12. CEO Compensation Listed below are the recent annual compensation amounts for these chief executive officers: Mulally (Ford), Jobs (Apple), Kent (Coca-Cola), Otellini (Intel), and McNerney (Boeing). The data are from the Associated Press. What is particularly notable about these compensation amounts?

$17,688,241 $1 $19,628,585 $12,407,800 $14,765,410

13. Lead in Medicine Listed below are the lead concentrations (in μg/g) measured in different Ayurveda medicines. Ayurveda is a traditional medical system commonly used in India. The lead concentrations listed here are from medicines manufactured in the United States. The data are based on the article "Lead, Mercury, and Arsenic in US and Indian Manufactured Ayurvedic Medicines Sold via the Internet," by Saper et al., *Journal of the American Medical Association,* Vol. 300, No. 8. What would be the values of the measures of variation if the medicines contained no lead?

3.0 6.5 6.0 5.5 20.5 7.5 12.0 20.5 11.5 17.5

14. Mercury in Sushi Listed below are the amounts of mercury (in parts per million, or ppm) found in tuna sushi sampled at different stores in New York City. The study was sponsored by the *New York Times,* and the stores (in order) are D'Agostino, Eli's Manhattan, Fairway, Food Emporium, Gourmet Garage, Grace's Marketplace, and Whole Foods. What would be the values of the measures of variation if the tuna sushi contained no mercury?

0.56 0.75 0.10 0.95 1.25 0.54 0.88

15. Years to Earn Bachelor's Degree Listed below are the lengths of time (in years) it took for a random sample of college students to earn bachelor's degrees (based on data from the National Center for Education Statistics). Based on these results, is it *unusual* for someone to earn a bachelor's degree in 12 years?

4 4 4 4 4 4 4.5 4.5 4.5 4.5 4.5 4.5 6 6 8 9 9 13 13 15

16. Cell Phone Radiation Listed below are the measured radiation emissions (in W/kg) corresponding to these cell phones: Samsung SGH-tss9, Blackberry Storm, Blackberry Curve, Motorola Moto, T-Mobile Sidekick, Sanyo Katana Eclipse, Palm Pre, Sony Ericsson, Nokia 6085, Apple iPhone 3G S, and Kyocero Neo E1100. The data are from the Environmental Working Group. If one of each model of cell phone is measured for radiation and the results are used to find the standard deviation, is that standard deviation equal to the standard deviation of the population of all cell phones that are in use? Why or why not?

0.38 0.55 1.54 1.55 0.50 0.60 0.92 0.96 1.00 0.86 1.46

17. JFK to LAX Flight Delays Listed below are the arrival delay times (in minutes) of randomly selected American Airline flights from New York's JFK airport to Los Angeles (LAX). Negative values correspond to flights that arrived early before the scheduled arrival time, and positive values represent lengths of delays. (The data are from the Bureau of Transportation, and more data are listed in Data Set 15 in Appendix B.) Some of the sample values are negative, but can the standard deviation ever be negative?

−15 −18 −32 −21 −9 −32 11 2

18. Freshman 15 According to the "freshman 15" legend, college freshmen gain 15 pounds (or 6.8 kilograms) during their freshman year. Listed below are the amounts of weight change (in kilograms) for a simple random sample of freshmen included in a study ("Changes in Body Weight and Fat Mass of Men and Women in the First Year of College: A Study of the 'Freshman 15'" by Hoffman, Policastro, Quick, and Lee, *Journal of American College Health,* Vol. 55, No. 1). Positive values correspond to students who gained weight and negative values correspond to students who lost weight. Is a weight gain of 15 pounds (or 6.8 kg) *unusual*? Why or why not? If 15 pounds (or 6.8 kg) is not unusual, does that support the legend of the "freshman 15"?

11 3 0 −2 3 −2 −2 5 −2 7 2 4 1 8 1 0 −5 2