



22. TECHNOLOGY CORNER

SIGNIFICANCE TEST FOR A DIFFERENCE IN PROPORTIONS

TI-Nspire instructions in Appendix B; HP Prime instructions on the book's Web site.

The TI-89 can be used to perform significance tests for comparing two proportions. Here, we use the data from the hungry children example. To perform a test of $H_0: p_1 - p_2 = 0$ versus $H_a: p_1 - p_2 \neq 0$:

TI-89

- In the Statistics/List Editor, press **[2nd]** **[F1]** (**[F6]**) and choose 2-PropZTest.
- When the 2-PropZTest screen appears, enter the values $x_1 = 19$, $n_1 = 80$, $x_2 = 26$, $n_2 = 150$. Specify the alternate hypothesis $p_1 \neq p_2$, as shown.

2-PropZTest

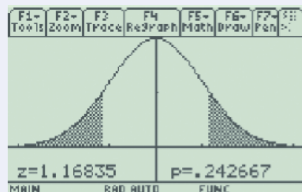
Successes, x1: 19
n1: 80
Successes, x2: 26
n2: 150
Alternate Hyp: \neq
Results: Calculate
Enter=OK ESC=CANCEL

- If you select “Calculate” and press **[ENTER]**, you will see that the test statistic is $z = 1.168$ and the P -value is 0.2427. Do you see the combined proportion of students who didn't eat breakfast? It's the value labeled \hat{p} , 0.1957.

2-PropZTest

$p_1 \neq p_2$
z = 1.16835
P Value = 0.242667
p1-hat = 0.2375
p2-hat = 0.173333
p-hat = 0.195652
n1 = 80
n2 = 150
Enter=OK

- If you select the “Draw” option, you will see the screen shown here.



AP® EXAM TIP The formula for the two-sample z statistic for a test about $p_1 - p_2$ often leads to calculation errors by students. As a result, we recommend using the calculator's 2-PropZTest feature to perform calculations on the AP® exam. Be sure to name the procedure (two-proportion z test) and to report the test statistic ($z = 1.17$) and P -value (0.2427) as part of the “Do” step.