

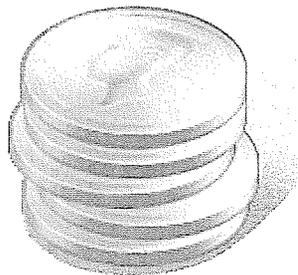
PENNIES' DATES

Focus Question: In what year was a typical penny currently in circulation minted, and how could you determine that year?

Learning Objectives:

Students will:

- Organize a sample of pennies by minting date;
- Determine measures of center: mean and median;
- Determine measures of variability: standard deviation and interquartile range;
- Determine outliers; and
- Construct a dotplot and a boxplot from the data



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IN WHAT YEAR WAS A TYPICAL PENNY MINTED?

List the minting date of every penny in your data in sequence from newest to oldest to identify the extremes, quartiles, and median. Check for any possible outliers. Then make a boxplot of the data. Use the diagram and table on page 5 complete your list and boxplot.

CONNECTING LEARNING

Measures of Center

- 1991, 38
1. What is the mean of the minting dates of your pennies? ..median? 1994
 2. Where do you see these on the dotplot? 1991 is in the middle of the dotplot. 1994 is toward the end of the dotplot.
 3. What do these tell you about pennies currently in circulation?
The most is 1995 + 1996
 4. Which do you think is the best measure of center? Why?
median, the data is negatively skewed.

Measures of Variability

1. What is the standard deviation of the minting dates of your pennies? 5.95
..interquartile range? 11
2. What do these tell you about pennies currently in circulation? There is not a lot of variability in the dates.
3. Which do you think is the best measure of variability? Why?
IQR since median is the best measure of center

Dotplots

1. What patterns do you see in the heights on the dotplot? 1995 + 1996 were the highest
2. What does that tell you about these pennies?
More pennies were made during these years.
3. How does your data compare to the data of other groups?

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Boxplot

1. How much of the boxplot is made of just the box? *11 out of the 19 years represented*
2. What fraction of the pennies does the box represent? $\frac{29}{50}$
3. Why is half the data filling much less than half the plot?
Mine is filling more than half the plot
4. Did you have any outliers? *no*
5. How do the two whiskers of the plot compare in length?
The lower one is longer
6. What fraction of the pennies does each whisker represent?
lower $\frac{11}{50}$ higher $\frac{8}{50}$
7. Since the whiskers are different lengths but represent the same amount of data, what does that tell you about the pennies in the longer whisker?
There are only a few pennies for each of the years and some years may not have any pennies.
8. Summarize what the boxplot tells you about the minting dates of pennies.
There are more pennies in the newer dates than older dates

