

1. The table displays the number of U.S hurricane strikes by decade from the years 1851 to 2000. What are the mean and standard deviation for this data set?

Decade	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Strikes	19	15	20	22	21	18	21	13	19	24	17	14	12	15	14

SOURCE: National Hurricane Center

$\bar{x} = 17.6$
(mean) $S_x = 3.641$

2. Suppose you work in the quality control department for a computer company that manufactures computer parts. The specific part that you are to evaluate the quality of is supposed to be 8 micrometers in thickness. You obtained samples of four of these parts manufactured by the day shift and four parts manufactured by the night shift workers. Here are the findings:

Day Shift (Micrometers)	7.9	8.0	8.2	8.3
Night Shift (Micrometers)	2	4	12	14

- a. Find the mean, median, range and standard deviation of the day shift and night shift workers.

	\bar{x}	Median	Range	S_x
Day Shift	8.1	8.1	.4	.183
Night Shift	8	8	12	5.89

- b. What conclusions can you make based on your findings? Which shift would you prefer the part to have been manufactured? Why? Be sure to clearly support your answer.

The day shift is more accurate because the standard deviation for the sample, S_x , is so small that it indicates most of the data will be near the mean.

3. The following table shows the base salary for the 20 top-paid players on the Cubs active roster in millions.

15	11	12	9.5	9
6	5.69	5	4.5	3.63
2	2.6	2.53	2.51	2.25
2.10	0.9	0.54	0.51	0.51

<http://www.sportrac.com/mlb/chicago-cubs/payroll/>

- a. Find the mean and standard deviation of the data set.

Sum = 97.77

$\bar{x} = 4.89$ million $S_x = 4.26$ million

- b. In comparison, the mean payroll for MLB teams is \$125.55 million with a standard deviation of 45.58. How does the salary distribution on the Cubs compare to the distribution for Major League teams?

The Cubs salary for its active roster (20 players) is lower than the mean. Based on the standard deviation of 45.58, there is a large range of active roster salaries.

4. Find the mean, median, mode, range and standard deviation for the waiting times, in minutes, of customers at Jefferson Valley Bank and Bank of Providence.

Jefferson Valley Bank (Single waiting line)	6.5	6.6	6.7	6.8	7.1	7.3	7.4	7.7	7.7	7.7
Bank of Providence (Multiple waiting lines)	4.2	5.4	5.8	6.2	6.7	7.7	7.7	8.5	9.3	10

	\bar{x}	Median	Mode	Range	S_x
Jefferson Valley Bank	7.15	7.2	7.7	1.2	.477
Bank of Providence	7.15	7.2	7.7	5.8	1.822

- a. Which method is more efficient, single or multiple waiting lines? Clearly support your answer.

Although both banks have the same mean, median, and mode, Jefferson Valley Bank is more efficient with a single waiting line because the Standard Deviation is smaller. That means more values in the data set are close to the mean.

- b. Why do you think most banks have switched to a single waiting line even though the average waiting time is the same for both methods?

Most banks have switched to a single waiting line because it is more efficient (see above). Overall, most customers wait in line about the same amount.

5. The tables below include the fastest recorded speeds of various large wild cats and birds in flight.

Wild Cats (MPH)	70	50	30	40	35	30	30	40	15
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Birds in flight (MPH)	217	106	95	56	65	37	50	31	53	25	25	25
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- a. Find the mean, median, mode, range and standard deviation for the wild cats and birds.

	\bar{x}	Median	Mode	Range	S_x
Wild Cats	37.78	35	30	55	15.434
Birds	65.42	51.5	25	192	54.667

- b. What conclusions can you draw about each type of animal and their speeds?

The wild cats have speeds that are more consistent because the standard deviation is smaller.