

LEMBAR PERHITUNGAN STATISTIK

WRS Cahaya Merah Sebelum dan Setelah Pemberian Jus Nanas

X_1 (milidetik)	X_2 (milidetik)	$d(X_2-X_1)$	d^2
418	337	-81	6561
364	280	-84	7056
419	361	-58	3364
432	435	3	9
338	269	-69	4761
477	354	-123	15129
655	429	-226	51076
535	32	-203	41209
522	371	-151	22801
410	318	-92	8464
427	365	-62	3844
423	307	-116	13456
405	334	-71	5041
573	298	-275	75625
367	342	-25	625
347	289	-58	3364
424	365	-59	3481
327	297	-30	900
367	368	1	1
328	306	-22	484
$X_1= 428$	$X_2= 338$	$\Sigma d= -1801$	$\Sigma d^2= 267251$

$$\begin{aligned}
 t_{\text{hit}} &= \frac{d}{S_d / \sqrt{n}} \\
 &= \frac{90.05}{74.36430595 / \sqrt{20}} \\
 &= \frac{90.05}{16.62836432} \\
 &= 5.415445456
 \end{aligned}$$

$$t_{\text{tabel } 5\%} = 1.729$$

$$\begin{aligned}
 S_d^2 &= \frac{\sum d^2 - (\sum d)^2/n}{n - 1} \\
 &= \frac{267251 - (-1801)^2 / 20}{20 - 1} \\
 &= \frac{267251 - 162180.05}{19} \\
 &= \frac{105070.95}{19} \\
 &= 5530.05
 \end{aligned}$$

$$\begin{aligned}
 S_d &= \sqrt{5530.05} \\
 &= 74.36430595
 \end{aligned}$$

$$\begin{aligned}
 d &= \frac{\sum d}{n} \\
 &= \frac{-1801}{20} \\
 &= -90.05
 \end{aligned}$$

WRS Cahaya Kuning Sebelum dan Setelah Pemberian Jus Nanas

X_1 (milidetik)	X_2 (milidetik)	$d(X_2-X_1)$	d^2
335	357	22	484
353	293	-60	3600
554	367	-187	34969
518	457	-61	3721
401	349	-52	2704
549	357	-192	36864
668	446	-222	49284
549	365	-184	33856
525	391	-134	17956
442	338	-104	10816
425	383	-42	1764
426	338	-88	7744
409	345	-64	4096
691	350	-341	116281
437	422	-15	225
444	328	-116	13456
456	377	-79	6241
343	334	-9	81
443	408	-35	1225
391	342	-49	2401
$X_1= 468$	$X_2= 367$	$\Sigma d= -2012$	$\Sigma d^2= 347768$

$$\begin{aligned}
 t_{\text{hit}} &= \frac{d}{s_d / \sqrt{n}} \\
 &= \frac{100.6}{87.46752781 / \sqrt{20}} \\
 &= \frac{100.6}{19.5583338} \\
 &= 5.143587436
 \end{aligned}$$

$$t_{\text{tabel } 5\%} = 1.729$$

$$\begin{aligned}
 Sd^2 &= \frac{\sum d^2 - (\sum d)^2/n}{n - 1} \\
 &= \frac{347768 - (-2012)^2 / 20}{19} \\
 &= \frac{347768 - 4048144/20}{19} \\
 &= \frac{347768 - 202407.2}{19} \\
 &= \frac{145360.8}{19} \\
 &= 7650.568421 \\
 Sd &= \sqrt{7650.568421} \\
 &= 87.46752781
 \end{aligned}$$

$$\begin{aligned}
 d &= \frac{\sum d}{n} \\
 &= \frac{-2012}{20} \\
 &= -100.6
 \end{aligned}$$

WRS Cahaya Jingga Sebelum dan Setelah Pemberian Jus Nanas

X_1 (milidetik)	X_2 (milidetik)	$d(X_2-X_1)$	d^2
368	376	8	64
347	303	-44	1936
506	402	-104	10816
505	465	-40	1600
370	365	-5	25
531	395	-136	18496
686	472	-214	45796
570	380	-190	36100
526	407	-119	14161
445	358	-87	7569
435	406	-29	841
445	370	-75	5625
420	371	-49	2401
576	366	-210	44100
456	435	-21	441
452	347	-105	11025
484	398	-86	7396
363	364	1	1
467	427	-40	1600
406	370	-36	1296
$X_1= 468$	$X_2= 389$	$\Sigma d= -1581$	$\Sigma d^2= 211289$

$$\begin{aligned}
 t_{\text{hit}} &= \frac{d}{s_d / \sqrt{n}} \\
 &= \frac{79.05}{67.39941824 / \sqrt{20}} \\
 &= \frac{79.05}{15.07096808} \\
 &= 5.245183958
 \end{aligned}$$

$$t_{\text{tabel } 5\%} = 1.729$$

$$\begin{aligned}
 Sd^2 &= \frac{\sum d^2 - (\sum d)^2/n}{n - 1} \\
 &= \frac{211289 - (-1581)^2 / 20}{19} \\
 &= \frac{211289 - 2499561 / 20}{19} \\
 &= \frac{211289 - 124978.05}{19}
 \end{aligned}$$

$$= 4542.681579$$

$$Sd = \sqrt{4542.681579}$$

$$= 67.39941824$$

$$\begin{aligned}
 d &= \frac{\sum d}{n} \\
 &= \frac{-1581}{20} \\
 &= -79.05
 \end{aligned}$$

WRS Cahaya Hijau Sebelum dan Setelah Pemberian Jus Nanas

X_1 (milidetik)	X_2 (milidetik)	$d(X_2-X_1)$	d^2
423	391	-32	1024
448	318	-130	16900
561	427	-134	17956
482	490	8	64
523	378	-145	21025
559	413	-146	21316
666	490	-176	30976
690	407	-283	80089
632	428	-204	41616
468	407	-61	3721
507	486	-21	441
457	393	-64	4096
490	383	-107	11449
705	383	-322	103684
459	447	-12	144
524	371	-153	23409
584	488	-96	9216
413	380	-33	1089
476	458	-18	324
510	413	-97	9409
$X_1= 529$	$X_2= 418$	$\Sigma d= -2226$	$\Sigma d^2= 397948$

$$\begin{aligned}
 t_{\text{hit}} &= \frac{d}{s_d / \sqrt{n}} \\
 &= \frac{111.3}{88.90983014 / \sqrt{20}} \\
 &= \frac{111.3}{19.88084241} \\
 &= 5.59835432
 \end{aligned}$$

$$t_{\text{tabel } 5\%} = 1.729$$

$$\begin{aligned}
 Sd^2 &= \frac{\sum d^2 - (\sum d)^2/n}{n - 1} \\
 &= \frac{397948 - (-2226)^2 / 20}{19} \\
 &= \frac{397948 - 4955076 / 20}{19} \\
 &= \frac{397948 - 247753.8}{19} \\
 &= \frac{150194.2}{19} \\
 &= 7904.957895 \\
 Sd &= \sqrt{7904.957895} \\
 &= 88.90983014 \\
 d &= \frac{\sum d}{n} \\
 &= \frac{-2226}{20} \\
 &= -111.3
 \end{aligned}$$

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