2-Proportion command in Minitab 17

for confidence intervals and hypothesis tests on two proportions

Please read the material on the 2-sample-t command before reading this. There are many similarities.

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								or₁/2 2 Variances		groups differ significantly.		

There are three ways that the data can be read in:

- Both samples are in one column
- Each sample is in its own column
- Summarized data

Here is the worksheet with two different sets of data.

Columns 1 and 2 have both samples in one column. The data is in C1 and the Group is in C2. Columns 4 and 5 have each sample in its own column.

💭 Worksheet 1 ***							
÷	C1-T	C2-T	C3	C4-T	C5-T		
	Responses	Group		Group A	Group B		
4	No	Species 1		Yes	No		
5	Yes	Species 1		No	No		
6	No	Species 2		No	Yes		
7	No	Species 3		Yes	Yes		

In this handout, we will focus only on entering summarized data. (The others are done in a similar way to the corresponding situtations in 2-Sample-t.)

We will test Ho: $p_1 = p_2$ versus Ha: $p_1 \neq p_2$.

Since this is a hypothesis test, we use the pooled proportion to estimate the standard deviation, so choose that in the dialog box.

We aren't doing a confidence interval so the confidence level isn't relevant. Our Ho says the two proportions are equal, so that says the "hypothesized difference" is 0. As that is the default value already in this box, we leave it.



The output gives a very large p-value, which isn't a surprise because the two sample proportions are very close. The output gives a confidence interval, but that is marked out here because you should not use it. The method we chose, of pooling the data to estimate the proportion for the standard deviation, is appropriate for a hypothesis test, but NOT for a confidence interval.

Sample 1	X 78	N 127	Sample p 0.614173					
2	153	245	0.624490					
Difference = $p(1) - p(2)$ Estimate for difference: -0.0103166								
Test for difference = 0 (vs \neq 0): Z = -0.19 P-Value = 0.846								
Fisher's exact test: P-Value = 0.910								

The output also gives a second p-value from a different test that could be used on these data. We did not learn about Fisher's exact test in our course, so do not quote this result.

Find a 99% confidence interval for the difference of p_1 and p_2 .

In the dialog box, we will put in the 99%, make sure the alternative hypothesis is "not equal", and change the option to "Estimate the proportions separately."

Two-Sample Proportion		Two-Sample Proportion
Sum	nmarized data	Two-Sample Proportion: Options
Num	Sample 1 Sample	2 Difference = (sample 1 proportion)ple 2 proportion)
Num	when of trials: 127 245	Confidence level: 99.0
		Hypothesized difference: 0.0
		Alternative hypothesis: Difference ≠ hypothesized difference
		Test method: Estimate the proportions separately
Select	Optior	15 Help OK Cancel
Help	<u>Q</u> K Can	cel Help <u>OK</u> Cancel

In the output, we see the confidence interval. Since we didn't choose "pool" option, the hypothesis test conclusion here is not fully correct, so that is marked out.

Test and CI for Two Proportions

```
Sample X N Sample p

1 78 127 0.614173

2 153 245 0.624490

Difference = p (1) - p (2)

Estimate for difference: -0.0103166

99% CI for difference: (-0.147176, 0.126543)

Text for difference: 0 (m (0): 7 - 0.10 D Malue = 0.846
```