# Connections 

## T3xtensions

## Applications

For Exercises 1-4, use the stem-and-leaf plot at the right.

Student Travel Times to School

| 0 | 335789 |
| :--- | :--- | :--- |
| 1 | 02356689 |
| 2 | 013335588 |
| 3 | 05 |
| 4 | 5 |

Key: $2 \mid 5$ means 25 min

1. Multiple Choice How many students spent 10 minutes traveling to school?
A. 1
B. 9
C. 10
D. 19
2. Multiple Choice How many students spent 15 minutes or more traveling to school?
F. 10
G. 16
H. 17
J. 25
3. How many students are in the class? Explain.
4. What is the typical time it took these students to travel to school? Explain.

## For Exercises 5-8, use the table on the next page.

5. Make a stem-and-leaf plot of the students' ages. The plot has been started for you at the right. Notice that the first value in the stem is 6 , because there are no values less than 60 months.
6. What ages, in years, does the interval of $80-89$ months represent?
7. What is the median age of these students?
8. a. On a piece of grid paper, make a coordinate graph. Show age (in months) on the horizontal axis and height (in centimeters) on the vertical axis. To help you choose a scale for each axis, look at the least and greatest values for each measure.
b. Explain how you can use your graph to find out whether the
c. Use your graph to describe what happens to students' heights as the students get older.
d. What would happen to the graph if you extended it to include people in their late teens or early twenties? Explain.

Student Ages, Heights, and Foot Lengths

| Age <br> (mo) | Height <br> $(\mathbf{c m})$ | Foot Length <br> $(\mathbf{c m})$ |
| :---: | :---: | :---: |
| 76 | 126 | 24 |
| 73 | 117 | 24 |
| 68 | 112 | 17 |
| 78 | 123 | 22 |
| 81 | 117 | 20 |
| 82 | 122 | 23 |
| 80 | 130 | 22 |
| 90 | 127 | 21 |
| 101 | 127 | 21 |
| 99 | 124 | 21 |
| 103 | 130 | 20 |
| 101 | 134 | 21 |
| 145 | 172 | 32 |
| 146 | 163 | 27 |
| 144 | 158 | 25 |


| Age <br> $(\mathbf{m o})$ | Height <br> $(\mathrm{cm})$ | Foot Length <br> $(\mathrm{cm})$ |
| :---: | :---: | :---: |
| 148 | 164 | 26 |
| 140 | 152 | 22 |
| 114 | 135 | 20 |
| 108 | 135 | 22 |
| 105 | 147 | 22 |
| 113 | 138 | 22 |
| 120 | 141 | 20 |
| 120 | 146 | 24 |
| 132 | 147 | 23 |
| 132 | 155 | 21 |
| 129 | 141 | 22 |
| 138 | 161 | 28 |
| 152 | 156 | 30 |
| 149 | 157 | 27 |
| 132 | 150 | 25 |


9. The coordinate graph below shows the height and foot length data from the table on the previous page. Notice that the scale on the $x$-axis uses intervals of 5 centimeters and the scale on the $y$-axis uses intervals of 1 centimeter.

## Student Heights and Foot Lengths


a. If you know a person's foot length, can you tell that person's height? Explain.
b. Find the median height and the median foot length. The median height is about how many times the median foot length?
c. Measure the length of your foot in centimeters. Your height is about how many times your foot length?
d. Look at your responses to parts (b) and (c). How can you use this information to answer part (a)? Explain.
e. What would the graph look like if you started each axis at 0 ?

## Connections

10. a. Use the data in the Student Ages, Heights, and Foot Lengths table from Exercises 5-8. Make a stem-and-leaf plot of the students' heights.
b. Describe how to make a line plot of the students' heights. What are the least and greatest data values? How does this help you make the line plot?
c. Describe how to make a bar graph of the students' heights. What are the least and greatest data values? How does this help you make the graph?
d. Why might you display these data using a stem-and-leaf plot instead of a line plot or a bar graph?
11. The table below shows some of the Student Ages, Heights, and Foot Lengths data in centimeters. The table includes two new columns. Copy and complete the table to show heights and foot lengths in meters.

Homework Help nline

PHSchool.com For: Help with Exercise 11 Web Code: ame-8211
a. Round the height for each student to the nearest tenth of a meter.
b. Make a line plot showing these rounded height data.
c. What is the typical height for these students in meters? Explain.

Student Ages, Heights, and Foot Lengths

| Age (mo) | Height (cm) | Height (m) | Foot Length (cm) | Foot Length (m) |
| :---: | :---: | :---: | :---: | :---: |
| 76 | 126 | $\square$ | 24 |  |
| 73 | 117 | $\square$ | 24 |  |
| 68 | 112 | $\square$ | 17 |  |
| 78 | 123 | $\square$ | 22 |  |
| 81 | 117 | $\square$ | 20 |  |
| 82 | 122 | $\square$ | 23 |  |
| 80 | 130 | $\square$ | 22 |  |
| 90 | 127 | $\square$ | 21 |  |
| 138 | 161 | $\square$ | 28 |  |
| 152 | 156 | $\square$ | 27 |  |
| 149 | 157 | $\square$ |  | $\square$ |
| 132 | 150 | $\square$ |  | $\square$ |


12. The pie chart shows the portion of time Harold spent on homework in each subject last week.

Time Spent on Homework

a. If Harold spent two hours on math homework, about how many hours did he spend on homework altogether?
b. About what percent of his time did Harold spend on math, science, and history homework? Explain.


## Extensions

For Exercises 13 and 14, use the jump-rope data on the next page.
13. Make a back-to-back stem-and-leaf plot that compares either the girls in Mrs. Reid's class with the girls in Mr. Costo's class or the boys in Mrs.Reid's class with the boys in Mr.Costo's class.Did the girls (or boys) in one class do better than the girls (or boys) in the other class? Explain your reasoning.
14. Make a back-to-back stem-and-leaf plot that compares the girls in both classes with the boys in both classes. Did the girls do better than the boys? Explain.

## Number of Jumps


15. A group of students challenged each other to see who could come the closest to guessing the number of seeds in his or her pumpkin. The data they collected are shown in the table and the graph.


Number of Seeds in Pumpkins

| Guess | Actual |
| ---: | :---: |
| 630 | 309 |
| 621 | 446 |
| 801 | 381 |
| 720 | 505 |
| 1,900 | 387 |
| 1,423 | 336 |
| 621 | 325 |
| 1,200 | 365 |
| 622 | 410 |
| 1,000 | 492 |
| 1,200 | 607 |
| 1,458 | 498 |
| 350 | 523 |
| 621 | 467 |
| 759 | 423 |
| 900 | 479 |
| 500 | 512 |
| 521 | 606 |
| 564 | 494 |
| 655 | 441 |
| 722 | 455 |
| 202 | 553 |
| 621 | 367 |
| 300 | 442 |
| 200 | 507 |
| 556 | 462 |
| 604 | 384 |
| 2,000 | 545 |
| 1,200 | 354 |
| 766 | 568 |
| 624 | 506 |
| 680 | 486 |
| 605 | 408 |
| 1,100 | 387 |
|  |  |
| 6 |  |

a. What do you notice about how the actual counts vary? What are the median and the least and greatest values of the actual counts?
b. What do you notice about how the guesses vary? What are the median and the least and greatest values of the guesses?
c. Make your own coordinate graph of the data. Draw a diagonal line on the graph to connect the points $(0,0),(250,250),(500,500)$, all the way to $(2,250,2,250)$.
d. What is true about the guesses compared to the actual counts for points near the line you drew?
e. What is true about the guesses compared to the actual counts for points above the line?
f. What is true about the guesses compared to the actual counts for points below the line?
g. In general, did the students make good guesses? Use what you know about median and range to explain your reasoning.
h. The scales on the axes are the same, but the data are bunched together. How would you change the scale to show the data points better?


