

## Impact of Zero Activity

Our first activity today is to create a graphic organizer, review the measures of central tendency, and identify the necessary parts of a box plot. What would be a good title for the center of our organizer? As we complete the organizer, let's write the definition of each term.

<b>Mode</b>
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<b>Median</b>
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<b>Mean</b>
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<b>Range</b>
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<b>MEASURES OF CENTRAL TENDENCY</b>
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<b>BOX PLOT TERMS</b>
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<b>Quartile 1</b>
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<b>Quartile 3</b>
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<b>Minimum</b>
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<b>Maximum</b>
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<b>IQR (inner quartile range)</b>
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Today we are going to examine the test grades of a fictitious student, Conrad. You may use your graphic organizer to answer the questions about Conrad's test scores. His test scores are listed below.

(Organize Conrad's scores in a stem-and-leaf plot before you answer the questions below.)

84, 51, 77, 70, 86, 0, 70, 23, 73, 42, 50

**Test Scores**



**Grading Scale**

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
59 – below	F

**QUESTIONS FOR STUDENTS:**

- 1) How many tests did Conrad take?
- 2) How many tests did he fail?
- 3) How many tests did he pass?
- 4) What is Conrad's average (mean) score?
- 5) What grade should he receive?
- 6) Is he passing his class?
- 7) What is his median score?
- 8) What is the mode score?
- 9) What is Conrad's highest score?
- 10) What is his lowest score?
- 11) What is the range of his scores?
- 12) What would be the best representation of Conrad's scores: mode, median, or mean? Explain.

**Replace Conrad's score of zero with a score of 60.**

- 13) If Conrad had scored a 60 instead of the zero, what would his average score or mean score be?
- 14) What overall grade would he receive?
- 15) Is he passing the class?
- 16) What is his median score?
- 17) What is the mode score?
- 18) What is Conrad's highest score?
- 19) What is his lowest score?
- 20) What is the range of his scores?
- 21) What would be the best representation of Conrad's score now: mode, median, or mean? Explain.
- 22) Write a paragraph describing the effect of scoring a 60 on his test instead of a zero.

**Replace Conrad's original score of zero with a score of 80.**

- 23) If Conrad had scored an 80 instead of the zero, what would his average (mean) be?
- 24) What grade would he receive then?
- 25) Is he passing the class?
- 26) What is his median score?
- 27) What is the mode score?
- 28) What is Conrad's highest score?
- 29) What is his lowest score?
- 30) What is the range of his scores?
- 31) What would be the best representation of Conrad's score now: mode, median, or mean? Explain.
- 32) Write a paragraph describing the effect of scoring 80 on the test instead of a zero.
- 33) Could Conrad replace the zero with any score that would allow him to have an average of B or A? Explain.

Complete the following table and use the data to answer questions 34-37.

**CONRAD’S TABLE OF TEST DATA**

	<b>Conrad’s grade with the zero</b>	<b>Grades with zero replaced with 60</b>	<b>Grades with zero replaced with 80</b>	<b>Comment on change</b>
<b>Mean</b>				
<b>Median</b>				
<b>Mode</b>				
<b>Minimum</b>				
<b>Maximum</b>				
<b>Range</b>				
<b>Quartile 1</b>				
<b>Quartile 3</b>				

- 34) Construct a box plot of Conrad’s original scores.
- 35) Next to #34 construct a box plot of Conrad’s scores replacing the zero with the score of 60.
- 36) Next to #35 construct another box plot of Conrad’s scores replacing the original score of zero with the score of 80.
- 37) Compare the three box plots. Explain what you notice in comparing the three different box plots.

**ASSESSMENT OPTIONS:**

Suppose your test scores were 55, 85, 90,100, 75, 60, 80, 85. Find the mode, median, mean, and range, as well as quartile 1, quartile 3, and the minimum and maximum.

- 1) Construct a box plot for the data.
- 2) How could you change the data so that the box plot only had one whisker – the whisker on the right side? Explain.