CIMT Further Stats p74 Example.

X = "difference" in scores. (where difference = experimental - control)

X is assumed Normal, as given in question

$X \sim N(\mu, \sigma^2)$

$H_0 : \mu = 0$

$H_1 : \mu > 0$.

Assume H_0 to be true

$\alpha = 5\%$

one tailed test

Pair	1	2	3	4	5	6	7	8	9	10
Control	72	82	93	65	76	89	81	58	95	91
Experimental	75	79	84	71	82	91	85	68	90	92
E - C	3	-3	-9	6	6	2	4	10	-5	1

we estimate σ^2 from (E-C)'s $S_{n-1} = 5.72033$ and we have $n = 10$ (small) so we use a t-test on the differences (so turning this into a single sample t-test)

we also know that $\bar{x} = 1.5$

so $X \sim N(0, \sigma^2)$

$\bar{X} \sim N(0, \frac{\sigma^2}{10})$ where $\bar{X}$ = mean difference

$\dfrac{\bar{X} - 0}{\sqrt{\frac{\sigma^2}{10}}} \sim N(0, 1^2)$

So $t = \dfrac{\bar{x} - 0}{\sqrt{\frac{S_{n-1}^2}{10}}}$ is a value from the t_9 distribution.

p-value $= P\left(t_9 > \dfrac{1.5 - 0}{\sqrt{\frac{5.72^2}{10}}}\right)$

$= P(t_9 > 0.82922)$

$= 0.214212$

> 0.05

So we have no evidence to reject H_0 and conclude that the mean difference in scores is zero, and this suggests that the educational computer package does not deliver improvements in pupil's understanding of geometry.

on Ti-Nspire > Menu > Stats > Stat Tests > t Test   on differences

NOT 2-Sample t Test (which is used for non-paired data)