40 heights and weights results in $s_e = 17.5436$ cm. In your own words, describe what that value of s_e represents.

2. Prediction Interval Using the heights and weights described in Exercise 1, a height of 180 cm is used to find that the predicted weight is 88.0 kg, and the 95% prediction interval is displayed by Minitab as (50.7, 123.0). Write a statement that interprets that prediction interval. What is the major advantage of using a prediction interval instead of simply using the predicted weight of 88.0 kg? Why is the terminology of *prediction interval* used instead of *confidence interval*?

3. Coefficient of Determination Using the heights and weights described in Exercise 1, the linear correlation coefficient r is 0.356. Find the value of the coefficient of determination. What practical information does the coefficient of determination provide?

4. Standard Error of Estimate A sample of 12 different statistics textbooks is obtained and their weights are measured in kilograms and in pounds. Using the 12 paired weights (kg, lb), what is the value of s_e^2? For a Triola textbook that weighs 4.5 lb, the predicted weight in kilograms is 2.04 kg. What is the 95% prediction interval?

Interpreting the Coefficient of Determination. ***In Exercises 5–8, use the value of the linear correlation coefficient r to find the coefficient of determination and the percentage of the total variation that can be explained by the linear relationship between the two variables from the Appendix B data sets.***

5. $r = 0.933$ (x = weight of male, y = waist size of male)

6. $r = 0.963$ (x = chest size of a bear, y = weight of a bear)

7. $r = -0.793$ (x = weight of a car, y = highway fuel consumption)

8. $r = 0.751$ (x = weight of discarded plastic, y = household size)

Interpreting a Computer Display. ***In Exercises 9–12, refer to the Minitab display obtained by using the paired data consisting of foot lengths (cm) and heights (cm) of the 40 people listed in Data Set 2 of Appendix B. (Unlike the examples in this section, these exercises use* foot lengths *instead of shoe print lengths.) Along with the paired sample data, Minitab was also given a foot length of 29.0 cm to be used for predicting height.***

MINITAB

```
The regression equation is
Height = 64.1 + 4.29 Foot Length


Predictor      Coef  SE Coef     T      P
Constant      64.13    11.49  5.58  0.000
Foot Length  4.2913   0.4460  9.62  0.000


S = 5.50571   R-Sq = 70.9%   R-Sq(adj) = 70.1%


Predicted Values for New Observations

New Obs      Fit  SE Fit         95% CI              95% PI
      1  188.572   1.718  (185.095, 192.049)  (176.896, 200.247)

Values of Predictors for New Observations

            Foot
New Obs  Length
      1    29.0
```

9. Testing for Correlation Use the information provided in the display to determine the value of the linear correlation coefficient. Given that there are 40 pairs of data, is there sufficient evidence to support a claim of a linear correlation between foot lengths of people and their heights?

10. Identifying Total Variation What percentage of the total variation in height can be explained by the linear correlation between foot length and height?