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| |  | | --- | | **1.** A set of 50 data values has a mean of 26 and a variance of 9.   I.  Find the standard score (*z*) for a data value = 25.  II. Find the probability of a data value > 25. |      |  | | --- | | **2.** Find the area under the standard normal curve:   I.  to the right of z = 0.54  II. to the left of z = 0.54 |      |  | | --- | | **3.** Assume that the population of heights of male college students is approximately normally distributed with mean ** of 69 inches and standard deviation ** of 3.75 inches. Show all work.    (A)  Find the proportion of male college students whose height is greater than 70 inches.  (B)  Find the proportion of male college students whose height is no more than 70 inches. |      |  | | --- | | **4.** The diameters of grapefruits in a certain orchard are normally distributed with a mean of 7.25 inches and a standard deviation of 0.75 inches.  Show all work.   (A)  What percentage of the grapefruits in this orchard have diameters less than 6.5 inches?   (B)  What percentage of the grapefruits in this orchard are larger than 7.1 inches? |      |  | | --- | | **5.** Find the normal approximation for the binomial probability that x = 4, where n = 13 and p = 0.3. Compare this probability to the value of P(x=5) found in Table 2 of Appendix B in your textbook. (Points : 6) |      |  | | --- | | **6.** A set of data is normally distributed with a mean of 500 and standard deviation of 100.   What would be the standard score for a score of 300? What percentage of scores is between 500 and 300? What would be the percentile rank for a score of 300?    **PART 2** | |
| |  | | --- | | **1.** If the random variable z is the standard normal score and P(z > a) > 0.5, then a > 0.  Why or why not? |      |  | | --- | | **2.** Given a binomial distribution with n = 39 and p = 0.87, would the normal distribution provide a reasonable approximation?  Why or why not? |      |  | | --- | | **3.** Find the area under the standard normal curve for the following: (A) P(z > 1.98) (B) P(-1.93 < z < 0) (C) P(-0.67 < z < 0.77) |      |  | | --- | | **4.** Find the value of z such that approximately 16.28% of the distribution lies between it and the mean. |      |  | | --- | | **5.** Assume that the average annual salary for a worker in the United States is $28,500 and that the annual salaries for Americans are normally distributed with a standard deviation equal to $6,250. Find the following:   (A)  What percentage of Americans earn below $18,000?   (B)  What percentage of Americans earn above $41,000?   Please show all of your work. |      |  | | --- | | **6.** X has a normal distribution with a mean of 80.0 and a standard deviation of 3.5. Find the following probabilities: (A) P(x < 75.0) (B) P(75.0 < x < 82.0)  (C) P(x > 88.0) |      |  | | --- | | **7.** Answer the following:  (A) Find the binomial probability P(x = 5), where n = 15 and p = 0.50.  (B) Set up, without solving, the binomial probability P(x is at most 5) using probability notation.  (C) How would you find the normal approximation to the binomial probability P(x = 5) in part A?  Please show how you would calculate µ and σ in the formula for the normal approximation to the binomial, and show the final  formula you would use without going through all the calculations. | |