

AN ANALYSIS OF THE
PLACEMENT EXAMINATION SCORES AT
MICHIGAN STATE COLLEGE
BY USE OF MULTIPLE AND PARTIAL
CORRELATIONS

THESIS FOR THE DEGREE OF M. A.
Gaylord Armond Walker
1932

Correlation (Statistics)

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AT
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BY USE OF
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Thesis

Submitted to the Faculty of the
Michigan State College of Agriculture
and Applied Science in Partial Ful-
fillment of the Requirements for the
Degree of Master of Arts

by

Gaylord Armond Walker

September, 1952

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Although placement examinations have been given to freshmen entering Michigan State College for some years, very little has been done to determine the relation of the grades received on these examinations to the grades received in college. Since the basic purpose of these placement examinations is to determine the mental aptitude of each student, it is highly important that the true value of these examinations as barometers be known.

With the above purpose in mind, the following study in the correlation of the scores from the placement examinations and the grades as received by the same students for their first term in college has been worked out.

Three examinations were given to the freshmen when they entered school, namely English, Psychology, and Mathematics. For the purpose of facilitating the correlation, the range of grades received on these examinations was divided into four quartiles, and the grades recorded as being in quartiles 1, 2, 3, or 4, with quartile #4

being the highest and quartile #1 being the lowest. In determining the numerical figure to be used to represent the grades received for the first term in college, a grade of A was given a weight of 3, B of 2, C of 1, D of 0, and F of -1. The weights were added together for each student and divided by the number of courses taken. Grades in Military Science and Physical Education were not included. A slight error was introduced at this point due to the fact that each course was given the same weight but this error is minimized to some extent since the academic courses taken during the freshman year are all basic required courses and hence are not influenced by the individual student's likes and dislikes.

The problem is separated into two sections. The first section consists of a random sample of 300 students taken from the college at large and the partial and multiple correlations are computed between the three placement examinations and their respective grades for the first term as outlined above. The second section treats the problem from the standpoint of the division in which the student is enrolled. For this purpose random samples of 100 Liberal Arts students, and 50 students from each of

*

the two divisions, Home Economics and Engineering, were selected. This does not take in all the divisions of the college, but is fairly representative of the group. Moreover, the results obtained in this section are of special interest since the Liberal Arts group is composed of both men and women, the Home Economics group is women only, and the Engineering group is men only.

Following are the results and conclusions arrived at for each section. The tables of computation are arranged after the discussion. In testing the significance of the correlation coefficients, the t-test* was used.

*See page 159, "Statistical Methods for Research Workers"

by R. A. Fisher

Section I - Results

Regression equation:

$$t = b_1x + b_2y + b_3z$$

Solution by use of normal equations:

$$b_1 = .165277$$

$$b_2 = .215607$$

$$b_3 = .124932$$

Standard error = .635375

Standard deviation = .774084

Multiple Correlation Coefficient = .571200

$t = 12.0131$ Significant

Single Correlation Coefficients:

$r_{xy} = .576498$	$t = 12.1796$	Significant
$r_{xz} = .362482$	$t = 6.0837$	Significant
$r_{yz} = .517279$	$t = 10.4540$	Significant
$r_{xt} = .445639$	$t = 8.5934$	Significant
$r_{yt} = .529302$	$t = 10.7695$	Significant
$r_{zt} = .411485$	$t = 7.7937$	Significant

Note:

x - English Placement Examination Score
 y - Psychology Placement Examination Score
 z - Mathematics Placement Examination Score
 t - Index of Grades Received First Term in College

Partial Correlation Coefficients:

(Holding one variable fixed)

$r_{xy.z}$	= .501174	$t = 9.9810$	Significant
$r_{xt.z}$	= .359284	$t = 6.6648$	Significant
$r_{yt.z}$	= .405701	$t = 7.6495$	Significant
$r_{zt.y}$	= .189626	$t = 5.6284$	Significant
$r_{xt.y}$	= .202663	$t = 3.5666$	Significant
$r_{xz.y}$	= .049010		Not Significant

Partial Correlation Coefficients:

(Holding two variables fixed)

$r_{xt.yz}$	= .197181	$t = 3.4603$	Significant
$r_{yt.xz}$	= .279404	$t = 5.0065$	Significant
$r_{zt.xy}$	= .183722	$t = 3.2156$	Significant

Section I - Conclusions

A multiple correlation of .571200 shows that there is a fairly close relation between the grades received in college and the placement examinations. The single correlations indicate that the psychology placement examination with a correlation of .529502, is the best criterion of the students' ability and that mathematics is the least reliable.

The partial correlation of the psychology score and grades with the mathematics and english scores held constant is the best of the partial correlation, although the best of the three, is only .279404 which is rather low.

Since the multiple correlation index is only approximately .05 better than the single correlation index between the psychology score and the grades, it appears that the psychology placement examination alone may be used to predict success in college with practically the same accuracy as can be obtained when all three tests are used.

Section II - Results
Liberal Arts Students (n = 100)

Regression equation:

$$t = b_1x + b_2y + b_3z$$

Solution by use of normal equations:

$$b_1 = .193670$$

$$b_2 = .194601$$

$$b_3 = .099002$$

Standard error = .656015

Standard deviation = .778186

Multiple Correlation Coefficient = .537905

$t = 6.3167$ Significant

Single Correlation Coefficients:

$r_{xy} = .482975$ $t = 5.4603$ Significant

$r_{xz} = .347220$ $t = 3.6653$ Significant

$r_{yz} = .519256$ $t = 6.0148$ Significant

$r_{xt} = .458339$ $t = 5.1051$ Significant

$r_{yt} = .481528$ $t = 5.4390$ Significant

$r_{zt} = .373317$ $t = 3.9837$ Significant

Partial Correlation Coefficients:

(Holding one variable fixed)

$r_{xy.z}$	= .377667	$t = 4.0171$	Significant
$r_{xt.z}$	= .377841	$t = 4.0192$	Significant
$r_{yt.z}$	= .362852	$t = 3.8351$	Significant
$r_{zt.y}$	= .164591	$t = 1.6434$	Barely Significant
$r_{xt.y}$	= .294196	$t = 3.0316$	Significant
$r_{xz.y}$	= .128862	$t = 1.2792$	Barely Significant

Partial Correlation Coefficients:

(Holding two variables fixed)

$r_{xt.yz}$	= .279086	$t = 2.8476$	Significant
$r_{yt.xz}$	= .256816	$t = 2.6036$	Significant
$r_{zt.xy}$	= .133660	$t = 1.3215$	Not Significant

Section II - Results
Engineering Students (n = 50)

Regression equation:

$$t = b_1x + b_2y + b_3z$$

Solution by use of normal equations:

$$b_1 = .187459$$

$$b_2 = .055279$$

$$b_3 = .248236$$

Standard error = .674073

Standard deviation = .759581

Multiple Correlation Coefficient = .460948

$t = 3.5986$ Significant

Single Correlation Coefficients:

$r_{xy} = .744641$ $t = 7.7292$ Significant

$r_{xz} = .276089$ $t = 1.9902$ Significant

$r_{yz} = .365780$ $t = 2.4698$ Significant

$r_{xt} = .424515$ $t = 3.2483$ Significant

$r_{yt} = .387380$ $t = 2.9111$ Significant

$r_{zt} = .385332$ $t = 2.8935$ Significant

Partial Correlation Coefficients:

(Holding one variable fixed)

$r_{xy.z}$	= .720109	$t = 7.1151$	Significant
$r_{xt.z}$	= .358685	$t = 2.6343$	Significant
$r_{yt.z}$	= .296803	$t = 2.1308$	Significant
$r_{zt.y}$	= .294000	$t = 2.1088$	Significant
$r_{xt.y}$	= .221104	$t = 1.5543$	Barely Significant
$r_{xz.y}$	= .041439		Not Significant

Partial Correlation Coefficients:

(Holding two variables fixed)

$r_{xt.yz}$	= .218767	$t = 1.5205$	Barely Significant
$r_{yt.xz}$	= .059459		Not Significant
$r_{zt.xy}$	= .292318	$t = 2.0732$	Significant

Section II - Results

Home Economics Students (n = 50)

Regression equation:

$$t = b_1x + b_2y + b_3z$$

Solution by use of normal equations:

$$b_1 = .079234$$

$$b_2 = .341264$$

$$b_3 = .292633$$

Standard error = .494391

Standard deviation = .812294

Multiple Correlation Coefficient = .793451

t = 9.0320 Significant

Single Correlation Coefficients:

$r_{xy} = .636003$	$t = 5.7101$	Significant
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$r_{xz} = .398015$	$t = 2.9380$	Significant
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$r_{yz} = .548447$	$t = 4.5442$	Significant
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$r_{xt} = .559342$	$t = 4.6749$	Significant
--------------------	--------------	-------------

$r_{yt} = .748968$	$t = 7.8312$	Significant
--------------------	--------------	-------------

$r_{zt} = .652816$	$t = 5.9706$	Significant
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Partial Correlation Coefficients:

(Holding one variable fixed)

$r_{xy.z}$	= .545452	$t = 4.4617$	Significant
$r_{xt.z}$	= .432486	$t = 3.2883$	Significant
$r_{yt.z}$	= .617174	$t = 5.3775$	Significant
$r_{zt.y}$	= .450800	$t = 3.5295$	Significant
$r_{xt.y}$	= .162516	$t = 1.1273$	Not Significant
$r_{xz.y}$	= .073149		Not Significant

Partial Correlation Coefficients:

(Holding two variables fixed)

$r_{xt.yz}$	= .145508	$t = .9961$	Not Significant
$r_{yt.xz}$	= .504558	$t = 3.9655$	Significant
$r_{zt.xy}$	= .451855	$t = 3.2474$	Significant

Section II - Conclusions

The results obtained in section 2 appear to uphold those arrived at in section 1, namely, that the best single correlation coefficient is almost as good as the multiple correlation coefficient and in every case, the partial correlation coefficients fall far below those of either the single or the multiple correlations. This would indicate that not much more accuracy is to be obtained by using the three placement examinations than is obtained if just the correction one is used.

It is interesting to note how the correlations vary for the different divisions.

For the Liberal Arts division, the correlation between the psychology placement examination scores and the grades is the highest with the English scores ranking second and the Mathematics third. For the partial correlations in this group in which two of the variables are held fixed, the correlation between the English scores and the grades with the psychology and Mathematics scores held constant is greater than that

between the Psychology scores and grades with the English and Mathematics scores held fixed. However, these partial correlation coefficients are too small to be of much value except to portray the relative influence which the different examinations have when they are held at a fixed value in a particular correlation.

For the Engineering division the English examination scores and grades give the highest correlation while the correlations between the Psychology scores and the grades and the Mathematics scores and grades are almost the same.

The correlation within the Home Economics division yields the best results of any of the divisions. In this case the multiple correlation coefficient is very high, almost .8, and the single correlations are also higher than the corresponding ones for the other divisions. Correlation between Psychology examination scores and grades is the highest single correlation with a coefficient of approximately .75, the correlation between the Mathematics scores and grades is second, and that between

the English scores and grades is third.

Some of the results obtained are contrary to expectations. One would expect the highest correlation between Psychology and grades for the Liberal Arts division and Home Economics division, but for the Engineering division one might expect the Mathematics score to correlate the best with the grades but with the sample used the English score correlated the best and the Mathematics the poorest. It would be interesting to check this result for succeeding years and determine whether these relations continue to hold true.

Note:

x - English Placement Examination Score
y - Psychology Placement Examination Score
z - Mathematics Placement Examination Score
t - Index of Grades Received First Term in College

Original Data-Section I

x	y	z	t	x	y	z	t
3	1	1	.7	3	4	4	1.0
1	3	1	1.2	1	1	2	.7
1	1	1	0	4	1	2	1.0
3	4	1	2.0	4	1	1	1.0
1	1	1	.5	3	4	4	1.3
3	3	3	2.1	1	1	1	1.2
4	2	3	.4	1	2	2	0
4	4	3	2.4	1	1	2	.2
2	1	2	.4	4	4	3	1.2
3	3	3	1.4	4	3	2	1.4
4	4	4	1.6	2	2	2	.2
4	4	1	1.2	2	2	1	1.0
1	1	3	1.2	2	4	4	.7
1	1	3	.7	4	4	1	2.0
4	4	1	1.1	4	4	2	2.4
2	3	2	1.0	1	2	4	1.2
4	2	1	.5	3	1	4	1.2
1	1	1	0	4	4	2	1.2
1	2	3	1.0	3	2	3	1.2
1	2	2	1.0	4	4	3	1.2
1	1	2	1.0	2	2	2	.5
3	4	4	2.2	3	2	2	1.1
2	2	2	.5	1	2	1	-.25
3	3	2	2.3	1	2	3	.5
2	1	1	-.2	1	2	2	0
<u>59</u>	<u>58</u>	<u>51</u>	<u>26.2</u>	<u>63</u>	<u>61</u>	<u>59</u>	<u>23.15</u>

Original Data-Section I

x	y	z	t	x	y	z	t
4	4	4	3.0	4	3	3	1.5
4	4	3	2.0	2	3	4	.6
1	4	3	2.0	4	3	3	1.8
4	2	1	.7	4	3	1	2.0
1	3	4	1.6	2	4	4	1.8
3	4	3	.8	3	2	4	.7
2	2	2	1.0	4	2	3	1.7
3	4	3	1.4	1	2	3	1.2
1	1	1	.2	2	3	3	0
4	4	3	1.8	4	1	2	.8
2	1	1	.2	3	2	2	2.0
3	4	3	.7	3	1	1	.2
1	3	3	1.4	4	4	4	3.0
4	4	4	2.2	1	1	1	.8
2	2	2	1.0	1	4	3	1.2
1	3	4	0	1	1	1	-.4
4	4	4	2.2	3	1	1	1.0
2	2	2	.2	4	4	3	.6
3	3	4	2.2	2	1	2	.2
3	1	1	0	2	3	3	.5
3	3	3	0	1	1	1	0
4	3	2	.4	1	1	1	-.4
3	3	4	1.6	1	1	2	.6
3	4	4	1.5	4	4	4	1.4
1	1	1	1.0	1	1	1	-.25
<u>66</u>	<u>73</u>	<u>69</u>	<u>29.1</u>	<u>62</u>	<u>56</u>	<u>60</u>	<u>22.55</u>

Original Data-Section I

x	y	z	t	x	y	z	t
2	2	3	-.4	4	3	4	1.4
3	3	3	.7	4	4	4	1.0
2	3	4	1.7	3	3	1	1.0
1	1	1	1.5	1	1	1	-.25
1	2	4	1.4	4	4	4	1.8
3	2	1	1.8	4	4	4	2.2
2	2	3	1.6	2	2	2	0
4	4	3	2.2	3	4	1	1.0
3	3	1	0	4	4	4	1.0
2	1	1	.2	3	3	4	2.0
3	4	2	2.0	2	2	1	0
4	1	2	2.0	1	1	1	1.3
3	4	1	1.0	3	3	3	1.6
3	1	2	1.2	4	4	2	2.2
4	2	3	.5	3	3	3	0
1	3	4	2.4	4	4	4	2.2
1	2	1	1.0	2	1	2	-.2
2	2	1	1.7	1	1	3	0
4	4	4	1.7	3	4	3	1.0
1	1	2	1.5	1	1	1	.7
4	4	3	1.8	1	1	1	.5
3	2	2	1.8	2	1	2	-.7
3	3	1	1.0	4	1	1	.6
3	4	2	-.25	4	3	3	1.0
4	3	4	1.7	1	2	2	.8
<u>66</u>	<u>63</u>	<u>58</u>	<u>31.75</u>	<u>68</u>	<u>64</u>	<u>61</u>	<u>22.15</u>

Original Data-Section I

x	y	z	t	x	y	z	t
3	1	1	1.0	1	1	1	.5
2	3	3	2.0	3	3	2	1.7
3	2	2	1.8	4	4	4	2.7
3	1	4	-.4	3	2	4	1.2
4	2	3	1.0	2	2	2	.6
2	2	2	1.2	1	3	2	1.6
3	3	3	1.2	2	1	3	1.0
1	1	1	1.0	4	4	2	.7
4	3	1	.6	1	1	1	1.0
2	1	3	0	4	4	4	2.2
4	3	3	1.6	2	2	2	-.1
4	4	4	1.0	1	2	1	.7
3	3	1	.3	1	3	3	1.0
4	4	4	2.0	3	2	1	1.0
4	4	4	2.5	3	3	3	2.2
1	1	2	1.6	4	4	2	2.3
4	4	2	1.5	3	2	4	2.5
4	4	4	2.4	1	1	2	-.25
3	3	3	1.5	2	1	1	.2
3	2	4	1.0	2	2	3	1.0
4	4	3	-.25	3	4	4	2.0
2	2	3	1.5	2	2	3	.4
2	1	2	.7	3	3	4	.6
3	3	1	1.5	3	3	3	.2
1	3	2	.6	1	1	1	0
<u>73</u>	<u>64</u>	<u>65</u>	<u>28.85</u>	<u>59</u>	<u>60</u>	<u>62</u>	<u>26.95</u>

Original Data-Section I

x	y	z	t	x	y	z	t
1	3	3	1.4	2	4	3	-.4
4	3	2	2.0	4	4	4	2.0
2	2	1	.2	4	2	2	1.2
1	1	4	1.4	2	1	1	.8
3	4	4	.5	3	4	2	1.4
3	3	2	0	2	4	2	1.7
4	3	3	1.4	1	1	1	0
1	1	1	.4	3	3	2	1.6
3	2	3	.7	1	1	4	0
4	4	4	2.0	4	4	3	.7
2	1	4	.7	1	1	2	1.8
4	3	4	2.2	2	3	3	.7
3	3	4	1.4	3	3	3	1.0
4	3	3	1.6	3	3	2	1.2
3	3	4	2.0	1	1	3	1.0
3	4	4	1.0	3	1	1	1.2
1	2	1	0	1	1	2	-.6
4	4	3	2.2	4	2	2	.8
1	2	1	-.5	1	1	2	.6
3	4	2	1.5	3	4	4	2.4
2	1	2	1.0	2	1	2	.2
1	2	1	0	1	1	2	0
3	2	2	.7	4	4	3	1.6
1	3	4	1.4	2	1	1	.8
3	4	3	1.4	3	3	4	1.6
<u>64</u>	<u>67</u>	<u>69</u>	<u>26.6</u>	<u>60</u>	<u>58</u>	<u>60</u>	<u>23.3</u>

Grand Totals

x	y	z	t
761	744	733	315.05

Means:

x's -	2.54
y's -	2.48
z's -	2.44
t's -	1.05

$\bar{x}$ equals x minus the mean of x

$\bar{y}$	"	y	"	"	"	"	y
$\bar{z}$	"	z	"	"	"	"	z
$\bar{t}$	"	t	"	"	"	"	t

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
-1.54	-1.48	-1.44	-1.05	1.617	1.554	1.512
.46	.52	-.44	-.85	-.391	-.442	.374
1.46	1.52	1.56	.55	.803	.856	.858
.46	1.52	.56	-.55	-.161	-.552	-.196
1.46	-.48	.56	-1.05	-1.553	.504	-.588
-1.54	-.48	1.56	.75	-1.155	-.360	1.170
-1.54	-.48	-.44	.15	-.251	-.072	-.066
-1.54	-.48	-.44	-1.50	2.002	.624	.572
1.46	-1.48	-.44	-.05	-.073	.074	.022
-1.54	-1.48	.56	-.85	1.309	1.258	-.476
1.46	-1.48	-1.44	-.55	-.803	.814	.792
-1.54	-1.48	-1.44	-.15	.251	.222	.216
-.54	-1.48	-1.44	.35	-.189	-.518	-.504
-.54	.52	-.44	-.25	.155	-.130	.110
-.54	-.48	-1.44	-.55	.297	.264	.792
1.46	1.52	1.56	1.75	2.555	2.600	2.730
-.54	.52	-.44	-.45	.243	-.254	.198
1.46	1.52	.56	1.35	1.971	2.052	.756
1.46	.52	1.56	.45	.657	.234	.702
-.54	.52	-.44	.95	-.513	.494	-.418
.46	.52	-.44	1.25	.575	.650	-.550
-.54	.52	1.56	-.25	.135	-.130	-.390
-.54	-1.48	-1.44	-1.05	.567	1.554	1.512
.46	-.48	-1.44	.15	.069	-.072	-.216
.46	1.52	1.56	-.35	-.161	-.552	-.546
				7.956	10.772	8.306

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	x^2	y^2	z^2	t^2
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	1.1025
.2392	-.2024	-.2288	.2116	.2704	.1936	.7225
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.3025
.6992	.2576	.8512	.2116	2.3104	.3136	.1225
-.7008	.8176	-.2688	2.1316	.2304	.3136	1.1025
.7392	-2.4024	-.7488	2.3716	.2304	2.4336	.5625
.7392	.6776	.2112	2.3716	.2304	.1936	.0225
.7392	.6776	.2112	2.3716	.2304	.1936	1.6900
-2.1608	-.6424	.6512	2.1316	2.1904	.1936	.0025
2.2792	-.8624	-.8288	2.3716	2.1904	.3136	.7225
-2.1608	-2.1024	2.1312	2.1316	2.1904	2.0736	.3025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.0225
.7992	.7776	2.1312	.2916	2.1904	2.0736	.1225
-.2808	.2376	-.2288	.2916	.2704	.1936	.0625
.2592	.7776	.6912	.2916	.2304	2.0736	.3025
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	3.0625
-.2808	.2376	-.2288	.2916	.2704	.1936	.2025
2.2192	.8176	.8512	2.1316	2.3104	.3136	1.8225
.7592	2.2776	.8112	2.1316	.2704	2.4336	.2025
-.2808	.2376	-.2288	.2916	.2704	.1936	.9025
.2392	-.2024	-.2288	.2116	.2704	.1936	1.5625
-.2808	-.8424	.8112	.2916	.2704	2.4336	.0625
.7992	.7776	2.1312	.2916	2.1904	2.0736	1.1025
-.2208	-.6624	.6912	.2116	.2304	2.0736	.0225
.6992	.7176	2.3712	.2116	2.3104	2.4336	.1225
<u>13.8400</u>	<u>10.3600</u>	<u>20.5000</u>	<u>32.2500</u>	<u>30.1600</u>	<u>31.9200</u>	<u>16.2300</u>

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
.46	.52	1.56	.45	.207	.254	.702
-1.54	-1.48	-.44	-.05	.077	.074	.022
-.54	.52	1.56	.95	-.513	.494	1.482
-1.54	-1.48	-.44	-.05	.077	.074	.022
-1.54	-.48	-.44	-.35	.539	.168	.154
-.54	.52	-1.44	-.05	.027	-.026	.027
.46	1.52	1.56	.75	.345	1.140	1.170
1.46	.52	1.56	.65	.949	.538	1.014
-1.54	.52	.56	.35	-.539	.182	.196
-1.54	-1.48	-1.44	.15	-.231	-.222	-.216
1.46	-.48	-.44	.35	.511	-.166	-.154
-.54	.52	.56	-.85	.459	-.442	-.476
1.46	1.52	1.56	.15	.219	.228	.234
-1.54	-1.48	-.44	-1.05	1.617	1.554	.462
.46	-.48	.56	-.05	-.023	.024	-.028
.46	1.52	.56	1.45	.667	2.204	.812
.46	-1.48	-1.44	-.35	-.161	.518	.504
-1.54	.52	-1.44	.15	-.231	.078	-.216
-1.54	-1.48	-1.44	-1.05	1.617	1.554	1.512
.46	1.52	-1.44	.95	.437	1.444	-1.368
-1.54	-1.48	-1.44	-.55	.847	.814	.792
.46	.52	.56	1.05	.483	.546	.588
1.46	-.48	.56	-.65	-.949	.312	-.364
1.46	1.52	.56	1.35	1.971	2.052	.756
-.54	-1.48	-.44	-.65	.351	.962	.286
				8.753	14.136	7.958

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\frac{2}{\overline{x}}$	$\frac{2}{\overline{y}}$	$\frac{2}{\overline{z}}$	$\overline{t}^2$
.2392	.7176	.8112	.2116	.2704	2.4336	.2025
2.2792	.6776	.6512	2.3716	2.1904	.1936	.0025
-.2808	-.8424	.8112	.2916	.2704	2.4336	.9025
2.2792	.6776	.6512	2.3716	2.1904	.1936	.0025
.7392	.6776	.2112	2.3716	.2304	.1936	.1225
-.2808	.7776	-.7488	.2916	.2704	2.0736	.0025
.6992	.7176	2.3712	.2116	2.3104	2.4336	.5625
.7592	2.2776	.8112	2.1316	.2704	2.4336	.4225
-.8008	-.8624	.2912	2.3716	.2704	.3136	.1225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.0225
-.7008	-.6424	.2112	2.1316	.2304	.1936	.1225
-.2808	-.3024	.2912	.2916	.2704	.3136	.7225
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.0225
2.2792	.6776	.6512	2.3716	2.1904	.1936	1.1025
-.2208	.2576	-.2688	.2116	.2304	.3136	.0025
.6992	.2576	.8512	.2116	2.3104	.3136	2.1025
-.6803	-.6624	2.1312	.2116	2.1904	2.0736	.1225
-.8008	2.2176	-.7488	2.3716	.2704	2.0736	.0225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	1.1025
.6992	-.6624	-2.1888	.2116	2.3104	2.0736	.9025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.3025
.2392	.2576	.2912	.2116	.2704	.3136	1.1025
-.7008	.8176	-.2688	2.1316	.2304	.3136	.4225
2.2192	.8176	.6512	2.1316	2.3104	.3136	1.8225
.7992	.2376	.6512	.2916	2.1904	.1936	.4225
<u>18.2400</u>	<u>17.0200</u>	<u>17.0800</u>	<u>34.6500</u>	<u>32.1800</u>	<u>30.0400</u>	<u>12.8025</u>

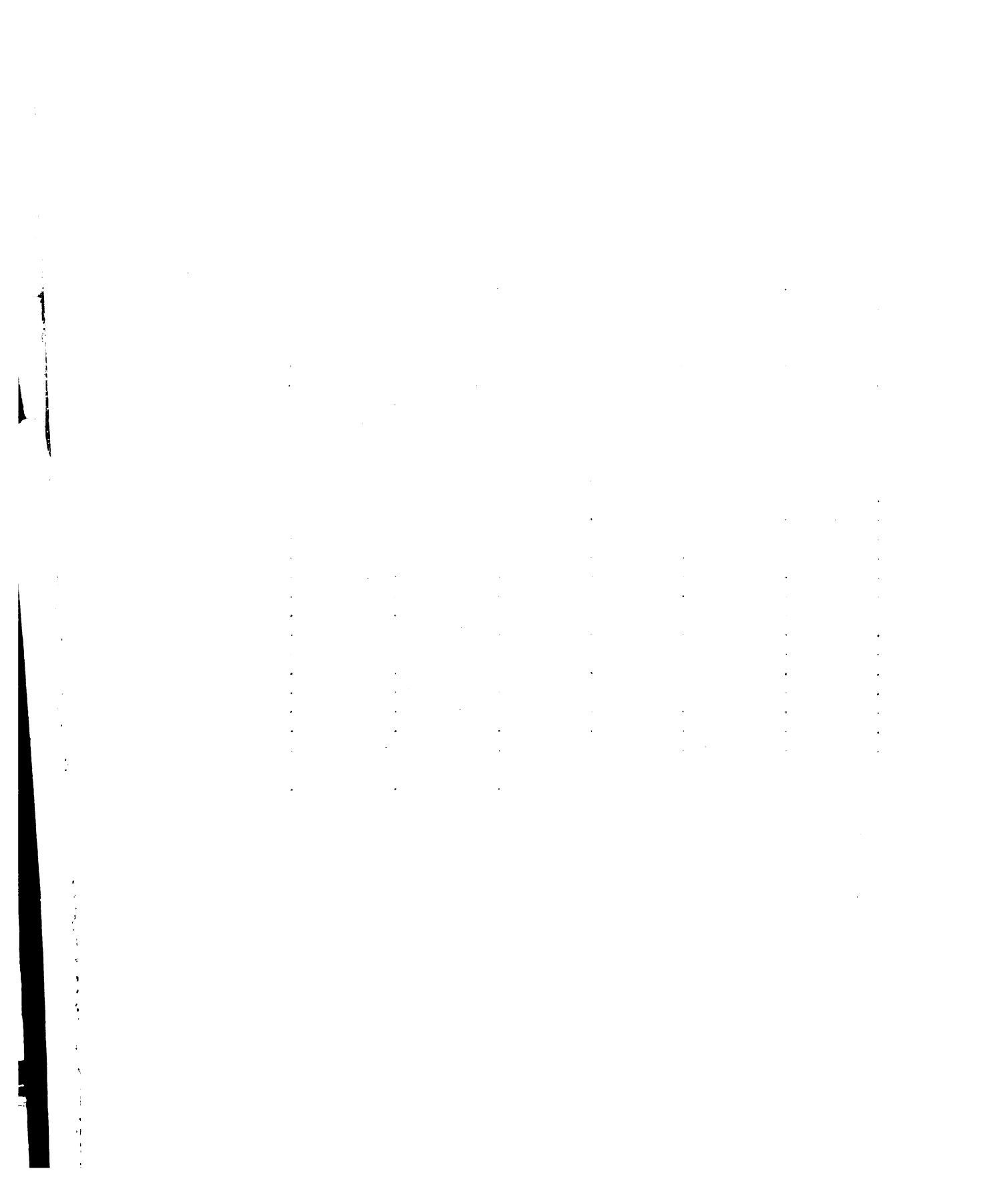
$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
.46	-1.48	-1.44	-.35	-.161	.518	.504
-1.54	.52	-1.44	.15	-.231	.076	-.216
-1.54	-1.48	-1.44	-1.05	1.617	1.554	1.512
.46	1.52	-1.44	.95	.437	1.444	-1.368
-1.54	-1.48	-1.44	-.55	.847	.914	.792
.46	.52	.56	1.05	.483	.546	.588
1.46	-.48	.56	-.65	-.949	.312	-.364
1.46	1.52	.56	1.35	1.971	2.052	.756
-.54	-1.48	-.44	-.65	.351	.962	.286
.46	.52	.56	.35	.161	.182	.196
1.46	1.52	1.56	.55	.803	.856	.858
1.46	1.52	-1.44	.15	.219	.228	-.216
-1.54	-1.48	.56	.15	-.231	-.222	.084
-1.54	-1.48	.56	-.35	.559	.518	-.196
1.46	1.52	-1.44	.05	.073	.076	-.072
-.54	.52	-.44	-.05	.027	-.026	.022
1.46	-.48	-1.44	-.44	-.803	.264	.792
-1.54	-1.48	-1.44	-1.05	1.617	1.554	1.512
-1.54	-.48	.56	-.05	.077	.024	-.028
-1.54	-.48	-.44	-.05	.077	.024	.022
-1.54	-1.48	-.44	-.05	.077	.074	.022
.46	1.52	1.56	1.15	.529	1.748	1.794
-.54	-.48	-.44	.55	-.297	-.264	-.242
.46	.52	-.44	1.25	.575	.650	-.550
-.54	-1.48	-1.44	-1.25	.675	1.850	1.800
				8.483	15.796	8.238

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
-.6808	-.6624	2.1312	.2116	2.1904	2.0736	.1225
-.8008	2.2176	-.7488	2.3716	.2704	2.0736	.0225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	1.1025
.6992	-.6624	-2.1888	.2116	2.3104	2.0736	.9025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.5025
.2392	.2376	.2912	.2116	.2704	.3136	1.1025
-.7008	.8176	-.2688	2.1316	.2304	.3136	.4225
2.2192	.8176	.8512	2.1316	2.3104	.3136	1.8225
.7992	.2376	.6512	.2916	2.1904	.1936	.4225
.2392	.2376	.2912	.2116	.2704	.3136	.1225
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.3025
2.2192	-2.1024	-2.1888	2.1316	2.3104	2.0736	.0225
2.2792	-.8624	-.8288	2.3716	2.1904	.2136	.0225
2.2792	-.8624	-.8288	2.3716	2.1904	.3136	.1225
2.2192	-2.1024	-2.1888	2.1316	2.3104	2.0736	.0025
-.2808	.2376	-.2288	.2916	.2704	.1936	.0025
-.7008	-2.1024	.6912	2.1316	.2304	2.0736	.3025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	1.1025
.7392	-.8624	-.2688	2.3716	.2304	.3136	.0025
.7392	.6776	.2112	2.3716	.2304	.1936	.0025
2.2792	.6776	.6512	2.3716	2.1904	.1936	.0025
.6992	.7176	2.3712	.2116	2.3104	2.4336	1.8225
.2592	.2376	.2112	.2916	.2304	.1936	.3025
.2392	-.2024	-.2288	.2116	.2704	.1936	1.5025
.7992	.7776	2.1312	.2916	2.1904	2.0736	1.5025
<u>24.8400</u>	<u>0.4400</u>	<u>-9.2800</u>	<u>36.3700</u>	<u>36.0800</u>	<u>28.9600</u>	<u>12.9825</u>

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\bar{xt}$	$\bar{yt}$	$\bar{zt}$
.46	1.52	1.56	-.05	-.023	-.076	-.078
-1.54	-1.48	-.44	-.55	.539	.518	.154
1.46	-1.48	-.44	-.05	-.073	.074	.022
1.46	-1.48	-1.44	-.05	-.073	.074	.072
.46	1.52	1.56	.25	.115	.380	.390
-1.54	-1.48	-1.44	.15	-.231	-.222	-.216
-1.54	-.48	-.44	-1.05	1.617	.504	.462
-1.54	-1.48	-.44	-.85	1.309	1.258	.374
1.46	1.52	.56	.15	.219	.228	.084
1.46	.52	-.44	.35	.511	.132	-.154
-.54	-.48	-.44	-.85	.459	.408	.574
-.54	-.48	-1.44	-.05	.027	.024	.072
-.54	1.52	1.56	-.55	.189	-.532	-.546
1.46	1.52	-1.44	.95	1.387	1.444	-1.368
1.46	1.52	-.44	1.35	1.971	2.052	-.594
-1.54	-.48	1.56	.15	-.231	-.072	.234
.46	-1.48	1.56	.15	.069	-.222	.234
1.46	1.52	-.44	.15	.219	.228	-.066
.46	-.48	.56	.15	.069	-.072	.084
1.46	1.52	.56	.15	.219	.228	.084
-.54	-.48	-.44	-.55	.297	.264	.242
.46	-.48	-.44	.05	.023	-.024	-.022
-1.54	-.48	-1.44	-1.30	2.002	.624	1.872
-1.54	-.48	.56	-.55	.847	.264	-.308
-1.54	-.48	-.44	-1.05	1.617	.504	.462
				13.074	8.058	1.864

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
.6992	.7176	2.3712	.2116	2.3104	2.4336	.0025
2.2792	.6776	.6512	2.3716	2.1904	.1936	.1225
-2.1608	-.6424	.6512	2.1316	2.1904	.1936	.0025
-2.1608	-2.1024	2.1312	2.1316	2.1904	2.0736	.0025
.6992	.7176	2.3712	.2116	2.3104	2.4336	.0625
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.0225
.7392	.6776	.2112	2.3716	.2304	.1936	1.1025
2.2792	.6776	.6512	2.3716	2.1904	.1936	.7225
2.2192	.8176	.8512	2.1316	2.3104	.3136	.0225
.7592	-.6424	-.2288	2.1316	.2704	.1936	.1225
.2592	.2376	.2112	.2916	.2304	.1936	.7225
.2592	.7776	.6912	.2916	.2304	2.0736	.0025
-.8208	-.8424	2.3712	.2916	2.3104	2.4336	.1225
2.2192	-2.1024	-2.1888	2.1316	2.3104	2.0736	.9025
2.2192	-.6424	-.6688	2.1316	2.3104	.1936	1.8225
.7392	-2.4024	-.7488	2.3716	.2304	2.4336	.0225
-.6808	.7176	-2.3088	.2116	2.1904	2.4336	.0225
2.2192	-.6424	-.6688	2.1316	2.3104	.1936	.0225
-.2208	.6576	-.2688	.2116	.2304	.3136	.0225
2.2192	.8176	.8512	2.1316	2.3104	.3136	.0225
.2592	.2376	.2112	.2916	.2304	.1936	.3025
-.2208	-.2024	.2112	.2116	.2304	.1936	.0025
.7392	2.2176	.6912	2.3716	.2304	2.0736	1.6900
.7392	-.8624	-.2688	2.3716	.2304	.3136	.3025
.7392	.6776	.2112	2.3716	.2304	.1936	1.1025
<u>18.3000</u>	<u>1.3600</u>	<u>10.1200</u>	<u>38.2500</u>	<u>34.2000</u>	<u>25.9200</u>	<u>9.2700</u>

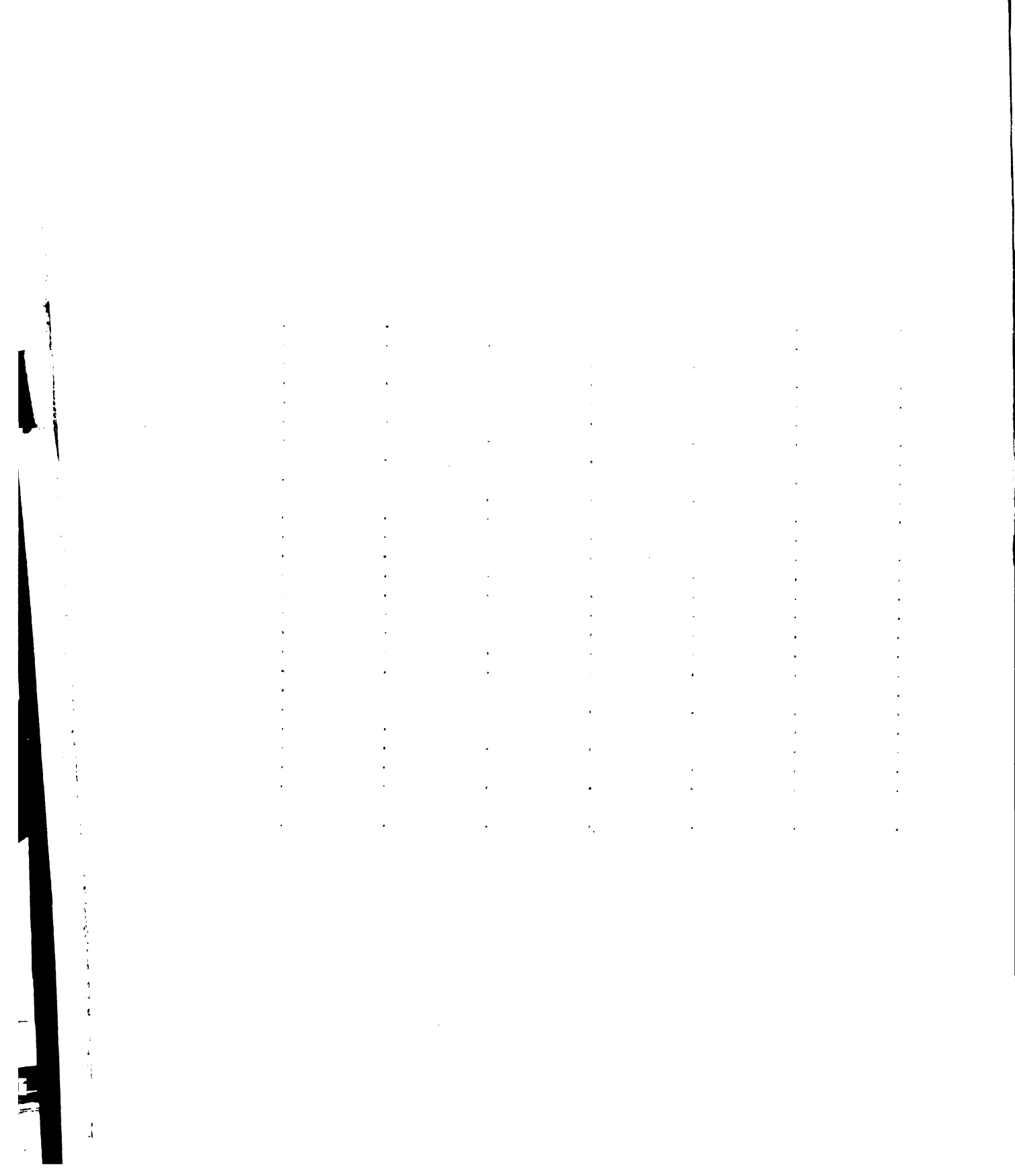
$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
1.46	1.52	1.56	1.95	2.847	2.964	3.042
1.46	1.52	.56	.95	1.387	1.444	.552
-1.54	1.52	.56	.95	-1.463	1.444	.532
1.46	-.48	-1.44	-.35	-.511	.168	.504
-1.54	.52	1.56	.55	-.847	.286	.858
.46	1.52	.56	-.25	-.115	-.380	-.140
-.54	-.48	-.44	-.05	.027	.024	.022
.46	1.52	.56	.35	.161	.532	.196
-1.54	-1.48	-1.55	-.85	1.309	1.258	1.224
1.46	1.52	.56	.75	1.095	1.140	.420
-.54	-1.48	-1.44	-.85	.459	1.258	1.224
.46	1.52	.56	-.35	-.161	-.532	-.196
-1.54	.52	.56	.35	-.539	.182	.196
1.46	1.52	1.56	1.15	1.679	1.748	1.794
-.54	-.48	-.44	-.05	.027	.024	.022
-1.54	.52	1.56	-1.05	1.617	-.546	-1.638
1.46	1.52	1.56	1.15	1.679	1.748	1.794
-.54	-.48	-.44	-.85	.459	.408	.374
.46	.52	1.56	1.15	.529	.598	1.794
.46	-1.48	-1.44	-1.05	-.483	1.554	1.512
.46	.52	.56	-1.05	-.483	-.546	-.588
1.46	.52	-.44	-.65	-.949	-.338	.286
.46	.52	1.56	.55	.253	.286	.858
.46	1.52	1.56	.45	.207	.684	.702
-1.54	-1.48	-1.44	-.05	.077	.074	.072
				8.251	15.482	15.356



$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	3.8025
2.2192	.8176	.8512	2.1316	2.3104	.3136	.9025
-2.3408	-.8624	.8512	2.3716	2.3104	.3136	.9025
-.7008	-2.1024	.6912	2.1316	.2304	2.0736	.1225
-.8008	-2.4024	.8112	2.3716	.2704	2.4336	.3025
.6992	.2576	.8512	.2116	2.3104	.3136	.0625
.2592	.2376	.2112	.2916	.2304	.1936	.0025
.6992	.2576	.8512	.2116	2.3104	.3136	.1225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.7225
2.2192	.8176	.8512	2.1316	2.3104	.3136	.5625
.7992	.7776	2.1312	.2916	2.1904	2.0736	.7225
.6992	.2576	.8512	.2116	2.3104	.3136	.1225
-.8008	-.8624	.2912	2.3716	.2704	.3136	.1225
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	1.3225
.2592	.2376	.2112	.2916	.2304	.1936	.0025
-.8008	-2.4024	.8112	2.3716	.2704	2.4336	1.1025
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	1.3225
.2592	.2376	.2112	.2916	.2304	.1936	.7225
.2392	.7176	.8112	.2116	.2704	2.4336	1.3225
-.6808	-.6624	2.1312	.2116	2.1904	2.0736	1.1025
.2392	.2576	.2912	.2116	.2704	.3136	1.1025
.7592	-.6424	-.2288	2.1316	.2704	.1936	.4225
.2392	.7176	.8112	.2116	.2704	2.4336	.3025
.6992	.7176	2.3712	.2116	2.3104	2.4336	.2025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.0025
<u>15.3800</u>	<u>7.6400</u>	<u>28.0400</u>	<u>32.0100</u>	<u>34.6800</u>	<u>55.1200</u>	<u>17.4025</u>

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\bar{xt}$	$\bar{yt}$	$\bar{zt}$
1.46	.52	.56	.45	.657	.234	.252
-.54	.52	1.56	-.45	.243	-.234	-.702
1.46	.52	.56	.75	1.095	.390	.420
1.46	.52	-1.44	.95	1.387	.494	-1.368
-.54	1.52	1.56	.75	-.405	1.140	1.170
.46	-.48	1.56	-.35	-.181	.168	-.546
1.46	-.48	.56	.65	.949	-.312	.364
-1.54	-.48	.56	.15	-.231	-.072	.084
-.54	.52	.56	-1.05	.537	-.546	-.588
1.46	-1.48	-.44	-.25	-.385	.370	.110
.46	-.48	-.44	.95	.437	-.456	-.418
.46	-1.48	-1.44	-.85	-.391	1.258	1.224
1.46	1.52	1.56	1.95	2.847	2.964	3.042
-1.54	-1.48	-1.44	-.25	.385	.370	.360
-1.54	1.52	.56	.15	-.231	.228	.084
-1.54	-1.48	-1.44	-1.45	2.233	2.146	2.088
.46	-1.48	-1.44	-.05	-.023	.074	.072
1.46	1.52	.56	-.45	-.657	-.684	-.252
-.54	-1.48	-.44	-.85	.459	1.258	.374
-.54	.52	.56	-.55	.297	-.286	-.308
-1.54	-1.48	-1.44	-1.05	1.617	1.554	1.512
-1.54	-1.48	-1.44	-1.45	2.233	2.146	2.088
-1.54	-1.48	-.44	-.45	.693	.666	.198
1.46	1.52	1.56	.35	.511	.532	.546
-1.54	-1.48	-1.44	-1.30	2.002	1.924	1.872
				16.148	15.326	11.678

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
.7592	.8176	.2912	2.1316	.2704	.3136	.2025
-.2808	-.8424	.8112	.2916	.2704	2.4336	.2025
.7592	.8176	.2912	2.1316	.2704	.3136	.5625
.7592	-2.1024	-.7488	2.1316	.2704	2.0736	.9025
-.8208	-.8424	2.3712	.2916	2.3104	2.4336	.5625
-.2208	.7176	-.7488	.2116	.2304	2.4336	.1225
-.7008	.8176	-.2688	2.1316	.2304	.3136	.4225
.7392	-.8624	-.2688	2.2716	.2304	.3136	.0225
-.2808	-.3024	.2912	.2916	.2704	.3136	1.1025
-2.1608	-.6424	.6512	2.1316	2.1904	.1936	.0625
-.2208	-.2024	.2112	.2116	.2304	.1936	.9025
-.6308	-.6624	2.1312	.2116	2.1904	2.0736	.7225
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	3.8025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.0625
-2.3408	-.8624	.8512	2.3716	2.3104	.3136	.0225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	2.1025
-.6808	-.6624	2.1312	.2116	2.1904	2.0736	.0025
2.2192	.8176	.8512	2.1316	2.3104	.3136	.2025
.7992	.2376	.6512	.2916	2.1904	.1936	.7225
-.2808	-.3024	.2912	.2916	.2704	.3136	.3025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	1.1025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	2.1025
2.2792	.6776	.6512	2.3716	2.1904	.1936	.2025
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.1225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	1.6900
<u>15.4800</u>	<u>12.3200</u>	<u>25.8400</u>	<u>38.3300</u>	<u>33.0000</u>	<u>32.0400</u>	<u>18.2300</u>

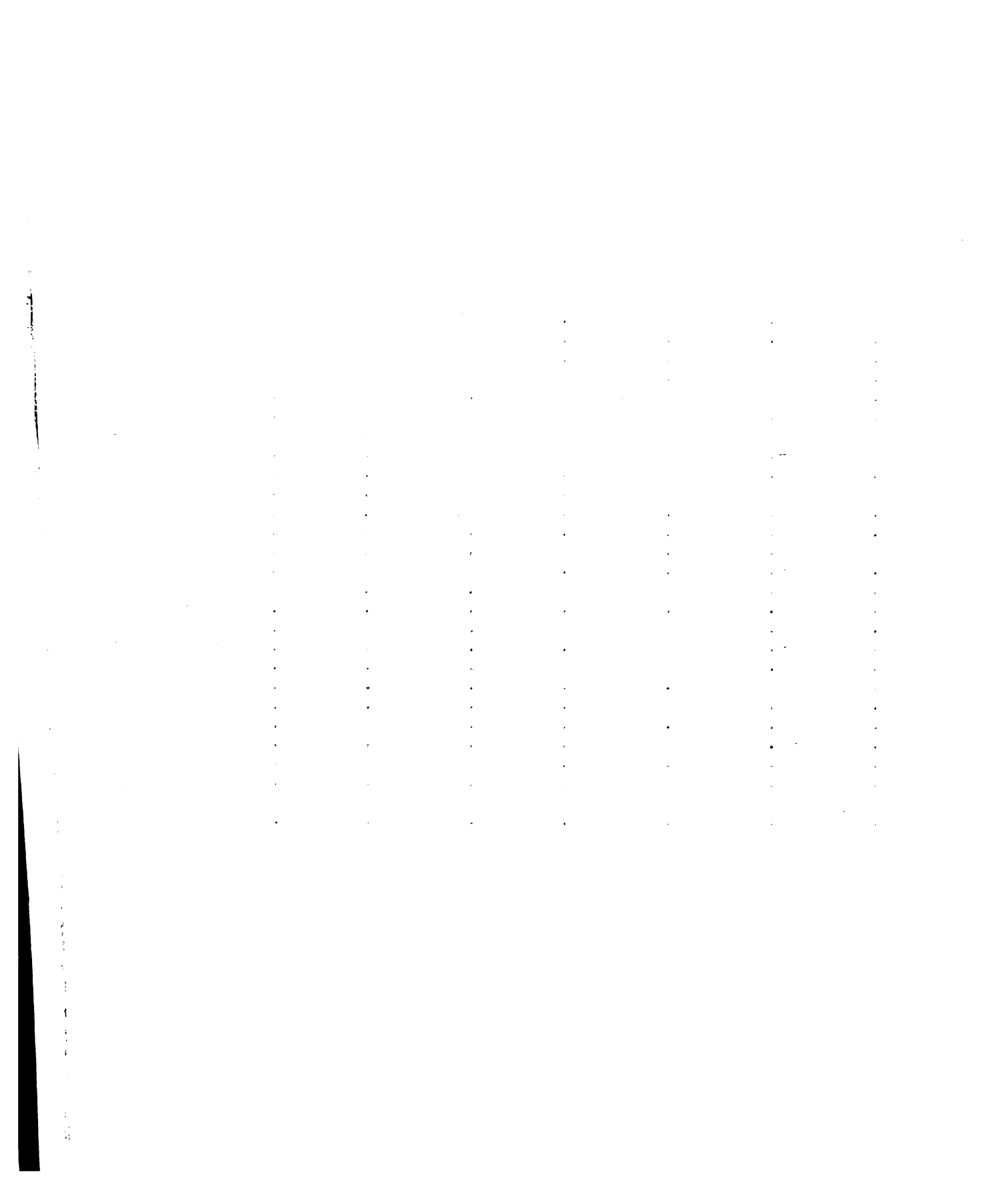


$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
-.54	-.48	.56	-1.45	.783	.696	-.812
.46	.52	.56	-.35	-.161	-.182	-.196
-.54	.52	1.56	.65	-.351	.338	1.014
-1.54	-1.48	-1.44	.45	-.693	-.666	-.648
-1.54	-.48	1.56	.35	-.539	-.168	.546
.46	-.48	-1.44	.75	.345	-.360	-1.080
-.54	-.48	.56	.55	-.297	-.264	.308
1.46	1.52	.56	1.15	1.679	1.748	.644
.46	.52	-1.44	-1.05	-.483	-.546	1.512
-.54	-1.48	-1.44	-.85	.459	1.258	1.224
.46	1.52	-.44	.95	.437	1.444	-.418
1.46	-1.48	-.44	.95	1.387	-1.406	-.418
.46	1.52	-1.44	-.05	-.023	-.076	.072
.46	-1.48	-.44	.15	.069	-.222	-.066
1.46	-.48	.56	-.55	-.803	.264	-.308
-1.54	.52	1.56	1.35	-2.079	.702	2.106
-1.54	-.48	-1.44	-.05	.077	.024	.072
-.54	-.48	-1.44	.65	-.351	-.312	-.936
1.46	1.52	1.56	.65	.949	.988	1.014
-1.54	-1.48	-.44	.45	-.693	-.666	-.198
1.46	1.52	.56	.75	1.095	1.140	.420
.46	-.48	-.44	.75	.345	-.360	-.330
.46	.52	-1.44	-.05	-.023	-.026	.072
.46	1.52	-.44	-1.30	-.598	-1.976	.572
1.46	.52	1.56	.65	.949	.338	1.014
				1.480	1.710	5.180

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
.2592	-.3024	-.2688	.2916	.2304	.3136	2.1025
.2392	.2576	.2912	.2116	.2704	.3136	.1225
-.2808	-.8424	.8112	.2916	.2704	2.4336	.4225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.2025
.7392	-2.4024	-.7488	2.3716	.2304	2.4336	.1225
-.2208	-.6624	.6912	.2116	.2304	2.0736	.5625
.2592	-.3024	-.2688	.2916	.2304	.3136	.3025
2.2192	.8176	.8512	2.1316	2.3104	.3136	1.3225
.2392	-.6624	-.7488	.2116	.2704	2.0736	1.1025
.7992	.7776	2.1312	.2916	2.1904	2.0736	.7225
.6992	-.2024	-.6688	.2116	2.3104	.1936	.9025
-2.1608	-.6424	.6512	2.1316	2.1904	.1936	.9025
.6992	-.6624	-2.1888	.2116	2.3104	2.0736	.0025
-.6808	-.2024	.6512	.2116	2.1904	.1936	.0225
-.7008	.8176	-.2688	2.1316	.2304	.3136	.3025
-.8008	-2.4024	.8112	2.3716	.2704	2.4336	1.8225
.7392	2.2176	.6912	2.3716	.2304	2.0736	.0025
.2592	.7776	.6912	.2916	.2304	2.0736	.4225
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.4225
2.2792	.6776	.6512	2.3716	2.1904	.1936	.2025
2.2192	.8176	.8512	2.1316	2.3104	.3136	.5625
-.2208	-.2024	.2112	.2116	.2304	.1936	.5625
.2392	-.6624	-.7488	.2116	.2704	2.0736	.0025
.6992	-.2024	-.6688	.2116	2.3104	.1936	1.6900
.7592	2.2776	.8112	2.1316	.2704	2.4336	.4225
<u>12.7800</u>	<u>3.5300</u>	<u>8.7200</u>	<u>28.0100</u>	<u>28.2300</u>	<u>31.8000</u>	<u>15.2300</u>

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
1.46	.52	1.56	.35	.511	.182	.546
1.46	1.52	1.56	-.05	-.073	-.076	-.078
.46	.52	-1.44	-.05	-.023	-.026	.072
-1.54	-1.48	-1.44	-1.30	2.002	1.924	1.872
1.46	1.52	1.56	.75	1.095	1.140	1.170
1.46	1.52	1.56	1.15	1.679	1.748	1.794
-.54	-.48	-.44	-1.05	.567	.504	.462
.46	1.52	-1.44	-.05	-.023	-.076	.072
1.46	1.52	1.56	-.05	-.073	-.076	-.078
.46	.52	1.56	.95	.467	.494	1.482
-.54	-.48	-1.44	-1.05	.567	.504	1.512
-1.52	-1.48	-1.44	.25	-.385	-.370	-.360
.46	.52	.56	.55	.255	.286	.308
1.46	1.52	-.44	1.15	1.679	1.748	-.506
.46	.52	.56	-1.05	-.483	-.546	-.588
1.46	1.52	1.56	1.15	1.679	1.748	1.794
-.54	-1.48	-.44	-1.25	.675	1.850	.550
-1.54	-1.48	.56	-1.05	1.617	1.554	-.588
.46	1.52	.56	-.05	-.023	-.076	-.028
-1.54	-1.48	-1.44	-.35	.569	.518	.504
-1.54	-1.48	-1.44	-.55	.847	.814	.792
.54	-1.48	-.44	-1.75	.945	2.590	.770
1.46	-1.48	-1.44	-.45	-.657	.666	.648
1.46	.52	.56	-.05	-.073	-.026	-.028
-1.54	-.48	-.44	-.25	.335	.120	.110
				13.684	17.113	12.204

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
.7592	2.2776	.8112	2.1316	.2704	2.4336	.1225
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.0025
.2392	-.6624	-.7488	.2116	.2704	2.0736	.0025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	1.6900
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.5625
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	1.3225
.2592	.2376	.2112	.2916	.2304	.1936	1.1025
.6992	-.6624	-2.1888	.2116	2.3104	2.0736	.0025
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.0025
.2392	.7176	.8112	.2116	.2704	2.4336	.9025
.2592	.7776	.6912	.2916	.2304	2.0736	1.1025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.0625
.2392	.2376	.2912	.2116	.2704	.3136	.3025
2.2192	-.6424	-.6688	2.1316	2.3104	.1936	1.3225
.2392	.2376	.2912	.2116	.2704	.3136	1.1025
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	1.3225
.7992	.2376	.6512	.2916	2.1904	.1936	1.5625
2.2792	-.8624	-.8288	2.3716	2.1904	.3136	1.1025
.6992	.2376	.8512	.2116	2.3104	.3136	.0025
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.1225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.3025
.7992	.2376	.6512	.2916	2.1904	.1936	2.0625
-2.1608	-2.1024	2.1312	2.1316	2.1904	2.0736	.2025
.7592	.8176	.2912	2.1316	.2704	.3136	.0025
.7392	.6776	.2112	2.3716	.2304	.1936	.0625
<u>29.2800</u>	<u>22.0800</u>	<u>23.8400</u>	<u>33.8500</u>	<u>38.3200</u>	<u>36.1000</u>	<u>17.3500</u>



$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
.46	-1.48	-1.44	-.05	-.023	-.074	-.72
-.54	.52	.56	.95	-.515	.494	.552
.46	-.48	-.44	.75	.515	-.580	-.580
.46	-1.48	1.56	-1.45	-.607	2.148	-2.262
1.46	-.48	.56	-.05	-.073	.024	-.028
-.54	-.48	-.44	.15	-.081	-.072	-.066
.46	.52	.56	.15	.089	.078	.082
-1.54	-1.48	-1.44	-.05	.077	.074	.072
1.46	.52	-1.44	-.45	-.637	-.254	.648
-.54	-1.48	.56	-1.05	.567	1.554	-.588
1.46	.52	.56	.55	.803	.286	.508
1.46	1.52	1.56	-.05	-.073	-.076	-.078
.46	.52	-1.44	-.75	-.345	.590	1.080
1.46	1.52	1.56	.95	1.387	1.444	1.482
1.46	1.52	1.56	1.45	2.117	2.204	2.262
-1.54	-1.48	-.44	.55	-.847	-.814	-.842
1.46	1.52	-.44	.45	.637	.634	-.196
1.46	1.52	1.56	1.55	1.971	2.052	2.106
.46	.52	.56	.45	.207	.254	.262
.46	-.48	1.56	-.05	-.023	.024	-.078
1.46	1.52	.56	-1.50	-1.893	-1.976	-.728
-.54	-.48	.56	.45	-.245	-.216	.262
-.54	-1.48	-.44	-.55	.189	.518	.154
.46	.52	-1.44	.45	.207	.254	-.648
-1.54	.52	-.44	-.45	.693	-.254	.198
				5.846	7.752	4.250

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{xyz}$
-.6808	-.6824	2.1512	.2116	2.1904	2.0736	.0025
-.2808	-.3024	.2912	.2916	.2704	.3136	.9025
-.2208	-.2024	.2112	.2116	.2304	.1936	.5825
-.6808	.7176	-2.3088	.2116	2.1904	2.4336	2.1025
-.7008	.8176	-.2688	2.1316	.2304	.3136	.0025
.2592	.2376	.2112	.2916	.2304	.1936	.0225
.2392	.2376	.2912	.2116	.2704	.3136	.0225
2.2792	2.2176	2.1512	2.3716	2.1904	2.0736	.0025
.7592	-2.1024	-.7488	2.1316	.2704	2.0736	.2025
.7992	-.3025	-.8288	.2916	2.1904	.3136	1.1025
.7592	.3176	.2912	2.1316	.2704	.3136	.3025
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.0025
.2392	-.6824	-.7488	.2116	.2704	2.0736	.5825
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.9025
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	2.1025
2.2792	.6776	.6512	2.3716	2.1904	.1936	.2725
2.2192	-.6424	-.6688	2.1316	2.3104	.1936	.2025
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	1.8225
.2392	.2376	.2192	.2116	.2704	.3136	.2025
-.2208	.7176	-.7488	.2116	.2304	2.4336	.0025
2.2192	.8176	.8512	2.1316	2.3104	.3136	1.0900
.2592	-.3024	-.2688	.2916	.2304	.3136	.2025
.7992	.2376	.6512	.2916	2.1904	.1936	.1225
.2392	-.6824	-.7488	.2116	.2704	2.0736	.2025
-.8008	.6776	-.2288	2.3716	.2704	.1936	.2025
<u>18.8800</u>	<u>11.7200</u>	<u>9.9200</u>	<u>29.4500</u>	<u>30.3200</u>	<u>28.6400</u>	<u>13.7500</u>

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
-1.54	-1.48	-1.44	-.55	.847	.814	.792
.46	.52	-.44	.65	.299	.538	-.286
1.46	1.52	1.56	1.65	2.409	2.408	2.574
.46	-.48	1.56	.15	.069	-.072	.254
-.54	-.48	-.44	-.45	.243	.216	.198
-1.54	.52	-.44	.55	-.847	.286	-.242
-.54	-1.48	.56	-.05	.027	.074	-.028
1.46	1.52	-.44	-.35	-.511	-.532	.154
-1.54	-1.48	-1.44	-.05	.077	.074	.072
1.46	1.52	1.56	1.15	1.679	1.748	1.794
-.54	-.48	-.44	-1.15	.621	.552	.506
-1.54	-.48	-1.44	-.35	.539	.168	.504
-1.54	.52	.56	-.05	.077	-.026	-.028
.46	-.48	-1.44	-.05	-.023	.024	.072
.46	.52	.56	1.15	.529	.598	.644
1.46	1.52	-.44	1.25	1.825	1.900	-.550
.46	-.48	1.56	1.45	.667	-.696	2.262
-1.54	-1.48	-.44	-1.30	2.002	1.924	.572
-.54	-1.48	-1.44	-.85	.459	1.258	1.224
-.54	-.48	.56	-.05	.027	.024	-.028
.46	1.52	1.56	.95	.437	1.444	1.482
-.54	-.48	.56	-.65	.351	.312	-.364
.46	.52	1.56	-.45	-.207	-.234	-.702
.46	.52	.56	-.85	-.391	-.442	-.476
-1.54	-1.48	-1.44	-1.05	1.617	1.554	1.512
				12.822	13.814	11.892

$\overline{xy}$	$\overline{xz}$	$\overline{yz}^c$	$\overline{x}^2$	$\overline{y}^2$	$\overline{z}^2$	$\overline{t}^2$
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.3025
.2392	-.2024	-.2288	.2116	.2704	.1936	.4225
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	2.7225
-.2208	.7176	-.7488	.2116	.2304	2.4336	.0225
.2592	.2376	.2112	.2916	.2304	.1936	.2025
-.8008	.6776	-.2288	2.3716	.2704	.1936	.3025
.7992	-.3024	-.8288	.2916	2.1904	.3136	.0025
2.2192	-.6424	-.6688	2.1316	2.3104	.1936	.1225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.0025
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	1.3225
.2592	.2376	.2112	.2916	.2304	.1936	1.3225
.7392	2.2176	.6912	2.3716	.2304	2.0736	.1225
-.8008	-.8624	.2912	2.3716	.2704	.3136	.0025
-.2208	-.7724	.6912	.2116	.2304	2.0736	.0025
.2392	.2576	.2912	.2116	.2704	.3136	1.3225
2.2192	-.6424	-.6688	2.1316	2.3104	.1936	1.5225
-.2208	.7176	-.7488	.2116	.2304	2.4336	2.1025
2.2792	.6776	.6512	2.3716	2.1904	.1936	1.6900
.7992	.7776	2.1312	.2916	2.1904	2.0736	.7225
.2592	-.3024	-.2688	.2916	.2304	.3136	.0025
.6992	.7176	2.3712	.2116	2.3104	2.4336	.2025
.2592	-.3024	-.2688	.2916	.2304	.3136	.4225
.2392	.7176	.8112	.2116	.2704	2.4336	.2025
.2392	.2576	.2712	.2116	.2704	.3136	.7225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	1.1025
<u>20.7600</u>	<u>15.5000</u>	<u>15.1200</u>	<u>28.3700</u>	<u>28.1600</u>	<u>30.2800</u>	<u>17.6300</u>

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
-1.54	.52	.56	.35	-.534	.182	.196
1.46	.52	-.44	.95	1.387	.494	-.418
-.54	-.48	-1.44	-.85	.459	.408	1.224
-1.54	-1.48	1.56	.35	-.539	-.518	.546
.46	1.52	1.56	-.55	-.253	-.836	-.858
.46	.52	-.44	-1.05	-.483	-.546	.462
1.46	.52	.56	.35	.311	.182	.196
-1.54	-1.48	-1.44	-.65	1.001	.962	.936
.46	-.48	.56	-.35	-.161	.168	-.196
1.46	1.52	1.56	.95	1.387	1.444	1.482
-.54	-1.48	1.56	-.35	.189	.518	-.546
1.46	.52	1.56	1.15	1.679	.598	1.794
.46	.52	1.56	.35	.161	.182	.546
1.46	.52	.56	.55	.803	.286	.308
.46	.52	1.56	.95	.457	.494	1.482
.46	1.52	1.56	-.05	-.023	-.076	-.078
-1.54	-.48	-1.44	-1.05	1.617	.504	1.512
1.46	1.52	.56	1.15	1.679	1.748	.644
-1.54	-.48	-1.44	-1.55	2.387	.744	2.232
.46	1.52	-.44	.45	.207	.684	-.198
-.54	-1.48	-.44	-.05	.027	.074	.022
-1.54	-.48	-1.44	-1.05	1.617	.504	1.512
.46	-.48	-.44	-.35	-.161	.168	.154
-1.54	.52	1.56	.35	-.539	.182	.546
.46	1.52	.56	.35	.161	.532	.196
				13.011	9.082	13.696

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\frac{2}{\overline{x}}$	$\frac{2}{\overline{y}}$	$\frac{2}{\overline{z}}$	$\frac{2}{\overline{t}}$
-.8008	-.8624	.2912	2.3716	.2704	.3136	.1225
.7592	-.6424	-.2288	2.1316	.2704	.1936	.9025
.2592	.7776	.6912	.2916	.2304	2.0736	.7225
2.2792	-2.4024	2.3088	2.3716	2.1904	2.4536	.1225
.6992	.7176	2.3712	.2116	2.3104	2.4536	.3025
.2392	-.2024	-.2288	.2116	.2704	.1936	1.1025
.7592	.8176	.2912	2.1316	.2704	.3136	.1225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	.4225
-.2208	.2576	-.2688	.2116	.2304	.3136	.1225
2.2192	2.2776	2.3712	2.1316	2.3104	2.4536	.9025
.7992	-.8424	-2.3088	.2916	2.1904	2.4536	.1225
.7592	2.2776	.8112	2.1316	.2704	2.4536	1.3225
.2392	.7176	.8112	.2116	.2704	2.4536	.1225
.7592	.8176	.2912	2.1316	.2704	.3136	.3025
.2392	.7176	.8112	.2116	.2704	2.4536	.9025
.6992	.7176	2.3712	.2116	2.3104	2.4536	.0025
.7392	2.2176	.6912	2.3716	.2304	2.0736	1.1025
2.2192	.8176	.8512	2.1316	2.3104	.3136	1.3225
.7392	2.2176	.6912	2.3716	.2304	2.0736	2.4025
.6992	-.2024	-.6688	.2116	2.3104	.1936	.2025
.7992	.2376	.6512	.2916	2.1904	.1936	.0025
.7392	2.2176	.6912	2.3716	.2304	2.0736	1.1025
-.2208	-.2024	.2112	.2116	.2304	.1936	.1225
-.8008	-2.4024	.8112	2.3716	.2704	2.4536	.1225
.6992	.2576	.8512	.2116	2.3104	.3136	.1225
<u>17.5800</u>	<u>12.5200</u>	<u>12.6800</u>	<u>32.1700</u>	<u>26.4400</u>	<u>35.1200</u>	<u>14.1225</u>

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
-.54	1.52	.56	-1.45	.783	-2.204	-.812
1.46	1.52	1.56	.95	1.387	1.444	1.482
1.46	-.48	-.44	.15	.219	-.072	-.066
-.54	-1.48	-1.44	-.25	.135	.370	.360
.46	1.52	-.44	.35	.161	.532	-.154
-.54	1.52	-.44	.65	-.351	.988	-.286
-1.54	-1.48	-1.44	-1.05	1.617	1.554	1.512
.46	.52	-.44	.55	.253	.286	-.242
-1.54	-1.48	1.56	-1.05	1.617	1.554	-1.638
1.46	1.52	.56	-.35	-.511	-.532	-.196
-1.54	-1.48	-.44	.75	-1.155	-1.110	-.330
-.54	.52	.56	-.35	.189	-.182	-.196
.46	.52	.56	-.05	-.023	-.026	-.028
.46	.52	-.44	.15	.069	.078	-.066
-1.54	-1.48	.56	-.05	.077	.074	-.028
.46	-1.48	-1.44	.15	.069	-.222	-.216
-1.54	-1.48	-.44	-1.65	2.541	2.442	.726
1.46	-.48	-.44	-.25	-.365	.120	.110
-1.54	-1.48	-.44	-.45	.693	.606	.198
.46	1.52	1.56	1.35	.621	2.052	2.106
-.54	-1.48	-.44	-.85	.459	1.258	.374
-1.54	-1.48	-.44	-1.05	1.617	1.554	.462
1.46	1.52	.56	.55	.803	.836	.308
-.54	-1.48	-1.44	-.25	.135	.370	.360
.46	.52	1.56	.55	.253	.286	.858
				11.293	12.116	4.598

Grand Totals

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
--	--	--	--	118.7910	141.1420	105.3760

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x}^2$	$\overline{y}^2$	$\overline{z}^2$	$\overline{t}^2$
-.8208	-.3024	.8512	.2916	2.3104	.3136	2.1025
2.2192	2.2776	2.3712	2.1316	2.3104	2.4336	.9025
-.7008	-.6424	.2112	2.1316	.2304	.1936	.0225
.7992	.7776	2.1312	.2916	2.1904	2.0736	.0625
.6992	-.2024	-.6688	.2116	2.3104	.1936	.1225
-.8208	.2376	-.6688	.2916	2.3104	.1936	.4225
2.2792	2.2176	2.1312	2.3716	2.1904	2.0736	1.1025
.2392	-.2024	-.2288	.2116	.2704	.1936	.3025
2.2792	-2.4024	-2.3088	2.3716	2.1904	2.4336	1.1025
2.2192	.8176	.8512	2.1316	2.3104	.3136	.1225
2.2792	.6776	.6512	2.3716	2.1904	.1936	.5625
-.2808	-.3024	.2912	.2916	.2704	.3136	.1225
.2392	.2576	.2912	.2116	.2704	.3136	.0025
.2392	-.2024	-.2288	.2116	.2704	.1936	.0225
2.2792	-.8624	-.8288	2.3716	2.1904	.3136	.0025
-.6808	-.6624	2.1312	.2116	2.1904	2.0736	.0225
2.2792	.6776	.6512	2.3716	2.1904	.1936	2.7225
-.7008	-.6424	.2112	2.1316	.2304	.1936	.0625
2.2792	.6776	.6512	2.3716	2.1904	.1936	.2025
.6992	.7176	2.3712	.2116	2.3104	2.4336	1.8225
.7992	.2376	.6512	.2916	2.1904	.1936	.7225
2.2792	.6776	.6512	2.3716	2.1904	.1936	1.1025
2.2192	.8176	.8512	2.1316	2.3104	.3136	.3025
.7992	.7776	2.1312	.2916	2.1904	2.0736	.0625
.2392	.7176	.8112	.2116	.2704	2.4336	.3025
<u>23.3600</u>	<u>6.1400</u>	<u>15.9600</u>	<u>30.4900</u>	<u>42.0800</u>	<u>22.0400</u>	<u>14.3025</u>

Grand Totals

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x}^2$	$\overline{y}^2$	$\overline{z}^2$	$\overline{t}^2$
228.7200	126.6800	197.1600	396.6000			
				396.8800	366.0400	179.1625

Original Data-Section II
Liberal Arts Students

x	y	z	t	x	y	z	t
1	1	1	0	1	2	2	1.0
4	4	4	1.6	2	2	2	.5
3	4	3	.7	3	3	2	2.3
4	2	3	0	2	1	1	-.2
1	2	2	-.25	4	1	2	1.0
4	1	2	1.0	4	1	1	1.0
1	1	1	1.2	4	3	2	1.4
2	2	1	.5	2	2	1	1.0
4	3	4	1.5	4	4	1	2.0
3	3	2	2.3	4	4	2	2.4
3	2	1	1.2	3	2	3	1.2
3	4	4	.7	4	4	3	1.2
1	2	2	.7	2	2	2	.5
2	3	1	1.0	3	2	2	1.1
4	3	4	1.7	1	2	3	.5
4	2	2	1.4	1	2	2	0
2	3	3	.2	3	3	3	.7
1	1	2	0	2	3	4	1.7
3	1	1	.7	3	2	1	1.8
1	3	1	1.2	3	3	1	0
1	1	1	.5	2	1	1	.2
3	3	3	2.1	3	4	2	2.0
4	2	3	.4	4	1	2	2.0
4	4	3	2.4	3	4	1	1.0
4	2	1	.5	1	1	2	1.5
<u>67</u>	<u>59</u>	<u>55</u>	<u>25.25</u>	<u>68</u>	<u>59</u>	<u>48</u>	<u>27.8</u>

Note:

x - English Placement Examination Score
y - Psychology Placement Examination Score
z - Mathematics Placement Examination Score
t - Index of Grades Received First Term in College

Original Data-Section II

Liberal Arts Students

x	y	z	t	x	y	z	t
4	4	3	1.8	3	2	4	.7
3	2	2	1.8	4	1	2	.8
3	4	2	-.25	3	2	2	2.0
3	3	1	1.0	1	1	1	.8
3	4	1	1.0	1	4	3	1.2
4	4	4	1.0	3	1	1	1.0
2	2	1	0	2	3	3	.5
1	1	1	1.3	1	1	1	-.4
4	4	2	2.2	1	1	1	-.25
2	1	2	-.2	3	1	1	1.0
4	3	3	1.0	2	3	3	2.0
4	4	4	3.0	3	2	2	1.8
4	4	3	2.0	4	2	3	1.0
4	2	1	.7	4	3	1	.6
3	4	3	1.4	4	4	4	1.0
4	4	3	1.8	3	3	1	.3
4	4	4	2.2	4	4	4	2.5
4	4	4	2.2	1	1	2	1.6
2	2	2	.2	2	1	2	.7
3	3	4	2.2	3	3	1	1.5
3	1	1	0	3	3	2	1.7
4	3	2	.4	4	4	2	.7
3	4	4	1.5	2	2	2	-.1
4	3	3	1.5	1	2	1	.7
4	3	1	2.0	1	1	2	-.25
<u>83</u>	<u>77</u>	<u>61</u>	<u>31.75</u>	<u>63</u>	<u>55</u>	<u>51</u>	<u>23.10</u>

Grand Totals

x	y	z	t
281	250	215	105.90

Means

x - 2.81	y - 2.50	z - 2.15	t - 1.059
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Liberal Arts Students

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
-1.81	-1.50	-1.15	-1.06	1.9186	1.5900	1.2190
1.19	1.50	1.85	.54	.6426	.8100	.9990
.19	1.50	.85	-.36	-.0684	-.5400	-.3060
1.19	-.50	.85	-1.06	-1.2614	.5300	-.9010
-1.81	-.50	-.15	-1.31	2.3711	.6550	.1965
1.19	-1.50	-.15	-.06	-.0714	.0900	.0090
-1.81	-1.50	-1.15	.14	-.2534	-.2100	-.1610
-.81	-.50	-1.15	-.56	.4536	.2800	.6440
1.19	.50	1.85	.44	.5236	.2200	.8140
.19	.50	-.15	1.24	.2356	.6200	-.1860
.19	-.50	-1.15	.14	.0266	-.0700	-.1610
.19	1.50	1.85	-.36	-.0684	-.5400	-.6660
-1.81	-.50	-.15	-.36	.6516	.1800	.0540
-.81	.50	-1.15	-.06	.0486	-.0300	.0690
1.19	.50	1.85	.64	.7616	.3200	1.1840
1.19	-.50	-.15	.34	.4046	-.1700	-.0510
-.81	.50	.85	-.86	.8966	-.4300	-.7310
-1.81	-1.50	-.15	-1.06	1.9186	1.5900	.1590
.19	-1.50	-1.15	-.36	-.0684	.5400	.4140
-1.81	.50	-1.15	.14	-.2534	.0700	-.1610
-1.81	-1.50	-1.15	-.56	1.0136	.8400	.6440
.19	.50	.85	1.04	.1976	.5200	.8840
1.19	-.50	.85	-.66	-.7854	.3300	-.5610
1.19	1.50	.85	1.34	1.5946	2.0100	1.1690
1.19	-.50	-1.15	-.56	-.6664	.2800	.6440
				9.9625	9.4850	5.1875

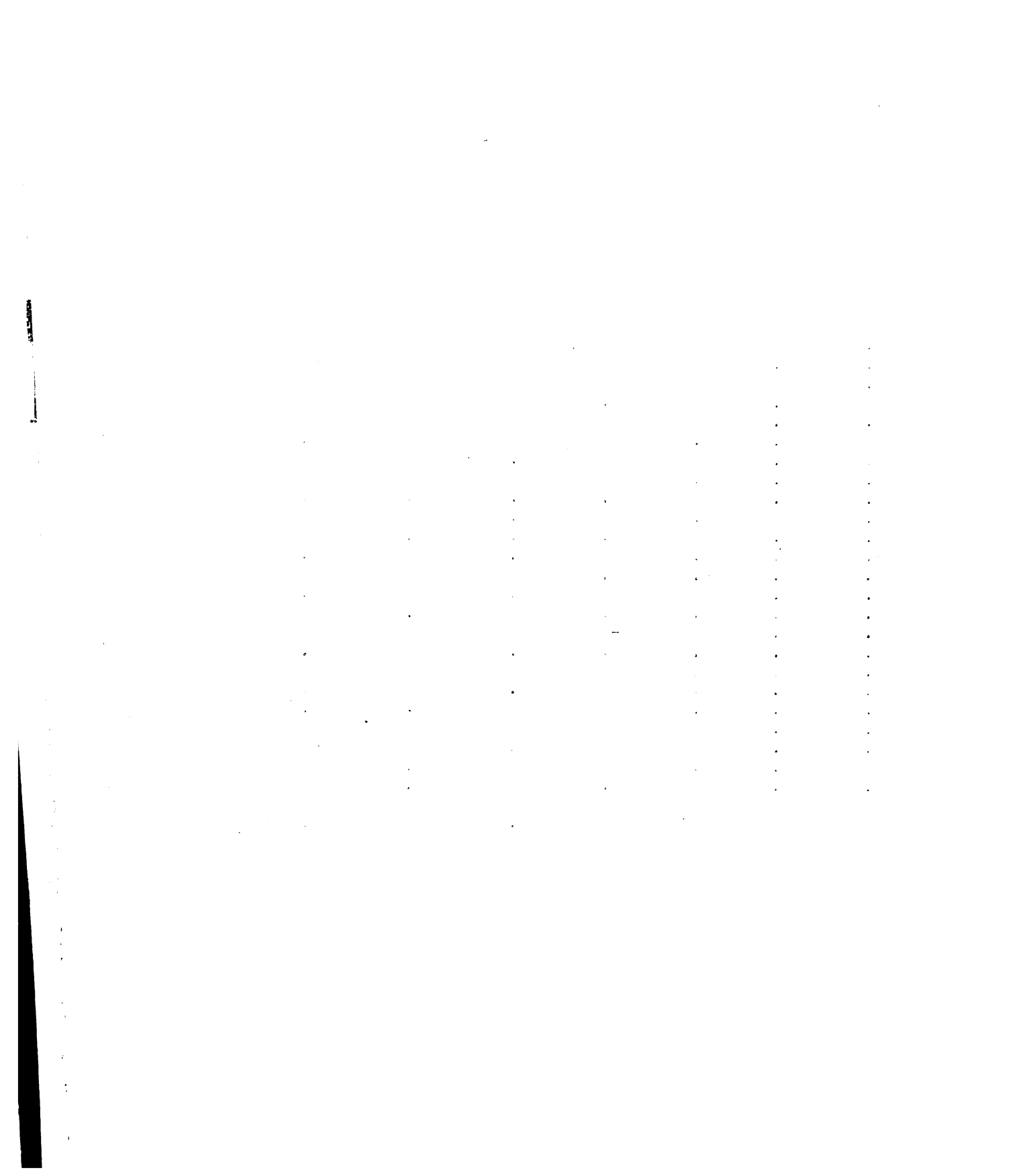


Liberal Arts Students

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
2.715	2.0815	1.725	3.2761	2.2500	1.3225	1.1236
1.785	2.2015	2.775	1.4161	2.2500	3.4225	.2916
.285	.1615	1.275	.0361	2.2500	.7225	.1296
-.595	1.0115	-.425	1.4161	.2500	.7225	1.1236
.905	.2715	.075	3.2761	.2500	.0225	1.7161
-1.785	-.1785	.225	1.4161	2.2500	.0225	.0036
2.715	2.0815	1.725	3.2761	2.2500	1.3225	.0196
.405	.9315	.575	.6561	.2500	1.3225	.3136
.595	2.2015	.925	1.4161	.2500	3.4225	.1936
.095	-.0285	-.075	.0361	.2500	.0225	1.5376
-.095	-.2185	.575	.0361	.2500	1.3225	.0196
.285	.3515	2.775	.0361	2.2500	3.4225	.1296
.905	.2715	.075	3.2761	.2500	.0225	.1296
-.405	.9315	-.575	.6561	.2500	1.3225	.0036
.595	2.2015	.925	1.4161	.2500	3.4225	.4096
-.595	-.1785	.075	1.4161	.2500	.0225	.1156
-.405	-.6885	.425	.6561	.2500	.7225	.7396
2.715	.2715	.225	3.2761	2.2500	.0225	1.1236
-.285	-.2185	1.725	.0361	2.2500	1.3225	.1296
-.905	2.0815	-.575	3.2761	.2500	1.3225	.0196
2.715	2.0815	1.725	3.2761	2.2500	1.3225	.3136
.095	.1615	.425	.0361	.2500	.7225	1.0816
-.595	1.0115	-.425	1.4161	.2500	.7225	.4056
1.785	1.0115	1.275	1.4161	2.2500	.7225	1.7956
-.595	-1.3685	.575	1.4161	.2500	1.3225	.3136
<u>12.335</u>	<u>18.4375</u>	<u>18.025</u>	<u>37.8625</u>	<u>26.2500</u>	<u>30.0625</u>	<u>13.2125</u>

Liberal Arts Students

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
-1.81	-.50	-.15	-.06	.1086	.0300	.0090
-.81	-.50	-.15	-.56	.4536	.2800	.0840
.19	.50	-.15	1.24	.2356	.6200	-.1860
-.81	-1.50	-1.15	-1.26	1.0206	1.8900	1.4490
1.19	-1.50	-.15	-.06	-.0714	.0900	.0090
1.19	-1.50	-1.15	-.06	-.0714	.0900	.0690
1.19	.50	-.15	.34	.4046	.1700	-.0510
-.81	-.50	-1.15	-.06	.0486	.0300	.0690
1.19	1.50	-1.15	.94	1.1186	1.4100	-1.0810
1.19	1.50	-.15	1.34	1.5946	2.0100	-.2010
.19	-.50	.85	.14	.0266	-.0700	.1190
1.19	1.50	.85	.14	.1666	.2100	.1190
-.81	-.50	-.15	-.56	.4536	.2800	.0840
.19	-.50	-.15	.04	.0076	-.0200	-.0060
-1.81	-.50	.85	-.56	1.0136	.2800	-.4760
-1.81	-.50	-.15	-1.06	1.9186	.5300	.1590
.19	.50	.85	-.56	-.0684	-.1800	-.3060
-.81	.50	1.85	.64	-.5184	.3200	1.8140
.19	-.50	-1.15	.74	.1406	-.3700	-.8510
.19	.50	-1.15	-1.06	-.2014	-.5300	1.2190
-.81	-1.50	-1.15	-.86	.6966	1.2900	.9890
.19	1.50	-.15	.94	.1786	1.4100	-.1410
1.19	-1.50	-.15	.94	1.1186	-1.4100	-.1410
.19	1.50	-1.15	-.06	-.0114	-.0900	.0690
-1.81	-1.50	-.15	.44	-.7964	.6600	-.0660
				8.9670	7.6100	2.1250

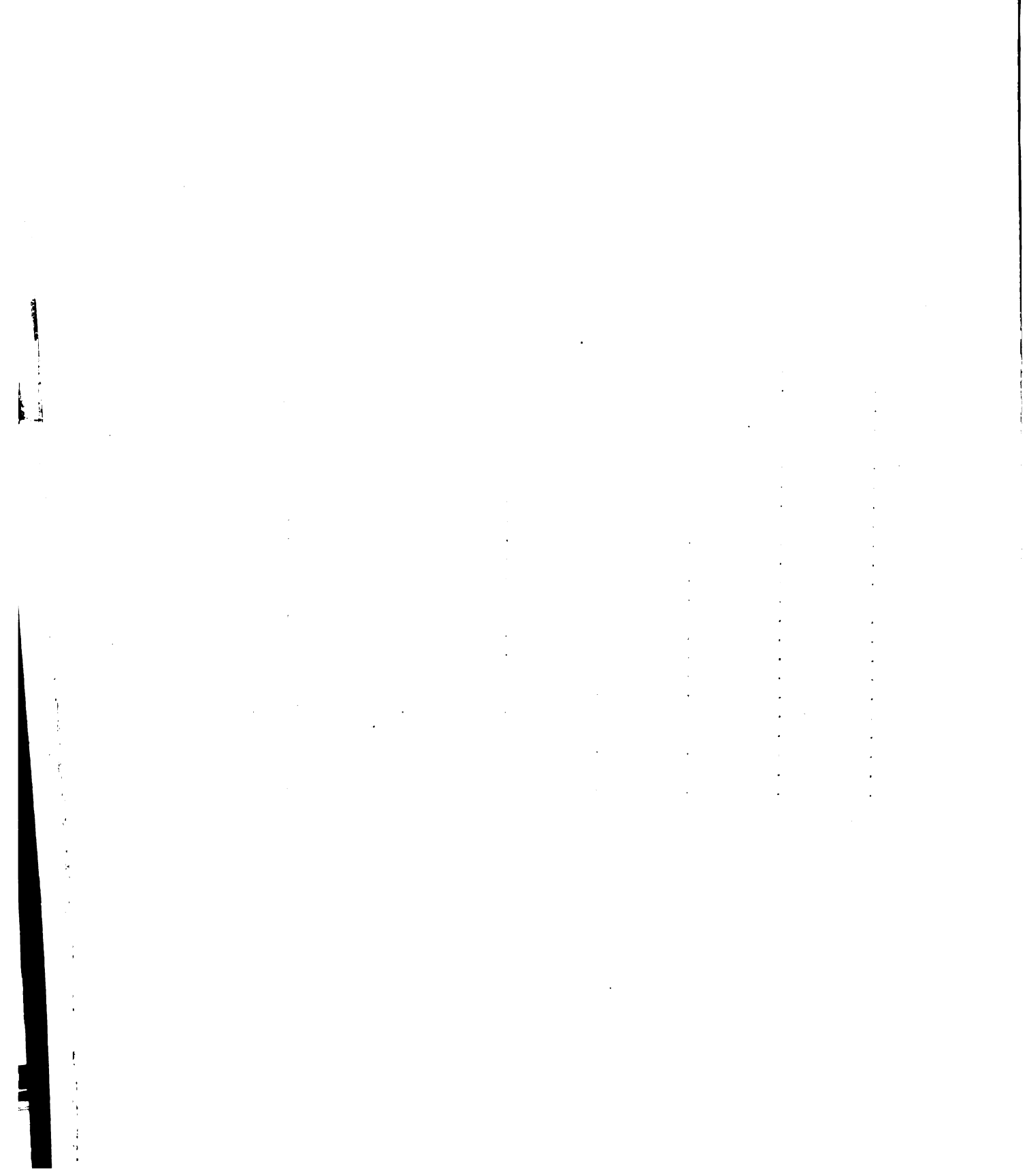


Liberal Arts Students

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
.9050	.2715	.0750	3.2761	.2500	.0225	.0036
.4050	.1215	.0750	.6561	.2500	.0225	.3136
.0950	-.0285	-.0750	.0361	.2500	.0225	1.5376
1.2150	.9315	1.7250	.6561	2.2500	1.3225	1.5876
-1.7850	-.1785	.2250	1.4161	2.2500	.0225	.0036
-1.7850	-1.3685	1.7250	1.4161	2.2500	1.3225	.0036
.5950	-.1785	-.0750	1.4161	.2500	.0225	.1156
.4050	.9315	.5750	.6561	.2500	1.3225	.0036
1.7850	-1.3685	-1.7250	1.4161	2.2500	1.3225	.8836
1.7850	-.1785	-.2250	1.4161	2.2500	.0225	1.7956
-.0950	.1615	-.4250	.0361	.2500	.7225	.0196
1.7850	1.0115	1.2750	1.4161	2.2500	.7225	.0196
.4050	.1215	.0750	.6561	.2500	.0225	.3136
-.0950	-.0285	.0750	.0361	.2500	.0225	.0014
.9050	-1.5385	-.4250	3.2761	.2500	.7225	.3136
.9050	.2715	.0750	3.2761	.2500	.0225	1.1256
.0950	.1615	.4250	.0361	.2500	.7225	.1296
-.4050	-1.4985	.9250	.6561	.2500	3.4225	.4096
-.0950	-.2185	.5750	.0361	.2500	1.3225	.5476
.0950	-.2185	-.5750	.0361	.2500	1.3225	1.1236
1.2150	.9315	1.7250	.6561	2.2500	1.3225	.7596
.2850	-.0285	-.2250	.0361	2.2500	.0225	.8856
-1.7850	-.1785	.2250	1.4161	2.2500	.0225	.8856
.2850	-.2185	-1.7250	.0361	2.2500	1.3225	.0036
2.7150	.2715	.2250	3.2761	2.2500	.0225	.1936
<u>9.8350</u>	<u>-2.0425</u>	<u>4.5250</u>	<u>27.2425</u>	<u>28.2500</u>	<u>17.1625</u>	<u>12.9536</u>

Liberal Arts Students

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
1.19	1.50	.85	.74	.8806	1.1100	.6290
.19	-.50	-.15	.74	.1406	-.3700	-.1110
.19	1.50	-.15	-1.31	-.2489	-1.9650	.1965
.19	.50	-1.15	-.06	-.0114	-.0300	.0690
.19	1.50	-1.15	-.06	-.0114	-.0900	.0690
1.19	1.50	1.85	-.06	-.0714	-.0900	-.1110
-.81	-.50	-1.15	-1.06	.8386	.5300	1.2190
-1.81	-1.50	-1.15	.24	-.4344	-.3600	-.2760
1.19	1.50	-.15	1.14	1.3566	1.7100	-.1710
-.81	-1.50	-.15	-1.26	1.0206	1.8900	.1890
1.19	.50	.85	-.06	-.0714	-.0300	-.0510
1.19	1.50	1.85	1.94	2.3086	2.9100	3.5890
1.19	1.50	.85	.94	1.1186	1.4100	.7990
1.19	-.50	-1.15	-.36	-.4284	.1800	.4140
.19	1.50	.85	.34	.0646	.5100	.2890
1.19	1.50	.85	.74	.8806	1.1100	.6290
1.19	1.50	1.85	1.14	1.3566	1.7100	2.1090
1.19	1.50	1.85	1.14	1.3566	1.7100	2.1090
-.81	-.50	-.15	-.86	.6986	.4300	.1290
.19	.50	1.85	1.14	.2166	.5700	2.1090
.19	-1.50	-1.15	-1.06	-.2014	1.5900	1.2190
1.19	.50	-.15	-.66	-.7854	-.3300	.0990
.19	1.50	1.85	.44	.0866	.6600	.8140
1.19	.50	.85	.44	.5236	.2200	.3740
1.19	.50	-1.15	.94	1.1186	.4700	-1.0810
				11.7175	13.4350	15.2525



Liberal Arts Students

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
1.7850	1.0115	1.2750	1.4161	2.2500	.7225	.5476
-.0950	-.0285	.0750	.0361	.2500	.0225	.5476
.2850	-.0285	-.2250	.0361	2.2500	.0225	1.7161
.0950	-.2185	-.5750	.0361	.2500	1.3225	.0036
.2850	-.2185	-1.7250	.0361	2.2500	1.3225	.0036
1.7850	2.2015	2.7750	1.4161	2.2500	3.4225	.0036
.4050	.9615	.5750	.6561	.2500	1.3225	1.1236
2.7150	2.0815	1.7250	3.2761	2.2500	1.3225	.0576
1.7850	-.1785	-.2250	1.4161	2.2500	.0225	1.2996
1.2150	.1215	.2250	.6561	2.2500	.0225	1.5876
.5950	1.0115	.4250	1.4161	.2500	.7225	.0036
1.7850	2.2015	2.7750	1.4161	2.2500	3.4225	3.7637
1.7850	1.0115	1.2750	1.4161	2.2500	.7225	.8836
-.5950	-1.3685	.5750	1.4161	.2500	1.3225	.1296
.2850	.1615	1.2750	.0361	2.2500	.7225	.1156
1.7850	1.0115	1.2750	1.4161	2.2500	.7225	.5476
1.7850	2.2015	2.7750	1.4161	2.2500	3.4225	1.2996
1.7850	2.2015	2.7750	1.4161	2.2500	3.4225	1.2996
.4050	.1215	.0750	.6561	.2500	.0225	.7396
.0950	.3515	.9250	.0361	.2500	3.4225	1.2996
-.2850	-.2185	1.7250	.0361	2.2500	1.3225	1.1236
.5950	-.1785	-.0750	1.4161	.2500	.0225	.4356
.2850	.3515	2.7750	.0361	2.2500	3.4225	.1936
.5950	1.0115	.4250	1.4161	.2500	.7225	.1936
.5950	-1.3685	-.5750	1.4161	.2500	1.3225	.8836
<u>21.7550</u>	<u>14.1775</u>	<u>22.3250</u>	<u>25.9425</u>	<u>30.2500</u>	<u>34.2625</u>	<u>19.8025</u>

Liberal Arts Students

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\bar{xt}$	$\bar{yt}$	$\bar{zt}$
.19	-.50	1.85	-.36	-.0684	.1800	-.6660
1.19	-1.50	-.15	-.26	-.3094	.3900	.0390
.19	-.50	-.15	.94	.1786	-.4700	-.1410
-1.81	-1.50	-1.15	-.26	.4706	.3900	.2990
-1.81	1.50	.85	.14	-.2534	.2100	.1190
.19	-1.50	-1.15	-.06	-.0114	.0900	.0690
-.81	.50	.85	-.56	.4556	-.2800	-.4760
-1.81	-1.50	-1.15	-1.46	2.6426	2.1900	1.6790
-1.81	-1.50	-1.15	-1.31	2.3711	1.9650	1.5065
.19	-1.50	-1.15	-.06	-.0114	.0900	.0690
-.81	.50	.85	.94	-.7614	.4700	.7990
.19	-.50	-.15	.74	.1406	-.5700	-.1110
1.19	-.50	.85	-.06	-.0714	.0300	-.0510
1.19	.50	-1.15	-.46	-.5474	-.2300	.5290
1.19	1.50	1.85	-.06	-.0714	-.0900	-.1110
.19	.50	-1.15	-.76	-.1444	-.3800	.8740
1.19	1.50	1.85	1.44	1.7166	2.1600	2.6640
-1.81	-1.50	-.15	.54	-.9774	-.8100	-.0810
-.81	-1.50	-.15	-.36	.2916	.5400	.0540
.19	.50	-1.15	.44	.0836	.2200	-.5060
.19	.50	-.15	.64	.1216	.5200	-.0960
1.19	1.50	-.15	-.36	-.4284	-.5400	.0540
-.81	-.50	-.15	-1.16	.9396	.5800	.1740
-1.81	-.50	-1.15	-.36	.6516	.1800	.4140
-1.81	-1.50	-.15	-1.31	2.3711	1.9650	.1965
				8.7740	8.8000	7.3000

Liberal Arts Students

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\frac{\overline{x^2}}{x}$	$\frac{\overline{y^2}}{y}$	$\frac{\overline{z^2}}{z}$	$\frac{\overline{t^2}}{t}$
-.0950	.3515	-.9250	.0361	.2500	3.4225	.1296
-1.7850	-.1785	.2250	1.4161	2.2500	.0225	.0676
-.0950	-.0285	.0750	.0361	.2500	.0225	.8836
2.7150	2.0815	1.7250	3.2761	2.2500	1.3225	.0676
-2.7150	-1.5385	1.2750	3.2761	2.2500	.7225	.0196
-.2850	-.2185	1.7250	.0361	2.2500	1.3225	.0036
-.4050	-.6885	.4250	.6561	.2500	.7225	.3136
2.7150	2.0815	1.7250	3.2761	2.2500	1.3225	2.1316
2.7150	2.0815	1.7250	3.2761	2.2500	1.3225	1.7161
-.2850	-.2185	1.7250	.0361	2.2500	1.3225	.0036
-.4050	-.6885	.4250	.6561	.2500	.7225	.8836
-.0950	-.0285	.0750	.0361	.2500	.0225	.5476
-.5950	1.0115	-.4250	1.4161	.2500	.7225	.0036
.5950	-1.3685	-.5750	1.4161	.2500	1.3225	.2116
1.7850	2.2015	2.7550	1.4161	2.2500	3.4225	.0036
.0950	-.2185	-.5750	.0361	.2500	1.3225	.5776
1.7850	2.2015	2.7750	1.4161	2.2500	3.4225	2.0736
2.7150	.2715	.2250	3.2761	2.2500	.0225	.2916
1.2150	.1215	.2250	.6561	2.2500	.0225	.1296
.0950	-.2185	-.5750	.0361	.2500	1.3225	.1936
.0950	-.0285	-.0750	.0361	.2500	.0225	.4096
1.7850	-.1785	-.2250	1.4161	2.2500	.0225	.1296
.4050	.1215	.0750	.6561	.2500	.0225	1.3456
.9050	2.0815	.5750	3.2761	.2500	1.3225	.1296
2.7150	.2715	.2250	3.2761	2.2500	.0225	1.7161
<u>15.5750</u>	<u>9.2775</u>	<u>14.6250</u>	<u>34.3425</u>	<u>32.2500</u>	<u>25.2625</u>	<u>13.9830</u>

Original Data-Section II
Engineering Students

x	y	z	t	x	y	z	t
1	2	4	1.8	4	4	3	.6
2	3	2	.6	1	3	2	.6
4	4	3	2.4	1	1	4	1.4
2	3	4	.8	4	4	4	2.0
3	4	4	1.8	4	3	4	2.2
1	3	3	1.4	3	3	4	1.4
4	4	4	1.2	1	3	4	1.4
2	1	2	.4	2	4	3	-.4
1	2	4	1.4	4	4	4	2.0
1	1	3	1.2	3	3	2	1.6
1	2	3	1.0	1	1	4	0
3	4	4	2.2	3	4	4	2.4
3	4	4	1.3	1	1	4	.8
1	2	4	1.2	2	3	4	2.0
1	3	4	2.4	3	4	4	0
4	4	4	1.0	2	3	4	1.0
4	4	4	2.2	2	4	2	1.4
3	3	4	2.0	1	1	2	.6
3	3	3	0	2	3	3	.2
4	4	4	2.2	4	4	4	2.4
3	4	3	1.0	4	4	4	2.6
1	1	1	.7	3	4	4	1.5
1	2	2	.8	3	2	2	1.7
1	3	4	1.6	2	3	2	1.2
2	3	4	.6	1	1	3	0
<u>56</u>	<u>73</u>	<u>85</u>	<u>53.2</u>	<u>61</u>	<u>74</u>	<u>84</u>	<u>50.6</u>

Grand Totals

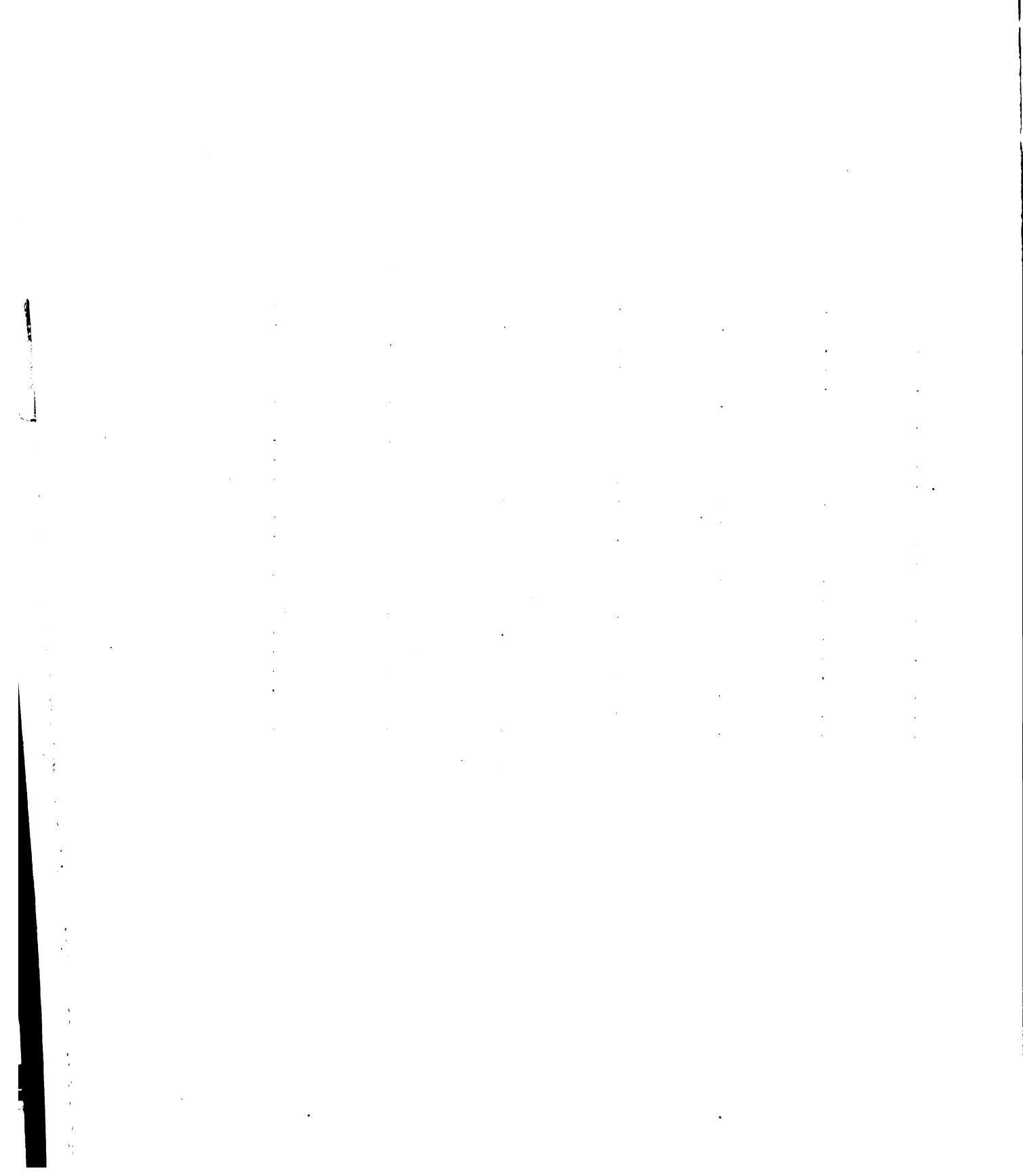
x	y	z	t
117	147	169	63.8

Means

x - 2.34 y - 2.94 z - 3.38 t - 1.276

Engineering Students

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
-1.34	-.94	.62	.524	-.7022	-.4926	.3249
-.34	.06	-1.38	-.676	.2298	-.0406	.9329
1.66	1.06	-.38	1.124	1.8658	1.1914	-.4271
-.34	.06	.62	-.476	.1618	-.0286	-.2951
.66	1.06	.62	.524	.3459	.5554	.3249
-1.34	.06	-.38	.124	-.1662	.0074	-.0471
1.66	1.06	.62	-.076	-.1262	-.0806	-.0471
-.34	-1.94	-1.38	-.876	.2978	1.6994	1.2089
-1.34	-.94	.62	.124	-.1662	-.1166	.0769
-1.34	-1.94	-.38	-.076	.1018	.1474	.0289
-1.34	-.94	-.38	-.276	.3698	.2594	.1049
.66	1.06	.62	.924	.6098	.9794	.5729
.66	1.06	.62	.024	.0158	.0254	.0149
-1.34	-.94	.62	-.076	.1018	.0714	-.0471
-1.34	.06	.62	1.124	-1.5062	.0674	.6969
1.66	1.06	.62	-.276	-.4582	-.2926	-.1711
1.66	1.06	.62	.924	1.5338	.9794	.5729
.66	.06	.62	.724	.4778	.0434	.4489
.66	.06	-.38	-1.276	-.8422	-.0766	.4849
1.66	1.06	.62	.924	1.5338	.9794	.5729
.66	1.06	-.38	-.276	-.1822	-.2926	.1049
-1.34	-1.94	-2.38	-.576	.7718	1.1174	1.3709
-1.34	-.94	-1.38	-.476	.6378	.4474	.6569
-1.34	.06	.62	.324	-.4342	.0194	.2709
-.34	.06	.62	-.676	.2298	-.0406	-.4191
				4.7011	7.1290	7.2465



Engineering Students

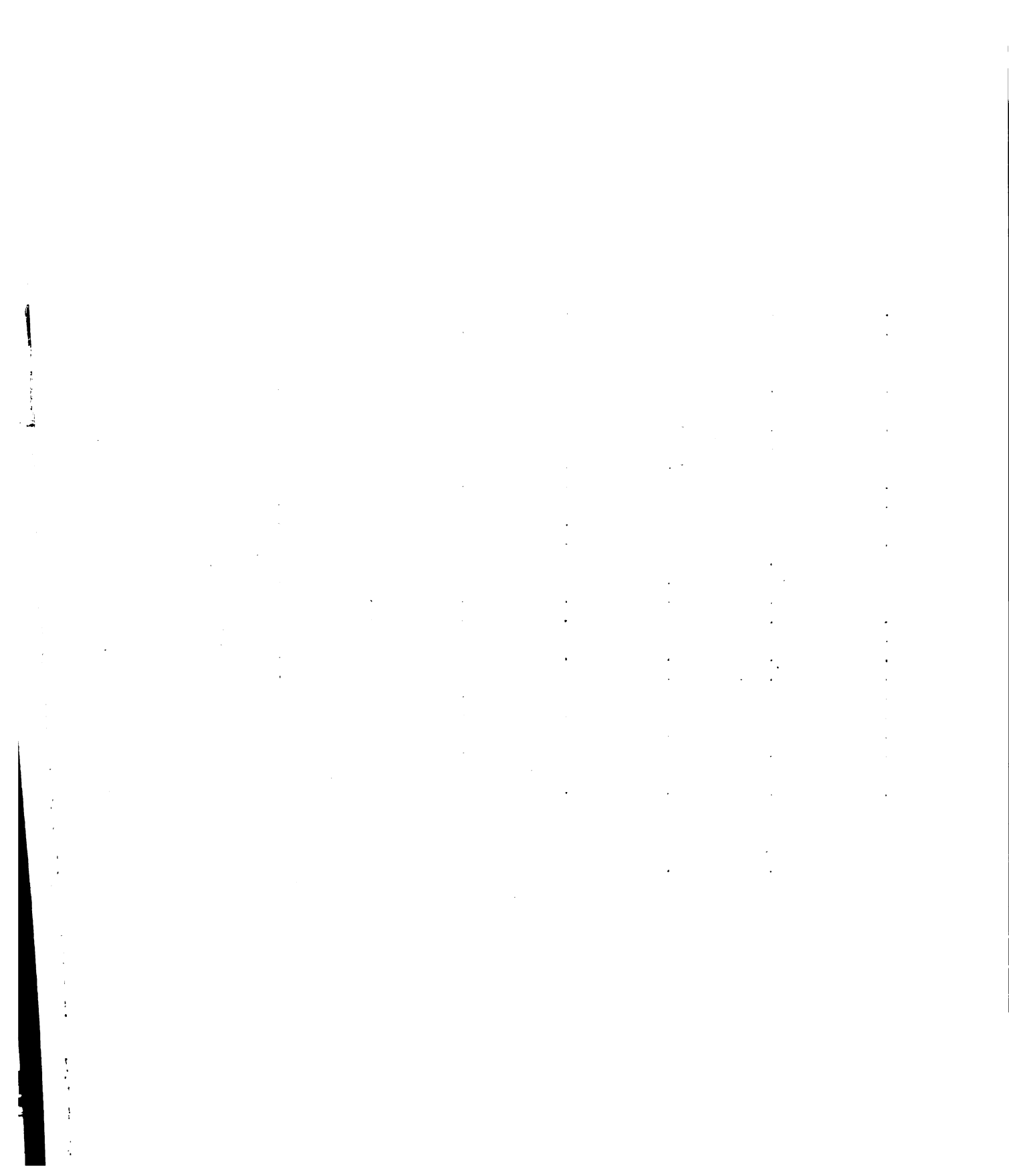
$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
1.2596	-.8308	-.5828	1.7956	.8836	.3844	.274576
-.0204	.4692	-.0828	.1156	.0036	1.9044	.456976
1.7596	-.6308	-.4028	2.7556	1.1236	.1444	1.263376
-.0204	-.2108	-.0372	.1156	.0036	.3844	.226576
.6996	.4092	.6572	.4356	1.1236	.3844	.274576
-.0804	.5092	-.0228	1.7956	.0036	.1444	.015376
1.7596	1.0292	.6572	2.7556	1.1236	.3844	.005776
.6596	.4092	2.6772	.1156	3.7636	1.9044	.767576
1.2596	-.8308	-.5828	1.7956	.8836	.3844	.015376
2.5996	.5092	.7372	1.7956	3.7636	.1444	.005776
1.2596	.5092	.3572	1.7956	.8836	.1444	.076176
.6996	.4092	.6572	.4356	1.1236	.3844	.853776
.6996	.4092	.6572	.4356	1.1236	.3844	.000576
1.2596	-.8308	-.5828	1.7956	.8836	.3844	.005776
-.0804	-.8308	.0372	1.7956	.0036	.3844	1.263376
1.7596	1.0292	.6572	2.7556	1.1236	.3844	.076176
1.7596	1.0292	.6572	2.7556	1.1236	.3844	.853776
.0396	.4092	.0372	.4356	.0036	.3844	.524176
.0396	-.2508	-.0228	.4356	.0036	.1444	1.628176
1.7596	1.0292	.6572	2.7556	1.1236	.3844	.853776
.6996	-.2508	-.4028	.4356	1.1236	.1444	.076176
2.5996	3.1892	4.6172	1.7956	3.7636	5.6644	.331776
1.2596	1.8492	1.2972	1.7956	.8836	1.9044	.226576
-.0804	-.8308	.0372	1.7956	.0036	.3844	.104976
-.0204	-.2108	.0372	.1156	.0036	.3844	.456976
<u>23.5300</u>	<u>7.5500</u>	<u>11.7900</u>	<u>34.8100</u>	<u>25.8500</u>	<u>13.0100</u>	<u>19.6300</u>

Engineering Students

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\bar{xt}$	$\bar{yt}$	$\bar{zt}$
1.66	1.06	-.38	-.676	-1.1222	-.7166	.2569
-1.34	.06	-1.38	-.676	.9058	-.0406	.9329
-1.34	-1.94	.62	.124	-.1662	-.2406	.0769
1.66	1.06	.62	.724	1.2018	.7674	.4489
1.66	.06	.62	.924	1.5338	.0554	.5729
.66	.06	.62	.124	.0818	.0074	.0769
-1.34	.06	.62	.124	-.1662	.0074	.0769
-.34	1.06	-.38	-1.676	.5698	-1.7766	.6369
1.66	1.06	.62	.724	1.2018	.7674	.4489
.66	.06	-1.38	.324	.2138	.0194	-.4471
-1.34	-1.94	.62	-1.276	1.7098	2.4754	-.7911
.66	1.06	.62	1.124	.7418	1.1914	.6969
-1.34	-1.94	.62	-.476	.6378	.9234	-.2951
-.34	.06	.62	.724	-.2462	.0454	.4489
.66	1.06	.62	-1.276	-.8422	-1.3526	-.7911
-.34	.06	.62	-.276	.0938	-.0166	-.1711
-.34	1.06	-1.38	.124	-.0422	.1314	-.1711
-1.34	-1.94	-1.38	-.676	.9058	1.3114	.9329
-.34	.06	-.38	-1.076	.3658	-.0646	.4089
1.66	1.06	.62	1.124	1.8658	1.1914	.6969
1.66	1.06	.62	1.324	2.1978	1.4034	.8209
.66	1.06	.62	.224	.1478	.2374	.1369
.66	-.94	-1.38	.424	.2798	-.3936	-.5851
-.34	.06	-1.38	-.076	.0258	-.0046	.1049
-1.34	-1.94	-.38	-1.276	1.7098	2.4754	.4849
				13.8050	8.3970	5.0103
Grand Totals						
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Engineering Students

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
1.7596	-.6308	-.4028	2.7556	1.1236	.1444	.456976
-.0804	1.8492	-.0828	1.7956	.0036	1.9044	.456976
2.5996	-.8308	-1.2028	1.7956	3.7636	.3844	.015376
1.7596	1.0292	.6572	2.7556	1.1236	.3844	.524176
.0996	1.0292	.0372	2.7556	.0036	.3844	.853776
.0396	.4092	.0372	.4356	.0036	.3844	.015376
-.0804	-.8308	.0372	1.7956	.0036	.3844	.015376
-1.3604	.1292	-.4028	.1156	1.1236	.1444	2.808976
1.7596	1.0292	.6572	2.7556	1.1236	.3844	.524176
.0296	-.9108	-.0828	.4356	.0036	1.9044	.104976
2.5996	-.8308	-1.2028	1.7956	3.7636	.3844	1.628176
.6996	.4092	.6572	.4356	1.1236	.3844	1.263376
2.5996	-.8308	-1.2028	1.7956	3.7636	.3844	.226576
-.0204	-.2108	.0372	.1156	.0036	.3844	.524176
.6996	.4092	.6572	.4356	1.1236	.3844	1.628176
-.0204	-.2108	.0372	.1156	.0036	.3844	.076176
-.3604	.4692	-1.4628	.1156	1.1236	1.9044	.015376
2.5996	1.8492	2.6772	1.7956	3.7636	1.9044	.456976
-.0204	.1292	-.0228	.1156	.0036	.1444	1.157776
1.7596	1.0292	.6572	2.7556	1.1236	.3844	1.263376
1.7596	1.0292	.6572	2.7556	1.1236	.3844	1.752976
.6996	.4092	.6572	.4356	1.1236	.3844	.050176
-.6204	-.9108	1.2972	.4356	.8836	1.9044	.179776
-.0204	.4692	-.0828	.1156	.0036	1.9044	.005776
2.5996	.5092	.7372	1.7956	3.7636	.1444	1.628176
<u>22.4900</u>	<u>5.9900</u>	<u>3.3500</u>	<u>52.4100</u>	<u>50.9700</u>	<u>17.7700</u>	<u>17.6332</u>
Grand Totals						
46.0200	13.5400	15.1400	67.2200	56.8200	35.7800	28.2712



Original Data-Section II

Home Economics Students

x	y	z	t	x	y	z	t
3	3	2	.2	3	1	1	.2
1	2	2	1.2	4	4	4	3.0
1	1	3	.2	2	1	2	.2
4	1	1	.5	1	1	1	0
2	3	2	.8	2	2	2	1.2
2	1	1	0	3	3	3	1.2
3	4	3	2.5	1	1	1	1.0
3	4	1	2.0	3	3	3	1.5
4	4	1	1.2	2	1	3	1.0
1	1	1	0	4	4	4	2.2
1	2	2	0	3	3	3	2.2
4	4	2	1.2	4	4	2	2.3
4	4	3	2.2	2	1	1	.2
3	1	2	1.2	4	3	3	1.6
4	3	4	1.4	3	2	2	.7
1	1	1	-.25	2	1	1	.8
4	4	4	1.8	4	2	2	.8
3	3	3	1.6	1	1	2	.6
2	1	2	-.7	2	1	2	.5
4	1	1	.6	4	4	3	1.8
2	1	1	.2	1	2	2	1.6
2	2	2	1.0	3	3	2	.5
4	3	3	1.8	3	3	1	.2
4	2	3	1.7	1	1	1	.2
1	2	3	1.2	4	2	2	1.2
<u>67</u>	<u>58</u>	<u>53</u>	<u>23.55</u>	<u>66</u>	<u>54</u>	<u>53</u>	<u>26.7</u>

Grand Totals

x	y	z	t
133	112	106	50.25

Means

x - 2.66	y - 2.24	z - 2.12	t - 1.005
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Home Economics Students

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
.34	.76	-.12	-.805	-.2737	-.6118	.0966
-1.66	-.24	-.12	.195	-.3237	-.0468	-.0234
-1.66	-1.24	.88	-.805	1.3363	.9982	-.7084
1.34	-1.24	-1.12	-.505	-.6767	.6262	.5656
-.66	.76	-.12	-.205	.1353	-.1558	.0246
-.66	-1.24	-1.12	-1.005	.6633	1.2462	1.1256
.34	1.76	.88	1.495	.5083	2.6312	1.3156
.34	1.76	-1.12	.995	.3383	1.7512	-1.1144
1.34	1.76	-1.12	.195	.2613	.3432	-.2184
-1.66	-1.24	-1.12	-1.005	1.6683	1.2462	1.1256
-1.66	-.24	-.12	-1.005	1.6683	.2412	.1206
1.34	1.76	-.12	.195	.2613	.3432	-.0234
1.34	1.76	.88	1.195	1.6013	2.1032	1.0616
.34	-1.24	-.12	.195	.0663	-.2418	-.0234
1.34	.76	1.88	.395	.5293	.3002	.7426
-1.66	-1.24	-1.12	-1.255	2.0853	1.5562	1.4056
1.34	1.76	1.88	.795	1.0653	1.3992	1.4946
.34	.76	.88	.595	.2023	.4522	.5236
-.66	-1.24	-.12	-1.705	1.1253	2.1142	.2046
1.34	-1.24	-1.12	-.405	-.5427	.5022	.4536
-.66	-1.24	-1.12	-.805	.5313	.9982	.9016
-.66	-.24	-.12	-.005	.0033	.0012	.0056
1.34	.76	.88	.795	1.0653	.6042	.6996
1.34	-.24	.88	.695	.9313	-.1668	.6116
-1.66	-.24	.88	.195	-.3237	-.0468	.1716
				<u>13.9045</u>	<u>18.1880</u>	<u>10.5240</u>

Home Economics Students

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
.2584	-.0408	-.0912	.1156	.5776	.0144	.648025
.3984	.1992	.0288	2.7556	.0576	.0144	.038025
2.0584	-1.4608	-1.0912	2.7556	1.5376	.7744	.648025
-1.6616	-1.5008	1.3888	1.7956	1.5376	1.2544	.255025
-.5016	.0792	-.0912	.4356	.5776	.0144	.042025
.8184	.7392	1.3888	.4356	1.5376	1.2544	1.010025
.5984	.2992	1.5488	.1156	3.0976	.7744	2.255025
.5984	-.3808	-1.9712	.1156	3.0976	1.2544	.990025
2.3584	-1.5008	-1.9712	1.7956	3.0976	1.2544	.038025
2.0584	1.8592	1.3888	2.7556	1.5376	1.2544	1.010025
.3984	.1992	.0288	2.7556	.0576	.0144	1.010025
2.3584	-.1608	-.2112	1.7956	3.0976	.0144	.038025
2.3584	1.1792	1.5488	1.7956	3.0976	.7744	1.428025
-.4216	-.0408	.1488	.1156	1.5376	.0144	.038025
1.0184	2.5192	1.4288	1.7956	.5776	3.5344	.156025
2.0584	1.8592	1.3888	2.7556	1.5376	1.2544	1.575025
2.3584	2.5192	3.3088	1.7956	3.0976	3.5344	.632025
.2584	.2992	.0688	.1156	.5776	.7744	.354025
.8184	.0792	.1488	.4356	1.5376	.0144	2.907025
-1.6616	-1.5008	1.3888	1.7956	1.5376	1.2544	.164025
.8184	.7392	1.3888	.4356	1.5376	1.2544	.648025
.1584	.0792	.0288	.4356	.0576	.0144	.030025
1.0184	1.1792	.6688	1.7956	.5776	.7744	.632025
-.3216	1.1792	-.2112	1.7956	.0576	.7744	.425025
.3984	-1.4608	-.2112	2.7556	.0576	.7744	.038025
<u>18.6000</u>	<u>6.9000</u>	<u>12.0400</u>	<u>35.4500</u>	<u>35.6000</u>	<u>22.6400</u>	<u>17.017825</u>

Home Economics Students

$\bar{x}$	$\bar{y}$	$\bar{z}$	$\bar{t}$	$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
.34	-1.24	-1.12	-.805	-.2737	.9982	.9016
1.34	1.76	1.88	1.995	2.6733	3.5112	3.7508
-.66	-1.24	-.12	-.805	.5313	.9982	.0986
-1.66	-1.24	-1.12	-1.005	1.6683	1.2462	1.1256
-.66	-.24	-.12	.195	-.1287	-.0468	-.0234
.34	.76	.88	.195	.0663	.1482	.1716
-1.66	-1.24	-1.12	-.005	.0083	.0082	.0056
.34	.76	.88	.495	.1683	.3782	.4556
-.66	-1.24	.88	-.005	.0083	.0082	-.0044
1.34	1.76	1.88	1.195	1.6013	2.1082	2.2468
.34	.76	.88	1.195	.4063	.9082	1.0516
1.34	1.76	-.12	1.295	1.7353	2.2792	-.1534
-.66	-1.24	-1.12	-.805	.5313	.9982	.9016
1.34	.76	.88	.595	.7973	.4522	.5236
.34	-.24	-.12	-.305	-.1027	.0732	.0300
-.66	-1.24	-1.12	-.205	.1353	.2512	.2296
1.34	-.24	-.12	-.205	-.2747	.0492	.0246
-1.66	-1.24	-.12	-.405	.6723	.5022	.0486
-.66	-1.24	-.12	-.505	.3333	.6282	.0606
1.34	1.76	.88	.795	1.0653	1.3992	.6996
-1.66	-.24	-.12	.595	-.9877	-.1423	-.0714
.34	.76	-.12	-.505	-.1717	-.3852	.0606
.34	.76	-1.12	-.805	-.2737	-.6118	.9016
-1.66	-1.24	-1.12	-.805	1.3363	.9982	.9016
1.34	-.24	-.12	.195	.2613	-.0468	-.0234
				11.7805	16.7020	15.8960

Grand Totals

$\overline{xt}$	$\overline{yt}$	$\overline{zt}$
25.6850	34.8900	24.4200

Home Economics Students

$\overline{xy}$	$\overline{xz}$	$\overline{yz}$	$\overline{x^2}$	$\overline{y^2}$	$\overline{z^2}$	$\overline{t^2}$
-.4216	-.3808	1.3888	.1156	1.5576	1.2544	.648025
2.3584	2.5192	3.3088	1.7956	3.0976	3.5344	3.980025
.8184	.0792	.1488	.4356	1.5576	.0144	.648025
2.0584	1.8592	1.3888	2.7556	1.5576	1.2544	1.010025
.1584	.0792	.0288	.4356	.0576	.0144	.038025
.2584	.2992	.6688	.1156	.5776	.7744	.038025
2.0584	1.8592	1.3888	2.7556	1.5576	1.2544	.000025
.2584	.2992	.6688	.1156	.5776	.7744	.245025
.8184	-.5808	-1.0912	.4356	1.5576	.7744	.000025
2.3584	2.5192	3.3088	1.7956	3.0976	3.5344	1.428025
.2584	.2992	.6688	.1156	.5776	.7744	1.428025
2.3584	-.1608	-.2112	1.7956	3.0976	.0144	1.677025
.8184	.7392	1.3888	.4356	1.5576	1.2544	.648025
1.0184	1.1792	.6688	1.7956	.5776	.7744	.354025
-.0816	-.0408	.0288	.1156	.0576	.0144	.093025
.8184	.7392	1.3888	.4356	1.5576	1.2544	.042025
-.3216	-.1608	.0288	1.7956	.0576	.0144	.042025
2.0584	.1992	.1488	2.7556	1.5576	.0144	.164025
.8184	.0792	.1488	.4356	1.5576	.0144	.255025
2.3584	1.1792	1.5488	1.7956	3.0976	.7744	.632025
.3984	.1992	.0288	2.7556	.0576	.0144	.354025
.2584	-.0408	-.0912	.1156	.5776	.0144	.255025
.2534	-.3808	-.8512	.1156	.5776	1.2544	.648025
2.0584	1.8592	1.3888	2.7556	1.5576	1.2544	.648025
-.3216	-.1608	.0288	1.7956	.0576	.0144	.038025
<u>23.4800</u>	<u>14.0800</u>	<u>17.5200</u>	<u>29.7700</u>	<u>31.5200</u>	<u>20.6400</u>	<u>15.313025</u>

Grand Totals

42.0800	21.0400	29.5600	65.2200	67.1200	43.2800	32.3313
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