1. On the level alpha=0.05, test whether the two samples from the table below have the same means using T^2 statistic.

Haltica oleracea					*Haltica carduorum*				
Experiment Number	y_1	y_2	y_3	y_4	Experiment Number	y_1	y_2	y_3	y_4
1	189	245	137	163	1	181	305	184	209
2	192	260	132	217	2	158	237	133	188
3	217	276	141	192	3	184	300	166	231
4	221	299	142	213	4	171	273	162	213
5	171	239	128	158	5	181	297	163	224
6	192	262	147	173	6	181	308	160	223
7	213	278	136	201	7	177	301	166	221
8	192	255	128	185	8	198	308	141	197
9	170	244	128	192	9	180	286	146	214
10	201	276	146	186	10	177	299	171	192
11	195	242	128	192	11	176	317	166	213
12	205	263	147	192	12	192	312	166	209
13	180	252	121	167	13	176	285	141	200
14	192	283	138	183	14	169	287	162	214
15	200	294	138	188	15	164	265	147	192
16	192	277	150	177	16	181	308	157	204
17	200	287	136	173	17	192	276	154	209
18	181	255	146	183	18	181	278	149	235
19	192	287	141	198	19	175	271	140	192
					20	197	303	170	205

2. Conduct a paired test to check whether the two samples from the table below have the same means.

Table 5.9. Number of Words and Number of Verbs

	Informal		Formal			
	Words	Verbs	Words	Verbs		
Student	y_1	y_2	x_1	x_2	$d_1 = y_1 - x_1$	$d_2 = y_2 - x_2$
1	148	20	137	15	+11	+5
2	159	24	164	25	−5	−1
3	144	19	224	27	−80	−8
4	103	18	208	33	−105	−15
5	121	17	178	24	−57	−7
6	89	11	128	20	−39	−9
7	119	17	154	18	−35	−1
8	123	13	158	16	−35	−3
9	76	16	102	21	−26	−5
10	217	29	214	25	+3	+4
11	148	22	209	24	−61	−2
12	151	21	151	16	0	+5
13	83	7	123	13	−40	−6
14	135	20	161	22	−26	−2
15	178	15	175	23	+3	−8