
PROBLEMS

Assume a normal distribution for problems 1 through 13.

1. The employees at a certain fast-food restaurant have a mean hourly income of \$10.00 with a standard deviation of \$2.10. Find the actual hourly wages for the employees who have the following z scores:
 - a. 2.50
 - b. 1.56
 - c. $-.97$
 - d. -1.39
2. The mean verbal SAT score at a certain college is 450, with a standard deviation of 87. Find the SAT scores for the students who scored at the following percentiles.
 - a. 10th percentile
 - b. 95th percentile
 - c. 5th percentile
 - d. 45th percentile
3. The grades of the students in a large statistics class are normally distributed around a mean of 70, with an SD of 5. If the instructor decides to give an A grade only to the top 15% of the class (85th percentile), what grade must a student earn to be awarded an A?
4. Suppose the instructor in the class in problem 3 (where the mean was 70 and the SD was 5) decided to give an A grade only to the top 10% (90th percentile) of the class. What is the lowest grade a student could get and still receive an A?
5. The mean height among adult males is 68 inches. If one individual is 72 inches tall and has a z score of 1.11,
 - a. find the SD .
 - b. find the range.
 - c. find the highest score.
 - d. find the lowest score.
6. If a weight distribution for female college students has a mean of 120 pounds, and one individual who weighed 113 pounds was found to be at the 27th percentile,
 - a. find the SD .
 - b. find the range.
 - c. find the highest score.
 - d. find the lowest score.
7. A student has a grade-point average of 3.75, which is at the 90th percentile. The standard deviation is .65. Give the values for
 - a. the mean.
 - b. the median.
 - c. the mode.

8. A certain brand of battery is tested for longevity. One battery is found to last 30 hours and is at the 40th percentile. The standard deviation is 13.52 hours. What is the mean life of the tested batteries?
9. Find the equivalent *T* scores for the following *z* scores.
 - a. .10
 - b. -1.42
 - c. 2.03
 - d. -.50
10. On a normal distribution of English achievement test scores, with a mean of 510 and a standard deviation of 72, find the *T* score for each of the following raw scores.
 - a. 550
 - b. 400
 - c. 610
 - d. 500
11. On a normal distribution of SAT scores, with a mean of 490 and a standard deviation of 83, find the SAT score for each of the following *T* scores.
 - a. $T = 55$
 - b. $T = 32$
 - c. $T = 65$
 - d. $T = 47$
12. On any normal distribution, the middlemost 68.26% of the cases fall between
 - a. which two *z* scores?
 - b. which two *T* scores?
13. A score that falls at the first quartile (25th percentile) must receive
 - a. what *z* score?
 - b. what *T* score?

True or False. Indicate either T or F for problems 14 through 20.

14. If the *z* score is zero, the *T* score must be 50.
15. The standard deviation of the *T* score distribution must equal the standard deviation of the raw score distribution.
16. A *T* score of less than 50 must yield a negative *z* score.
17. All *T* scores greater than 50 must yield percentiles that are greater than 50.
18. A normal distribution with a mean of 50 and a standard deviation of 10 must have a range that approximates 60.
19. If the mean of a set of normally distributed values is 11.83, the median is also equal to 11.83.
20. If the mean of a normal distribution is equal to 100, with a range of 50, the highest possible score must be approximately 125.

For problems 21 through 25, use Table 5.2.

21. Find the T score for someone whose stanine was 4.18.
22. Find the Wechsler IQ for someone whose NCE was 42.5.
23. Find the z score for someone whose stanine was 6.04.
24. Find the SAT score for someone whose T score was 49.
25. Find the stanine for someone whose NCE was 35.80.

Using material from Chapters 2 through 5, indicate what is WRONG with at least one value from the following:

26. A certain distribution of scores has a high value of 25, a low value of 5, a range of 20, a mean, median, and mode of 27, and an SD of 4.
27. A set of sample scores shows a range of 50, a mean of 25, a median of 25, a mode of 25, and an SD of 27.
28. A normal distribution produces a range of 600, a mean of 500, a median of 450, a mode of 400, and an SD of 100.
29. A set of sample scores is skewed to the right. The range is 600, the mean is 500, the median is 600, the mode is 700, and the SD is 50.
30. A set of scores is normally distributed with a mean, median, and mode all equal to 100. The range is 90 and the SD is 20.