

## TOPIC: INDEPENDENCE TEST USING A TI-84

### Independence Test Using a TI-84

◆ To run an independence test using a TI-84, enter data in a \_\_\_\_\_, then use the **C:  $\chi^2$ -Test** function.

#### EXAMPLE

A research hospital runs a trial with the following results. Determine if the group a participant was in is independent from their symptoms improving.

Let  $\alpha = 0.05$ .

	Group A	Group B	Placebo
Yes	44	38	13
No	26	32	57

$H_0$ :

$H_a$ :

Because  $P$ -value = \_\_\_\_ [ $<$  |  $>$ ]  $\alpha$ , we [ **REJECT** | **FAIL TO REJECT** ]  $H_0$ .

There is [ **ENOUGH** | **NOT ENOUGH** ] evidence to conclude that whether a participant's symptoms improved is dependent on the group the participant was in.



#### HOW TO: Independence Test on TI-84

1) Enter data in matrix

**2ND** **x<sup>-1</sup>** (matrix)

2) **STAT**, **>** **TESTS**

**v** **C:  $\chi^2$ -Test**

3) Observed: [A]

Expected: [B]

**Calculate** Draw

#### PRACTICE

A student performs a Goodness of Fit Test using technology to see if pet ownership is independent of relationship status. They get the following results:  $\chi^2 = 0.545$  &  $p = 0.7614$ . What can they conclude about pet ownership and relationship status?

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### EXAMPLE

A college claims that the instruction delivery method is independent of the final grade students in the class receive, so they collect a random sample of students and record the data below. Perform an independent test for the claim with  $\alpha = 0.05$ .

	A	B	C	D	E
Online	26	45	31	13	6
Hybrid	31	56	29	12	9
In-Person	56	99	60	25	16

$H_0$ :

$H_a$ :

Because  $P$ -value [ < | > ]  $\alpha$ , we [ REJECT | FAIL TO REJECT ]  $H_0$ .

There is [ ENOUGH | NOT ENOUGH ] evidence to conclude that a student's final grade is dependent on the instruction delivery method of the class.

### HOW TO: Independence Test on TI-84

1) Enter data in matrix

**2ND** **x<sup>-1</sup>** (matrix)

2) **STAT**, **>** **TESTS**

**▼** **C:  $\chi^2$ -Test**

3) Observed: [A]

Expected: [B]

**Calculate** Draw

### EXAMPLE

A math textbook company claims that the proportion of books sold for each subject is the same across book type sold. They collected data on a random sample of book purchases. Perform a homogeneity test for the claim with  $\alpha = 0.05$ .

	STATS	CALC	ALG	Other
Hardcover	27	48	29	11
Softcover	30	57	26	14
Digital	98	67	49	2

$H_0$ :

$H_a$ :

Because  $P$ -value [ < | > ]  $\alpha$ , we [ REJECT | FAIL TO REJECT ]  $H_0$ . There is [ ENOUGH | NOT ENOUGH ] evidence to conclude that the proportion of books sold for each subject is not the same across book type.