

Name:

### Part 1

Look at you and your families' heights compared to the normal curve.

- a) For each member of your family state how many standard deviations they are above or below the mean and what percentile they are in.
- b) Is there a relationship between the parent's and children's height?
- c) Choosing the chart that refers to your gender, answer the following questions
  - a. What are the heights within 1 standard deviation?
  - b. How many standard deviations above the mean is the record holder for your gender?
  - c. How many standard deviations below the mean is the smallest person of your gender?

### Part 2

#### The Chesapeake and Ohio Freight Study

At the beginning of this chapter, we discussed a freight study commissioned by the Chesapeake and Ohio Railroad Company (C & O). A sample of 2072 waybills from a population of 22,984 waybills was used to estimate the total revenue due C & O. The estimate arrived at \$64,568.

Because all 22,984 waybills were available, a census could be taken to determine exactly the total revenue due C & O and thereby reveal the accuracy of the estimate obtained by sampling. The exact amount due C & O was found to be \$64,651.

1. What percentage of the waybills constituted the sample?
2. What percentage error was made using the sample to estimate the total revenue due C & O?
3. At the time of the study, the cost of a census was approximately \$5000, whereas the cost for the sample estimate was only \$1000. Knowing this information and your answers to parts (a) and (b), do you think that sampling was preferable to a census? Explain your answer.
4. In the study, the \$83 error was against C & O. Could the error have been in C & O's favor?