

1. For each value, find the percentile: a. $z = 2.24$ b. $z = -1.65$ c. $z = 1.47$
2. For each value, find the percent of cases falling above the z -score: a. $z = 0.24$ b. $z = -1.11$ c. $z = 1.22$
3. For each value, find the percent of cases falling between the two z -scores:
a. $z = -0.38$ and $z = 1.63$ b. $z = 0.88$ and $z = 1.55$ c. $z = -1.93$ and $z = 1.09$
4. A patient recently diagnosed with Alzheimer's disease takes a cognitive abilities test. The patient scores a 45 on the test ($\mu = 52$, $\sigma = 5$). What is the patient's percentile rank?
5. Another patient with Parkinson's disease takes the same cognitive abilities test (from #4) and scores a 54. What percent of individuals would receive a higher score?
6. A fifth grader takes a standardized test ($\mu = 125$, $\sigma = 15$) and scores 148. What is his percentile rank?
7. Michelle and Chris both took a spatial abilities test ($\mu = 80$, $\sigma = 8$). Michelle scores a 76 and Chris scored a 94. What percent of individuals would score between Michelle and Chris?
8. Each year, a national achievement test is administered to third graders. The test has a mean score of 100 and a standard deviation of 15. If Jane's z -score is 1.2, what was her score on the test?
9. A forester measured 27 trees in a large forest that is up for sale. He found the mean diameter of 10.4 inches and a standard deviation of 4.7 inches. Suppose that these trees provide an accurate description of the whole forest and that a normal model applies.
 - a. Between what sizes would you expect the middle 95% of all trees to be?
 - b. About what percent of the trees should be less than an inch in diameter?
 - c. About what percent of the trees should be between 5.7 and 10.4 inches in diameter?
 - d. About what percent of the trees should be over 15 inches in diameter?
10. Scores on the SAT form a normal distribution with $\mu = 500$ and $\sigma = 100$.
 - a. What is the minimum score necessary to be in the top 15% of the SAT distribution?
 - b. Find the range of scores that defines the middle 80% of the distribution of SAT scores.
11. In their last basketball game, Holly scores 25 points and Juanita scores 16 points. The mean number of points Holly scores is 20 with a standard deviation of 2. The mean number of points Juanita scores is 12 with a standard deviation of 1.25. Whose score is better relative to her average number of points per game?