

Lesson 3: Describing Quantitative Data: Shape, Center, & Spread

Preparation

Solutions

Please note that the steps show rounded numbers, but that the final answers to the problems are calculated without rounding.

Problem	Part	Solution
1	Shape	c. Symmetric, bell-shaped, skewed right, and skewed left, uniform, unimodal, bimodal, or multimodal
1	Center	a. Average, mean, median, mode
1	Spread	b. Standard deviation, variance
2	-	The standard deviation is a measure of the spread in a distribution. If the standard deviation is small then the data tend to be closer together. If the standard deviation is large, the data is usually more spread out.
3	-	Answers will vary
4	-	Sample variance is also a measure of spread in a data set. The sample variance is an estimator of the true population variance. The sample variance is just the sample standard deviation squared or s^2 .
5	Percentiles	A percentile is a number such that a specified percentage of the data are at or below this number, such as at the 50th percentile, this value is as large or larger than 50% of all the data.
5	Quartiles	Quartiles are just three special percentiles, 25 th , 50 th , and 75 th percentiles divide the data into fourths.
5	Five-number summary	The five number summary is comprised of the minimum, first quartile, median, third quartile, and maximum. It is just a good way to summarize the data into just five numbers.
5	Boxplot	A boxplot is a graphical representation of the five-number summary.
6	Company A	Mean: 21.276 Standard Deviation 37.679 n: 41
6	Company B	Mean: 33.482 Standard Deviation 49.311 n: 25
6	Company C	Mean: 41.122 Standard Deviation 79.177 n: 27
6	Company D	Mean: 0.706 Standard Deviation 21.054 n: 49
6	Company E	Mean: -1.084 Standard Deviation 21.297 n: 32

Problem	Part	Solution
		The figure displays five histograms, labeled A through E, each representing a different data set. The x-axis for all histograms is 'value', ranging from 0 to 200 with major grid lines every 100 units. The y-axis is 'count', ranging from 0 to 10 with major grid lines every 5 units. Histogram A is centered around 0, with a peak count of 8. Histogram B is centered around 50, with a peak count of 5. Histogram C is centered around 100, with a peak count of 4. Histogram D is centered around 150, with a peak count of 12. Histogram E is centered around 200, with a peak count of 9.
7	-	
8	-	Answers will vary but should talk about shape, center, and spread of the different graphs and data sets.
9	-	Answers may vary, students should choose a company and justify why. They will probably choose B or C, because they have the highest means.