

Assignment

Write

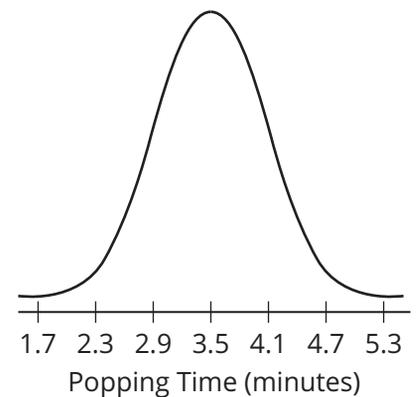
Describe the percent of data within 1, 2, and 3 standard deviations of the mean in a normal distribution according to the Empirical Rule.

Remember

The standard normal distribution is a normal distribution with a mean value of 0 and a standard deviation of 1. The Empirical Rule defines the percent of data within 1, 2, and 3 standard deviations of the mean in a normal distribution.

Practice

- A researcher recorded the birth weights of a sample of newborn babies. The average birth weight was 7.2 pounds and the standard deviation was 0.9 pound. Assume that the birth weights follow a normal distribution.
 - Sketch and label a normal curve. Include 3 standard deviations above and below the mean.
 - Determine the percent of newborns that weigh between 2 standard deviations below the mean and 2 standard deviations above the mean.
 - Determine the percent of newborns that weigh less than the mean.
 - Determine the percent of newborns that weigh between 1 standard deviation above the mean and 3 standard deviations above the mean.
 - Approximately what percent of newborns weighed between 4.5 pounds and 9.9 pounds? Weighed more than 9 pounds? Weighed less than 6.3 pounds?
- The time to cook a bag of microwave popcorn is normally distributed with a mean of 3.5 minutes and a standard deviation of 0.6 minute. Suppose that you randomly select a microwave popcorn bag from the sample. Use the given information and the distribution to answer each question. Explain your reasoning. Determine the percent of microwave popcorn bags that will properly cook within each timespan.
 - Between 2.9 minutes and 4.1 minutes
 - More than 3.5 minutes
 - Less than 2.3 minutes
 - More than 2.9 minutes?
 - Between 4.7 minutes and 5.3 minutes?



Stretch

1. A department store has a manager training program for qualified applicants. Before applying to the manager training program, applicants are given a basic mathematics test. The scores are normally distributed, with a mean of 40 and a standard deviation of 5.
 - a. If an applicant is told that 50% of all the applicants scored worse than they did on the test, what was their score? Explain your reasoning.
 - b. If an applicant is told that only 16% of all the applicants scored better than they did on the test, what was their score? Explain your reasoning.
 - c. If an applicant is told that only 2.5% of all the applicants scored worse than they did on the test, what was their score? Explain your reasoning.

Review

1. An annual photography competition received three hundred entries. The table shows the distribution of ages of the photographers who entered the competition.
 - a. Create a relative frequency histogram to represent the ages of the 250 photographers.
 - b. Does the distribution of the race time data appear to be a normal distribution? Explain your reasoning.
2. A chain restaurant records the times that diners spend waiting for a table in 2 different restaurants. The normal curves represent the wait times at Restaurant A and the wait times at Restaurant B.
 - a. Compare the mean wait times of the two restaurants. Explain your reasoning.
 - b. Compare the standard deviation of the two restaurants. Explain your reasoning.

Ages	Number of Relative Photographers	Relative Frequency
15 – 24	13	0.043
24 – 33	61	0.203
33 – 42	87	0.290
42 – 51	55	0.183
51 – 60	48	0.160
60 – 69	24	0.080
69 – 78	12	0.040

