1.9 Comparisons of the Distributions for One Quantitative Variable

AP Statistics Name: _____ **CA #2**

Use the scenario to answer the following questions.

1. An angler caught a bass weighing 8.4 pounds at a fishing tournament, where the average weight was 5.6 pounds with a standard deviation of 1.3 pounds. Calculate and interpret the angler's z-score.

2. A city's rainfall total for March was 1.9 inches, where the average March rainfall was 3.2 inches with a standard deviation of 0.7 inches. Calculate and interpret the z-score for this March's rainfall.

3. Two robotics teams competed at different regional competitions. Team Circuit Breakers scored 285 points, where the average score at their regional was 240 with a standard deviation of 30. Team Byte Force scored 420 points, where the average score at their regional was 350 with a standard deviation of 40. Which team performed better relative to their own regional competition?

4. Diego scored 680 on the Math section of a standardized test, where the average was 590 with a standard deviation of 65. Aaliyah scored 710 on the Reading section, where the average was 605 with a standard deviation of 70. Who performed relatively better on their section?

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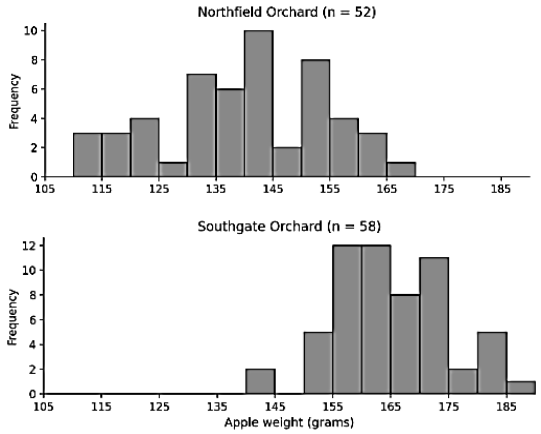
5. Two orchards compare the weight, in grams, of apples from their fall harvest: Northfield Orchard and Southgate Orchard. The histograms above show the results, along with summary statistics.



	Northfield	Southgate
n	52	58
Mean	139.9	164.9
Std Dev	14.31	9.4
Median	140.5	163
IQR	19	13

Describe and compare the distributions of weight of apples for Northfield and Southgate.

Answers to 1.9 Corrective Assignment

1. $z = \frac{8.4-5.6}{1.3} = 2.154$
The angler's 8.4-pound bass is about 2.15 standard deviations above the mean of 5.6 pounds.

2. $z = \frac{1.9-3.2}{0.7} = -1.857$
This March's rainfall of 1.9 inches is about 1.86 standard deviations below the mean of 3.2 inches.

3. $z_{CB} = \frac{285-240}{30} = 1.5$

$z_{BF} = \frac{420-350}{40} = 1.75$

Team Byte Force performed better relative to their own regional competition.

4. $z_{Diego} = \frac{680-590}{65} = 1.385$

$z_{Aaliyah} = \frac{710-605}{70} = 1.5$

Aaliyah performed relatively better on her section.

2.
The distribution of weight of apples grown during fall harvest for both Northfield and Southgate are approximately symmetric with no apparent outliers. This means the best measure of center is the mean and best measure of variability is standard deviation. Southgate has a mean of 164.9 grams which is greater than Northfield's mean of 139.9 grams. This means Southgate apples are typically heavier. Northfield's standard deviation is 14.31 grams which is greater than Southgate's standard deviation of 9.4 grams. This means Southgate's apple are more consistent in weight than Northfield's.

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