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1. Mr. Brown, a high school statistics teacher, was skeptical about a New York Times article that stated: "Teenagers ages 13 to 17 are by far the most prolific texters, sending or receiving 1,742 messages a month." Mr. Brown collected data from his first period statistics class on the number of text messages they had sent and received in the past 24 hours. The data are listed below.
$\begin{array}{lllllllllllllllllllllllll}0 & 7 & 1 & 29 & 25 & 8 & 5 & 1 & 25 & 98 & 9 & 0 & 26 & 8 & 118 & 72 & 0 & 92 & 52 & 14 & 3 & 3 & 44 & 5 & 42\end{array}$
a. Find the 5 -number summary
b. Find the boundary for outliers. Are there any, if so, which data members?
c. Sketch a boxplot. Describe its shape.
d. Find the mean and standard deviation.
e. Compare the mean and median, does this make sense based on your boxplot?
f. What should you use to describe the center and spread of the data? Why?
2. Match the summary statistics with the histograms. Explain how you made your decision.



a. mean $=6.6$, median $=6.8$, standard deviation $=1.3$, variable $=$ $\qquad$
b. mean $=6.6$, median $=6.0$, standard deviation $=8.65$, variable $=$ $\qquad$
c. mean $=6.6$, median $=3.75$, standard deviation $=7.4$, variable $=$ $\qquad$
3. You read that the mean income of U.S. households in 2007 was $\$ 67,609$ and that the median income was $\$ 50,233$. Explain why the mean household income is so much higher than the median household income.
4. A study examining the health risks of smoking measured the cholesterol levels of people who had smoked for at least 25 years and people of similar ages who had smoked for no more than 5 years and then stopped. Create appropriate graphical displays and calculate summary statistics (5-number summary, mean, sd) for both groups. Write a brief report comparing the two cholesterol levels. Here are the data:

Smokers

| 225 | 211 | 209 | 284 |
| :--- | :--- | :--- | :--- |
| 258 | 216 | 196 | 288 |
| 250 | 200 | 209 | 280 |
| 225 | 256 | 243 | 200 |
| 213 | 246 | 225 | 237 |
| 232 | 267 | 216 | 232 |
| 216 | 243 | 200 | 155 |
| 216 | 271 | 230 | 309 |
| 183 | 280 | 217 | 305 |
| 287 | 217 | 246 | 351 |
| 200 | 280 | 209 |  |

Ex-Smokers

| 250 | 134 | 300 |
| :--- | :--- | :--- |
| 249 | 213 | 310 |
| 175 | 174 | 328 |
| 160 | 188 | 321 |
| 213 | 257 | 292 |
| 200 | 271 | 227 |
| 238 | 263 | 163 |
| 192 | 242 | 249 |
| 242 | 267 | 243 |
| 217 | 267 | 218 |
| 217 | 183 | 228 |

5. A timeplot is a display of values over time. Time is on your horizontal axis and your variable is on the vertical axis. A timeplot can show you patterns and trends over a specified time period.

Accidents involving drunk drivers account for about $40 \%$ of all deaths on the nations highways. The table below tracks the number of alcohol related fatalities for 24 years.

| Year | Deaths <br> (thousands) | Year | Deaths <br> (thousands) |
| :--- | :--- | :--- | :--- |
| 1982 | 26.2 | 1994 | 17.3 |
| 1983 | 24.6 | 1995 | 17.7 |
| 1984 | 24.8 | 1996 | 17.7 |
| 1985 | 23.2 | 1997 | 16.7 |
| 1986 | 25 | 1998 | 16.7 |
| 1987 | 24.1 | 1999 | 16.6 |
| 1988 | 23.8 | 2000 | 17.4 |
| 1989 | 22.4 | 2001 | 17.4 |
| 1990 | 22.6 | 2002 | 17.5 |
| 1991 | 20.2 | 2003 | 17.1 |
| 1992 | 18.3 | 2004 | 16.9 |
| 1993 | 17.9 | 2005 | 16.9 |

a. Create a histogram and/or boxplot of the deaths. Describe the picture.
b. Create a timeplot. What is it telling you about the data?
c. Using both pictures, write a few sentences about deaths caused by drunk driving.
d. Which picture told you the most information and why?

