

LEARNING CHECK

1. Explain how you calculated Gracie's percentile rank.

A: We took her burnout score of 34 and subtracted the mean (36.5). This gave us -2.5 . We divided -2.5 by the standard deviation of the burnout measure (8.75), which gave us the z score of -0.29 . From Appendix A, we see that with this z score, 38.59% of the scores in the distribution fall below this point. Therefore, she scored at the 38.59th percentile.

2. Explain how you calculated Sigmund's percentile rank.

A: We took his burnout score of 43 and subtracted the mean (36.5). This gave us 6.5. We divided 6.5 by the standard deviation of the burnout measure (8.75), which gave us the z score of $+0.74$. From Appendix A, we see that with this z score, 22.96% of the scores in the distribution fall above this point. But remember that a percentile rank is the percentage of scores at or below a certain score. Therefore, we must subtract 22.96% from 100%, which leaves us with 77.04%. Therefore, Sigmund scored at the 77.04th percentile.

3. Use Appendix A to answer the following questions:

- a) What percentage of scores would fall between a z score of -1.35 and a z score of -0.21 ?

A: We first need to find the percentage of the distribution that falls below a z score of -0.21 . We see that the percentage is 41.68%. However, the question asks for the percentage of scores between a z score of -1.35 and -0.21 . Thus, we need to know the percentage of the distribution below the z score of -1.35 and subtract this number from 41.68%. We see it is 8.85%. So, we have $41.68\% - 8.85\% = 32.83\%$. Therefore, 32.83% of the scores fall between these two z scores.

- b) What percentage of scores would fall below a z score of $+0.89$?

A: 18.67% of the scores fall above this z score. To find the percentage of scores below this z score, take 100% and subtract 18.67% from it. That means 81.33% of the scores fall below a z score of $+0.89$.

- c) If we know that 90.99% of the scores fall above a specific point in a distribution, what is the z score of that specific point?

A: We must look for a z score below which $100\% - 90.99\% = 9.01\%$ of the scores fall. That z score is -1.34 .

4. Look back at Table 5.2, and using Appendix A, answer the following questions:

- a) What percentage of students at Ori's high school had a higher GPA than he had?

A: 25.14% of students had a higher GPA than Ori.

- b) What percentage of students scored lower on the SAT than Katie did?

A: 69.15% of students scored lower on the SAT than Katie.

- c) What percentage of students scored between 19 and 23 on the ACT?

A: 38.3% of students scored between 19 and 23.

- d) What percentage of students scored 1,400 or greater on the SAT?

A: 62.93% of students scored 1,400 or better.