

24. Significance test for a difference in proportions

The TI-Nspire can be used to perform significance tests for comparing two proportions. Here, we use the data from the Hungry Children example on page 631.

To perform a test of: $H_0 : p_1 - p_2 = 0$.


- Press $\left(\frac{\square}{\square}\right)$ (or $\left(\frac{\square}{\square}\right)$ on **A**) to insert a *Calculator Scratchpad*.
 - Press **menu** \rightarrow *Statistics* \rightarrow *Stat Tests* \rightarrow *2-Prop z test*.
 - A dialogue box will appear. Enter the values shown: $x_1 = 19$, $n_1 = 80$, $x_2 = 26$, $n_2 = 150$. Specify the alternative hypothesis $H_a : p_1 \neq p_2$ as shown.
- tab** to **OK** and press **enter**.

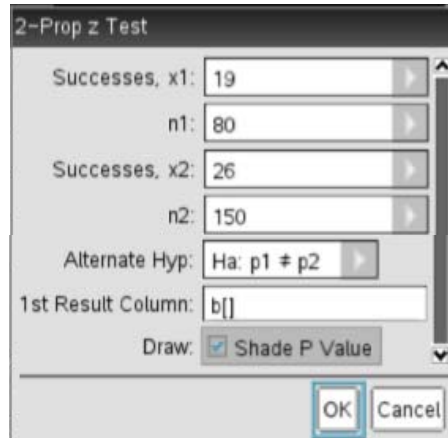
You will see that the z statistic is $z = 1.168$ and the P -value is 0.2427, as shown here. Do you see the combined proportion of students who didn't eat breakfast? It's the value of \hat{p} , which is 0.1957.

zTest_2Prop 19,80,26,150,0: stat.results	
"Title"	"2-Prop z Test"
"Alternate Hyp"	"p1 ≠ p2"
"z"	1.16835
"PVal"	0.242667
"p1"	0.2375
"p2"	0.173333
"p"	0.195652
"n1"	80.
"n2"	150.

To display the P -value as a shaded area under the standard Normal curve:

TI-Nspire Technology Corners

Press **(on)**, select the *Lists & Spreadsheet* icon .
Press **(menu)** → *Statistics* → *Stat Tests* → *2-Prop z test*.
A dialogue box will appear:



The dialog box titled "2-Prop z Test" contains the following fields and options:

- Successes, x1: 19
- n1: 80
- Successes, x2: 26
- n2: 150
- Alternate Hyp: Ha: $p_1 \neq p_2$
- 1st Result Column: b[]
- Draw: Shade P Value
- Buttons: OK, Cancel

Enter the values as shown in the box. Check the box to *Shade P value*. **(tab)** to **(OK)** and press **(enter)**.

