

Examples from the book:

Ex 1. Intelligence quotients (IQs) on the Stanford–Binet intelligence test are normally distributed with a mean of 100 and a standard deviation of 16. What is the IQ corresponding to a z-score of -1.5 ?

Ex 2. According to the Department of Health and Education, cholesterol levels are normally distributed. For men between 18 and 24 years, the mean is 178.1 and the standard deviation is 40.7. What percentage of men in this age range have a cholesterol level less than 239.15?

Ex 3. The amount of time that self-employed Americans work each week is normally distributed with a mean of 44.6 hours and a standard deviation of 14.4 hours. What percentage of self-employed individuals in the United States work between 37.4 and 80.6 hours per week?

Examples HW questions:

1. The government of a large city needs to determine whether the city's residents will support the removal of the city's university. The government decides to conduct a survey of a sample of the city's residents. Which one of the following procedures would be the most appropriate for obtaining a sample of the city's residents?

Ans: Survey a random sample of persons within each neighborhood

2. Find **a.** the mean; **b.** the deviation from the mean for each data item; and **c.** the sum of the deviations in part (b) for the following group of data items. 75, 65, 55, 55, 85
3. The scores on a test are normally distributed with a mean of 50 and a standard deviation of 10. What is the score that is 2 standard deviations below the mean?
4. Not everyone pays the same price for the same model of a car. The figure illustrates a normal distribution for the prices paid for a particular model of a new car. The mean is \$ \$20,000 and the standard deviation is \$1000. Use the 68 -95 - 99.7 Rule to find what percentage of buyers paid between \$18,000 and \$ 22 000.
5. Scores on a dental anxiety scale range from 0 (no anxiety) to 20 (extreme anxiety). The scores are normally distributed with a mean of 11 and a standard deviation of 4. Find the z-score for the given score on this dental anxiety scale. $x = 6$.
6. Use the table below to find the percentage of data items in a normal distribution that lie between $z = -0.5$ and $z = 0.5$

Use the table below to find the percentage of data items in a normal distribution that lie **a.** below and **b.** above a z-score of 2.

z-score	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
Percentile	53.98	57.93	61.79	65.54	69.15	72.57	75.80	78.81	81.59	84.13
z-score	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
Percentile	86.43	88.49	90.32	91.92	93.32	94.52	95.54	96.41	97.13	97.72
z-score	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
Percentile	98.21	98.61	98.93	99.18	99.38	99.53	99.65	99.74	99.81	99.87

- a. The percentage of data items that lie below the z-score is 97.72 %.
- b. The percentage of data items that lie above the z-score is 2.28 %.