

~~Partial Credit will be given when~~
1. Find the area for each z score:

(10 points)

(a) $P(z < 2.77) =$

(b) $P(z > -1.11) =$

(c) $P(-2.25 < z < 1.94)$

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2. The length of time employees have worked at a corporation is normally distributed, with a mean of 11.2 years and a standard deviation of 2.1 years. In a company cutback, the lowest 10% in seniority are laid off. What is the maximum length of time an employee could have worked and still be laid off? (10 points)

3. A survey indicates that for each trip to the supermarket, a shopper spends an average of 30 minutes with a standard deviation of 10 minutes. The length of time spent in the store is normally distributed and is represented by the variable x . A shopper enters the store. Find the probability that:

(a) The shopper spends between 24 and 44 minutes in the store. (5 points)

(b) The shopper spends more than 29 minutes in the store. (3 points)

(c) Suppose 150 shoppers enter the store, how many shoppers would you expect to be in the store more than 29 minutes? (2 points)

4. A bank auditor claims that credit card balances are normally distributed, with a mean of \$2870, and a standard deviation of \$900.

- (a) What is the probability that a randomly selected credit card holder has a mean credit card balance that is less than \$2500? (7 points)

- (b) If 100 credit card holders are randomly selected, How many of them would you expect to have a mean credit card balance is less than \$2500? (**Round to the nearest whole number**) (3 points)

5. The GPAs of all students enrolled at a large university have an approximately normal distribution with a mean of $\mu = 3.02$ and a standard deviation $\sigma = 0.29$. Find the probability that the mean GPA of a random of 20 students selected from this university is 3.10 or higher. (10points)

6. A. C. Neilsen reported that the children between the ages of 2 and 5 watch an average of 25 hours of television per week. Assume the variable is normally distributed and the standard deviation is 3 hours. If 20 children between the ages of 2 and 5 are randomly selected:

(a) What is the mean of the sample means? ($\mu_{\bar{x}}$) (5 points)

(b) What is the standard deviation of the sample means? (5 points)

7. Ten percent of Americans are allergic to ragweed. If a random sample of 200 people is selected, find the probability that 10 or more will be allergic to ragweed.
(Use the normal approximation) (10 points)

8. Find the z-score for which 90% of the area lies between $-z$ and z . (5 points)

9. Find the z-score that has 20.75% of its area to the right (5 points)

10. If a baseball player's batting average is 32%, find the probability that the player will get at most 26 hits in 100 times at bat. (Use the normal approximation) (10 points)

11. The mean wage per hour for all 500 employees who work at a large company is \$45.00 and the standard deviation is \$5.00. Let $\bar{x}$ be the mean wage per hour for a random sample of certain employees selected by this company. Find the mean and standard of $\bar{x}$ for a sample size of 100. (10 points)