# $\frac{\frac{N_2}{2}}{\frac{-1)s_2^2}{2}(\frac{1}{N_1} + \frac{1}{N_2})} \quad \text{Social Science Statistics} \quad ^{t=} \frac{\frac{N_1}{N_2} - \frac{N_2}{2}}{\sqrt{\frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2}(\frac{1}{N_1} + \frac{1}{N_2})}}$

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# T-Test Calculator for 2 Independent Means

#### Success!

### Explanation of results

The output of this calculator is pretty straightforward. The values of t and p appear at the bottom of the page. If the text is blue, your result is significant; if it's red, it's not. The only thing that might catch you out is the way that we've rounded the data. The data you see in front of you, apart from the t and p values at the page bottom, has been rounded to 2 significant figures. However, we did not round when actually calculating the values of t and p. This means if you try to calculate these values on the basis of the summary data provided here, you're likely going to end up with a different, less accurate, result. This is especially the case if you're dealing with numbers that are fractions of 1.

Treatment 1 ( <i>X</i> )	Diff(X - M)	$Sq. Diff(X-M)^2$
52	3.60	12.96
45	-3.40	11.56
50	1.60	2.56
49	0.60	0.36
52	3.60	12.96
47	-1.40	1.96
49	0.60	0.36
45	-3.40	11.56
51	2.60	6.76
44	-4.40	19.36
	M: 48.40	SS: 80.40

Treatment 2 (X)	Diff(X - M)	$Sq. Diff(X - M)^2$
51	-2.40	5.76
53	-0.40	0.16
54	0.60	0.36
52	-1.40	1.96
59	5.60	31.36
42	-11.40	129.96
57	3.60	12.96
59	5.60	31.36
49	-4.40	19.36
58	4.60	21.16
	M: 53.40	SS: 254.40





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N<sub>2</sub>: 10  $df_2 = N - 1 = 10 - 1 = 9$  $M_2$ : 53.4 SS<sub>2</sub>: 254.4  $s^2_2 = SS_2/(N-1) = 254.4/(10-1) = 28.27$ 

# T-value Calculation

$$\begin{split} s^2_p &= ((df_1/(df_1 + df_2)) * s^2_1) + ((df_2/(df_2 + df_2)) \\ * s^2_2) &= ((9/18) * 8.93) + ((9/18) * 28.27) = 18.6 \end{split}$$

$$s^2_{M_1} = s^2_{p}/N_1 = 18.6/10 = 1.86$$
  
 $s^2_{M_2} = s^2_{p}/N_2 = 18.6/10 = 1.86$ 

$$t = (M_1 - M_2)/\sqrt{(s^2_{M_1} + s^2_{M_2})} = -5/\sqrt{3.72} = -2.59$$

The *t*-value is -2.59238. The *p*-value is .009196. The result is significant at p < .05.

Note: If you wish to calculate the effect size, this calculator will do the job.

Want to know how to report this t-test result in your work? (Opens in a new tab so you don't lose your calculation.)

How to report a *t*-test result (APA)

Calculate T and P Values Reset

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