

Chapter 3 Activity

A math instructor wrote two versions of the same test and believed them to be of equal difficulty. The first version was given to a random sample of 36 students, and the second version was given to a random sample of 41 students.

Your job is to help the instructor decide if the two tests were of equal difficulty, or if one of the exams was harder than the other. Here are the scores of the two versions.

(Data can be found as "AMATYC 2020" in the "Woodbury Math 21" StatCrunch group.)

Version A

91	79	82	86	88	88	82	88
88	64	98	90	75	60	93	80
86	82	63	77	82	69	79	73
57	92	82	85	94	77	74	90
53	68	62	77				

Version B

69	84	79	94	85	96	94	79
71	94	70	86	82	91	64	86
87	87	92	69	74	95	77	95
94	80	69	98	96	87	76	91
82	89	76	95	95	72	82	82
85							

Step 1: Create a frequency distribution for each set of test scores.

(*Hint:* Make histograms for each test, starting at 40 with a width of 10.)

Score	Test A		Test B	
	Frequency	Rel. Freq.	Frequency	Rel. Freq.
40 to 50				
50 to 60				
60 to 70				
70 to 80				
80 to 90				
90 to 100				

Step 2: Create a pie chart showing the letter grade breakdown for each test.
(Pie chart with data.)

Grade	Test A Count	Test B Count
A		
B		
C		
D		
F		

Test A Pie	Test B Pie

Step 3: Compute the following measures of central tendency for each test.

<i>Statistic</i>	<i>Test A</i>	<i>Test B</i>
<i>Mean</i>		
<i>Median</i>		
<i>Mode</i>		

Step 4: Compute the following measures of dispersion for each test for each test.

<i>Statistic</i>	<i>Test A</i>	<i>Test B</i>
<i>Range</i>		
<i>Standard Deviation</i>		
<i>Variance</i>		
<i>IQR</i>		

Step 5: Compute the 5-number summary for each test.

<i>Statistic</i>	<i>Test A</i>	<i>Test B</i>
<i>Minimum</i>		
<i>Q1</i>		
<i>Median</i>		
<i>Q3</i>		
<i>Maximum</i>		

Step 6: Draw a box plot for each set of scores on the same graph.

Step 7: Were the two exams of equal difficulty? Which pieces of evidence led you to your decision? Write a paragraph to explain your decision.