



# AP\* Statistics Practice Questions Using TI-Nspire™ Technology

Example 1: A world organization report gives the following percentages for primary-school-age children enrolled in school in the 17 countries of each of two geographic regions.

**Region A:** 36, 45, 52, 56, 56, 58, 60, 63, 65, 66, 69, 71, 72, 74, 77, 82, 92

**Region B:** 35, 41, 43, 43, 45, 48, 50, 54, 65, 76, 78, 82, 83, 85, 87, 89, 92

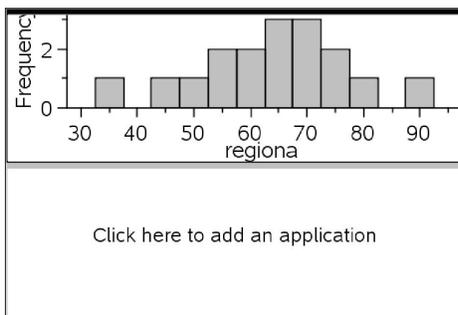
- (a) Compare the two distributions
- (b) If the organization has education funds to help only one region, give an argument for which should be helped.
- (c) A researcher plans to run a two-sample  $t$ -test to study the difference in means between the percentages from each region. Comment on his plan.

Help from the TI-Nspire:

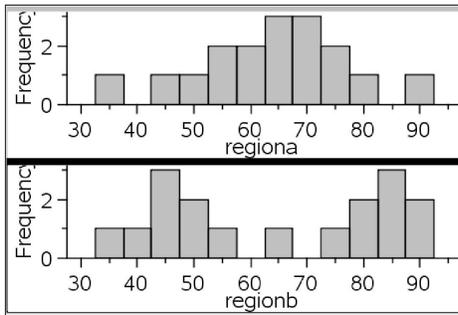
Select → "New Document" → "Add Lists & Spreadsheet"  
 Name the first two columns "regiona" and "regionb"  
 Put the data into the columns.

A	regiona	B	regionb	C	D
1	36		35		
2	45		41		
3	52		43		
4	56		43		
5	56		45		
6	58		48		

Select → "Data & Statistics"  
 Select → "Page Layout" → "Select Layout" → "Layout 3"  
 Move cursor to "Click to add variable" → → select "regiona"  
 Select → "Plot Type" → "Histogram"



Select "**ctrl**" "**tab**" to move to lower area  
 Select "**menu**" → "Add Data & Statistics"  
 Move cursor to "Click to add variable" → "**2/x**" → select "regionb"  
 Select "**menu**" → "Plot Type" → "Histogram"



From this TI-Nspire screen, we can answer question (a):

A complete answer compares shape, center, and spread.

*Shape.* While the percentages in both regions have roughly symmetric distributions, the percentages from Region A form a distinctly unimodal pattern, while those from Region B are distinctly bimodal. That is, in Region B the countries tended to show either a very low or a very high percentage, while in Region A most countries showed a percentage near the middle one.

*Center.* The center of both distributions is about 65.

*Spread.* The spread as measured by range is about the same in both distributions,  $92 - 36 = 56$  and  $92 - 35 = 57$ .

Answers to parts (b) and (c) require understanding of the context of the problem.

- (b) An argument can be made either for Region A because Region B has so many countries with high percentages (for primary-school-age children enrolled in school), or the argument can be made for Region B because Region B has so many countries with low percentages.
- (c) Data is already given on *all* the countries in the two regions. In doing inference, one uses sample statistics to estimate population parameters. If the data are actually the whole population, there is no point of a *t*-test.