c) Make a relative frequency histogram of these data.

d) Where is the original graph the steepest? What does this indicate about the distribution?

Do Check your Understanding p. 89.

Example. Macy, a 3-year-old female is 100 cm tall. Brody, her 12-year-old brother is 158 cm tall. Obviously, Brody is taller than Macy—but who is taller, relatively speaking? That is, relative to other kids of the same ages, who is taller? According to the Centers for Disease Control and Prevention, the heights of three-year-old females have a mean of 94.5 cm and a standard deviation of 4 cm. The mean height for 12-year-olds males is 149 cm with a standard deviation of 8 cm.

Read 89–91

How do you calculate and interpret a standardized score (*z*-score)? Do *z*-scores have units? What does the sign of a standardized score tell you?

Alternate Example: Home run kings

Year	Player	HR	Mean	SD
1927	Babe Ruth	60	7.2	9.7
1961	Roger Maris	61	18.8	13.4
1998	Mark McGwire	70	20.7	12.7
2001	Barry Bonds	73	21.4	13.2

The single-season home run record for major league baseball has been set just three times since Babe Ruth hit 60 home runs in 1927. Roger Maris hit 61 in 1961, Mark McGwire hit 70 in 1998 and Barry Bonds hit 73 in 2001. In an absolute sense, Barry Bonds had the best performance of these four players, because he hit the most home runs in a single season. However, in a relative sense this may not be true. Baseball historians suggest that hitting a home run has been easier in some eras than others. This is due to many factors, including quality of batters, quality of pitchers, hardness of the baseball, dimensions of ballparks, and possible use of performance-enhancing drugs. To make a fair comparison, we should see how these performances rate relative to others hitters during the same year. Calculate the standardized score for each player and compare.

How can we find a data value, *x*, given a standard z-score?

HW #19: page 99 (1, 5, 9, 11, 13, 15)

2.1 Transforming Data and Density Curves

Activity: Guess the Classroom width in meters.

What is the effect of adding or subtracting a constant from each observation?

What is the effect of multiplying or dividing each observation by a constant?

Read 95–97

In 2010, Taxi Cabs in New York City charged an initial fee of \$2.50 plus \$2 per mile. In equation form, *fare* = 2.50 + 2(*miles*). At the end of a month a businessman collects all of his taxi cab receipts and analyzed the distribution of fares. The distribution had a mean of \$15.45 and a standard deviation of \$10.20. What are the mean and standard deviation of the lengths of his cab rides in miles?

Clarence measures the diameter of each tennis ball in a bag with a standard ruler. Unfortunately, he uses the ruler incorrectly so that each of his measurements is 0.2 inches too large. Clarence's data ha a mean of 3.2 inches and a standard deviation of 0.1 inches. Find the mean and standard deviation of the corrected measurements in centimeters (1 inch = 2.54 cm).

HW page 101 (17–23 odd, 32)