deviation?
32. If Juanita is successful and decides to open a second store, what will her expected value and standard deviation be for the 2 stores (ignoring the start-up cost again)?

Use the mean and standard deviations of the clothing below to find the new mean and standard deviations after buying different items.

	Jacket	Backpack	Boots
Mean	\$72.85	\$43.99	\$64.38
Standard Deviation	\$8.45	\$4.32	\$3.37

33. You decide to buy a new jacket and backpack.
34. Your mom buys 2 pairs of boots
35. Which item cost more? Jacket or Boots? By how much and what is the standard deviation?
36. There is a 25% off sale on backpacks. How much will you save?
37. There is a 50% off sale on Jackets. How much do you pay?
38. What percent of the time, will a backpack cost more than \$52.00?
39. What percent of the time will your total cost be less than \$150 if you buy all 3 items?

CHAPTER 16 TEST REVIEW

For the 2016 election, it has been reported that 59% of Americans voted for President.

40. What is the probability that the first person you talk to that had voted was the 5th person?
41. What is the probability that out of 10 people, only 3 voted.
42. How many people should you talk to before you are expected to find someone who did NOT vote in the election?
43. What is the probability that at least 7 out of 9 people actually voted in the election?
44. What is the probability that less than 4 out of 9 voted in the election?
45. There is a company that has 85 employees. Assuming that this company is representative of the population, determine the mean and standard deviation for the number of the company's employees that voted.
46. How many employees from the company in #45 would be an unusually high amount that voted in the election?

47. How many employees from the company in #45 would represent an unusually low voter turnout for the election?

Anthony is trying to learn how to a double under jump. He is able to do it correctly 1 out of every 12 tries. At practice on Thursday, he was told to try 50 times.

48. Verify that this scenario satisfies the conditions of a Bernoulli Trial.
49. What is the expected amount of times he will have to try a double under before he is able to do it correctly?
50. What is the mean and standard deviation for the number of successful double under jumps out of the 50 tries?
51. What is the probability that he is able to double jump 11 out of 50 tries?
52. What is the probability that he is able to double jump no more than 8 times?
53. If he is only able to do 4 double under jumps, is this evidence that he is getting worse?
54. What percent of the time will he be able to double jump more than 13 times?

In 2016, 70% of High School graduates enrolled in college the following year. In 2016, 154 students graduated from JDHS.

55. Show why using a Normal model is appropriate.
56. What is the mean and standard deviation for the model?
57. What is the probability that 120 students enrolled in college that fall?
58. What is the probability that less than 100 students enrolled in college?