MTH 150 Test 2
Fall 2017

Elementary Statistics

Name _____

Justify all answers by showing your work or by providing a coherent explanation. Please circle your answers

The researchers found that the amount of time children spent in upright position followed a normal distribution with mean of 5.4 hours and standard deviation of 1.3 hours. Find:

1. The probability that a child selected at random spend greater than 5.4 hours in upright position:

a. 0.99 **b.** 0.75 **c**. 5.1 **d. 0.50**

2. The probability that a child selected at random spend less than 3 hours in upright position:

a. 0.0322 **b.** 0.0691 **c**. 0.7286 **d.** 40

3. The probability that a child selected at random will spend between 3 and 5 hours is:

a. 0.8085 **b.** 0.6915 **c. 0.3461** **d.** 0.9332

4. The probability that a child selected at random will spend less than *k* hours is 0.9671. Then the value of *k* is:

a. 7.795 **b.** 4.5 **c**. 0.3461 **d.** 0.9332

5. In a population of 10,000 children the number of children expected to be upright for more than 8.5 hours is:

a. 85 **b.** 225 **c**. 112 **d.** 43

Suppose that the hemoglobin levels of healthy adult males are approximately normally distributed with a mean of 16 and a variance of 0.81.

6. Find that probability that a randomly chosen healthy adult male has a hemoglobin level less than 14.

0.013

7. What is the percent of healthy adult males who have hemoglobin level less than 14?

1.3%

8. In a population of 10,000 healthy adult males, how many would you expect to have hemoglobin level less than 14?

130

9. A doctor knows from experience that 15% of the patients who are given a certain medicine will have undesirable side effects. What is the probability that the fifth patient will be the first to show these side effect?

$(0.85)^4 (0.15) = 0.078$

10. Suppose an antibiotic has been shown to be 70% effective against a common bacteria., and suppose that the antibiotic is given to 25 patients with the bacteria. What is the probability that the antibiotic is effective in more than 15 patients? (Note: This is a binomial probability distribution.)

0.810

11. There are three nursing positions to be filled at a certain hospital: a day nursing supervisor, a night nursing supervisor, and a nursing coordinator position. There are 15 applicants qualified for all three positions. Determine the number of different ways the positions can be filled by these applicants. The solution is $\binom{15}{3}$.

455

12. Systolic blood pressures are assumed to be normal with $\mu = 108$ and $\sigma = 14$. Find the blood pressure reading that marks the 95^{th} percentile in the distribution of systolic blood pressures.

131.032