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## College accounting testing program bulletin no. 7; Results of achievement tests and orientation tests administered in schools of business of one hundred and fifty-nine colleges and universities, spring, 1949

American Institute of Accountants. Committee on Selection of Personnel

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THE AMERICAN INSTITUTE OF ACCOUNTANTS  
COLLEGE ACCOUNTING TESTING PROGRAM

Bulletin No. 7

RESULTS OF  
ACHIEVEMENT TESTS AND ORIENTATION TESTS  
ADMINISTERED IN SCHOOLS OF BUSINESS  
OF ONE HUNDRED AND FIFTY-NINE  
COLLEGES AND UNIVERSITIES

Spring, 1949

Prepared by  
Committee on Selection of Personnel  
437 West 59th Street  
New York 19, N. Y.  
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Northeastern University  
Northern Michigan College  
North Texas State College  
Northwestern School of Commerce  
Northwestern State College

Occidental College  
Ohio University  
Oklahoma University  
The Packard School  
University of Pennsylvania

Pennsylvania Military College  
Pennsylvania State University  
Phillips University  
University of Pittsburgh  
Providence College

Queens College  
Regis College  
Rice Institute  
Rider College  
Roanoke College

Robert Morris School  
University of Rochester  
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St. Joseph's College  
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University of Tennessee - Extension  
University of Texas

A and M College of Texas  
Texas Christian University  
Texas Technological Institute  
Triple Cities College  
Union Junior College

University of Vermont  
University of Virginia  
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## INTRODUCTION

The third spring College Accounting Testing Program, under the direction of the Committee on Selection of Personnel of the American Institute of Accountants, was carried on between February 15, and June 30, 1949. During this period, colleges and universities administered a total of approximately 20,000 tests to students of accounting.

Three types of tests - achievement, orientation, and interest tests - are being used in the fall and spring accounting testing programs in the colleges. The Orientation Test is stressed in the fall, and the Achievement Tests are emphasized in the spring, while the interest test, the Strong Vocational Interest Blank, may be given at any time.

The Achievement Test, Level I, was the most extensively used test this spring. The largest use of this test was with first-year students, although, as will be seen from Table I, a considerable number of second-year students and a few students in their third year of study also took it. Norms are available on this test for the different levels of study. It was taken by approximately 7,800 students this spring.

In order to meet requests from colleges for a form of the Achievement Test, Level II, that would require less than four hours of administration time, a two-hour form, known as Level II, Form C, was prepared and was recommended for use with accounting seniors in the latter part of February and in March. About sixty colleges administered this test to a total of more than 2,600 seniors. In addition, more than 1,600 seniors took one of the long forms of the Level II test which was recommended for use after April 1.

Although naturally the greater use of the Orientation Test, or aptitude test, is in the fall shortly after the beginning of the college year, fifty-six colleges gave this test to approximately 4,600 students this spring. Form C of this test was available for the first time, and spring norms were established for it. The Orientation Test is used at all levels of study, and different norms are set up for each level.

The Strong blank was given in twenty-seven colleges to a total of 1,769 students. The results of this test are not presented in the present bulletin.

There was a marked increase in the use of project office scoring this spring. Whereas in the spring of 1948, the tests scored locally exceeded those scored centrally, approximately four times as much project office scoring as local scoring was done in the spring of 1949. Scoring services in the project office, at ten cents a student, include not only the scoring of the papers, but also the computation of medians, quartiles, and percentiles, and the preparation of typed distributions and lists showing the scores and percentile ranks of individual students.

The results of the Achievement Tests and Orientation Tests in all the participating colleges taken together are shown in the second section of this bulletin. The distributions of scores for the individual colleges are indicated by code numbers in the comparative charts in the third section.

Attention is called especially to the last section of the bulletin, which consists of an article by Vice-Dean T. A. Budd, presenting some results of a study of the value of the Orientation Test when used with students in the Wharton School of Finance and Commerce, University of Pennsylvania.

## II

### SUMMARY OF TEST RESULTS

Scores obtained on the various tests used in the spring, 1949, testing program by accounting students in the participating institutions are shown in Tables I through VII. The total number of students included in each distribution is indicated at the bottom of the distribution columns, together with the range of raw scores, the medians and the Q1 and Q3 scores. The medians and interquartile ranges are shown graphically by heavy black lines drawn adjacent to the distributions.

Achievement Tests. Table I shows the distributions of total scores on the Achievement Test, Level I, Form A. The scores are distributed separately by year of study. As has been the case in previous programs, wide ranges of achievement are evident. There are 120 possible points of score for this test. Scores for the first-year accounting students range from zero to 113 and, although the range lessens somewhat with increasing amounts of study, the median scores increase noticeably. Nevertheless, there is much overlapping of the distributions.

Several colleges, instead of using Form A of the Achievement Test, Level I, preferred to continue using Form B. Table II shows the distribution of total scores for first-year students to whom this form was administered. The number of second- and third-year students taking this form of the test was so small that no distributions have been prepared.

This testing program was the occasion for the innovation of the two-hour Level II Achievement Test, Form C, for seniors. The distribution of total scores for this test is shown in Table III. The project office recommended the use of this test during late February and the month of March with the thought in mind that an early administration of this achievement test would provide graduating seniors with their results early enough in the spring to be helpful in pre-graduation employment interviews. Although there was some use of this test later than March, only testings during that month are included in Table III and in the percentiles.

Form C of the Level II Achievement Test has a total possible score of 57. As will be seen in the distribution, one student achieved a score of 56 while no one made a perfect score.

The four hour Achievement Test, Level II, Forms A and B, was again recommended for use after April 1st with seniors. The distributions of scores for these two tests are shown in Table IV. For the first time this spring, these two forms were administered with special answer sheets instead of using the test booklets for recording the responses. Approximately the same difference appears as did last year - that is, Form B evidently is considerably more difficult than Form A. The highest score achieved on Form A is 146 while the highest score achieved on Form B is 135, or fifteen points less than a perfect score.

Orientation Test. About 4,600 students took the Orientation Test this spring and the majority of these took Form C which was used for the first time during this program. However, 1602 first-year students took Form A of the Orientation Test.

Orientation Test, Form C, results are distributed in Tables V and VI. The verbal and quantitative scores are distributed separately by year of study in Table V, and total scores are distributed by year of study in Table VI.

Possible ranges of scores on the Orientation Test are from zero to 100 on the verbal and from zero to 30 on the quantitative section, and from zero to 130 on total score. The median scores on the Orientation Test are quite widely separated for the first- and second-year students of accounting, while the difference between the distributions of the second-year and seniors is quite small. On the whole, Form C of the Orientation Test appears to be a great deal more difficult than either Form A or Form B of this test. For instance, the range for first-year students in verbal score on Form A (as shown in Table VII) is from 4 to 92 with a median of 36.7, while the range for first-year students on Form C in verbal score is from 2 to 65 with a median score of 28.9. Similar differences appear in both quantitative and total score.

TABLE I

DISTRIBUTIONS OF TOTAL SCORES ON ACHIEVEMENT TEST,  
LEVEL I, FORM A

Score	1st year	2nd year	3rd year
120			
117			
114		2	1
111	2	1	2
108	6	7	2
105	3	12	5
102	14	18	1
99	19	26	5
96	27	42	6
93	53	37	10
90	60	45	8
87	83	63	10
84	78	69	8
81	124	67	9
78	134	84	5
75	173	77	10
72	184	86	8
69	234	82	6
66	268	81	10
63	332	70	4
60	308	75	3
57	346	64	4
54	364	65	
51	349	59	5
48	365	60	
45	335	43	
42	323	35	3
39	315	30	3
36	295	23	
33	263	22	1
30	264	20	
27	200	6	
24	172	5	1
21	172	4	1
18	134	3	
15	99	5	
12	65	1	
9	47	1	
6	35	1	
3	16		
0-2	14		
Total	6275	1391	131
Q3	65.0	82.8	92.7
Md	51.2	69.8	81.5
Q1	36.9	55.4	68.3
Range	0-113	7-116	23-115
10%ile	24.8	43.6	53.5
90%ile	77.6	93.5	100.8

TABLE II

DISTRIBUTION OF TOTAL SCORES ON ACHIEVEMENT TEST,  
LEVEL I, FORM B

Score	1st year
177-178	
176	
172	
168	
164	
160	
156	1
152	
148	2
144	3
140	
136	6
132	1
128	11
124	13
120	7
116	15
112	11
108	19
104	25
100	25
96	25
92	22
88	19
84	34
80	23
76	21
72	21
68	18
64	26
60	14
56	13
52	16
48	15
44	11
40	11
36	7
32	9
28	7
24	6
20	5
16	
12	
8	1
4	1
0-3	1
Total	465
Q3	103.6
Md	84.8
Q1	63.8
Range	0-159
10%ile	43.5
90%ile	119.3

---- Median, Spring, 1948

TABLE III  
DISTRIBUTION OF TOTAL SCORES ON ACHIEVEMENT TEST,  
LEVEL II, FORM C

Score	Seniors
56	1
54	
52	1
50	1
48	3
46	13
44	12
42	27
40	43
38	40
36	54
34	61
32	107
30	119
28	106
26	172
24	147
22	143
20	173
18	116
16	146
14	109
12	127
10	120
8	62
6	85
4	45
2	42
0-1	33
Total	2108
Q3	29.2
Md	22.0
Q1	14.2
Range	0-56
10%ile	8.2
90%ile	35.5

TABLE IV

DISTRIBUTIONS OF TOTAL SCORES ON ACHIEVEMENT TESTS,  
LEVEL II, FORM A, AND LEVEL II, FORM B (SENIORS)

Score	II-A	II-B
150		
147		
144	1	
141	6	
138	3	
135	8	1
132	18	
129	11	1
126	22	3
123	25	2
120	29	2
117	45	8
114	42	10
111	41	11
108	32	8
105	48	14
102	40	13
99	43	12
96	52	9
93	51	30
90	40	26
87	54	14
84	51	33
81	45	26
78	40	31
75	29	25
72	30	17
69	32	28
66	22	17
63	28	17
60	26	12
57	22	14
54	29	14
51	15	22
48	20	10
45	19	6
42	11	8
39	8	6
36	10	3
33	6	3
30	9	3
27	6	1
24	1	
21		1
18		1
15		
12	1	
9		
6		
3		
0-2		
Total	1071	462
Q3	109.4	93.9
Md	91.6	80.2
Q1	72.3	65.0
Range	14-146	20-135
10%ile	54.1	51.6
90%ile	121.6	108.0

TABLE V  
 DISTRIBUTIONS OF SCORES ON PART I, VERBAL, AND PART II, QUANTITATIVE,  
 ON ORIENTATION TEST, FORM C

Score	V E R B A L			Score	Q U A N T I T A T I V E		
	lst yr.	2nd yr.	Senior		lst yr.	2nd yr.	Senior
99-100							
96							
93		1					
90				30	1		
87				29	1	2	
84				28	2		1
81				27			1
78				26	3	2	2
75		4		25	3	3	3
72		3		24	8	8	9
69		4		23	20	10	6
66		8		22	10	10	13
63	4	8	4	21	24	10	10
60	2	2	1	20	30	22	12
57	6	9	8	19	46	40	14
54	8	11	15	18	66	16	21
51	18	14	10	17	49	37	16
48	23	18	13	16	74	37	22
45	51	35	27	15	90	31	29
42	56	41	21	14	83	37	28
39	67	46	33	13	93	44	22
36	99	65	40	12	91	43	22
33	123	50	34	11	80	25	21
30	129	54	33	10	73	31	15
27	144	60	19	9	68	24	4
24	140	24	14	8	78	18	8
21	127	16	13	7	59	16	6
18	107	8	4	6	61	11	
15	71	8		5	54	3	1
12	50	1		4	41	5	3
9	25			3	29	1	
6	17			2	16	1	
3	7			1	12	1	
0-2	2			0	11	2	
Total	1276	490	289	Total	1276	490	289
Q3	36.5	44.6	45.8	Q3	16.2	18.0	18.9
Md	28.9	37.1	38.1	Md	12.6	14.5	15.5
Q1	21.9	30.3	32.0	Q1	8.5	11.4	12.6
Range	2-65	12-93	18-65	Range	0-30	0-29	4-28
10%ile	16.1	26.0	26.6	10%ile	5.3	8.5	10.5
90%ile	44.2	54.3	54.0	90%ile	19.4	20.8	22.5

TABLE VI  
DISTRIBUTIONS OF TOTAL SCORES ON ORIENTATION TEST, FORM C

Score	1st year	2nd year	Senior
128-130			
124			
120			
116			
112		1	
108			
104			
100			
96		2	
92		5	
88	2	3	
84	1	6	4
80	4	8	7
76	7	7	7
72	8	13	15
68	20	24	13
64	41	32	20
60	47	36	20
56	62	35	33
52	112	57	36
48	115	57	33
44	123	59	38
40	129	61	30
36	125	39	17
32	137	26	11
28	123	9	5
24	83	6	
20	67	4	
16	36		
12	20		
8	8		
4	5		
0-3	1		
Total	1276	490	289
Q3	51.5	61.6	62.8
Md	41.0	50.9	53.2
Q1	31.2	42.5	45.0
Range	2-89	20-115	28-86
10%ile	23.4	36.4	39.0
90%ile	60.2	71.3	73.1

TABLE VII

DISTRIBUTIONS OF SCORES ON PART I, VERBAL, AND PART II, QUANTITATIVE  
AND TOTAL OF ORIENTATION TEST, FORM A (FIRST YEAR)

Score	Verbal	Score	Quantitative	Score	Total
99-100				128-130	
96				124	
93				120	1
90	2	30	1	116	
87	1	29	2	112	1
84	5	28		108	4
81	3	27	9	104	2
78	10	26	15	100	7
75	7	25	19	96	14
72	20	24	19	92	18
69	16	23	41	88	17
66	25	22	26	84	24
63	34	21	39	80	36
60	49	20	54	76	50
57	50	19	43	72	82
54	76	18	74	68	85
51	86	17	84	64	101
48	87	16	95	60	95
45	89	15	108	56	124
42	107	14	114	52	137
39	119	13	121	48	135
36	135	12	127	44	166
33	148	11	106	40	140
30	124	10	118	36	116
27	111	9	88	32	95
24	100	8	69	28	52
21	84	7	67	24	42
18	41	6	48	20	32
15	33	5	37	16	16
12	21	4	28	12	9
9	14	3	20	8	1
6	4	2	8	4	
3	1	1	12	0-3	
0-2		0	10		
Total	1602	Total	1602	Total	1602
Q3	50.4	Q3	17.3	Q3	65.6
Md	38.7	Md	13.5	Md	51.9
Q1	29.8	Q1	10.1	Q1	41.1
Range	4-92	Range	0-30	Range	9-121
10%ile	22.7	10%ile	6.9	10%ile	32.3
90%ile	60.7	90%ile	21.3	90%ile	77.1

### III

#### RESULTS OF ACHIEVEMENT TESTS AND ORIENTATION TESTS IN INDIVIDUAL COLLEGES

Tables VIII through XVII show the scores of the students in the participating institutions on the Achievement Tests and the Orientation Tests, distributed separately by college. As with previous bulletins, the distributions are identified by code numbers at the top and each college has been informed of its own code number. The same code number applies throughout all the tables in which the college appears.

As with the summary distributions, the individual college distributions are in terms of raw scores listed near the margins of each chart. The medians and the upper and lower limits of the middle 50 per cent of the distribution of scores for the entire group of students at each tabular division are shown by broken horizontal lines across the table. The median and interquartile range for each individual distribution can be compared readily with these "national" norms. As in the summary distribution tables, the short solid horizontal line adjacent to the distribution locates the median, while the vertical solid line marks the range of scores for the middle 50 per cent. The total number of students included in each distribution, the range of raw scores, the median, the Q1 and the Q3 scores are listed under each distribution.

Individual distributions of scores on the Achievement Test, Level I, Form A are shown in Tables VIII and IX for first- and second-year students, respectively. Distributions of scores for first-year students on Achievement Test, Level I, Form B are shown in Table X. Tables XI, XII, and XIII show results for seniors on Achievement Test, Level II, Forms C, A and B, respectively. The distributions of total scores for the Orientation Tests are shown in Tables XIV through XVII. Tables XIV, XV, and XVI present distributions for first-year, second-year, and seniors on Orientation Test, Form C. Distributions for first-year students on Orientation Test, Form A are shown in Table XVII.

The question of extent of participation - that is, whether testings are made on a voluntary or a required basis - is one which has been raised periodically, both by the project office and various examiners. In an effort to determine to what extent this factor influences the total distributions and norms, each examiner receiving a report was asked to return a postcard indicating whether or not the testing was required, and if not, the per cent of the eligible group tested. Information on this question is available for schools using the Achievement Test, Level II, Form C. Of the forty-six colleges administering this test, twenty-six gave it on a required basis and in sixteen colleges it was administered on a voluntary basis. 1451 students took it on a required basis and the distribution of their scores alone resulted in a median of 21.7. Of the voluntary testings, there were 657 students taking the test and the median for their distribution of scores was 22.6. As expected, the voluntary testing shows a slightly higher trend, yet because considerably more than half of the participating colleges made the test a requirement, and because the difference noted above was not any larger than it was, the project office felt justified in combining the two groups. The resultant distribution shows a total of 2108 cases and a median of 22.0. Although a similar breakdown for the other testings is not yet available, it can be stated that, on the whole, participating colleges are making the tests a requirement.



TABLE IX

DISTRIBUTIONS OF SCORES MADE ON ACHIEVEMENT TEST, LEVEL I, FORM A, BY SECOND-YEAR STUDENTS OF ACCOUNTING IN THIRTY-THREE COLLEGES

	8	42	11	74	24	22	53	75	29	76	39	77	14	51	26	43	37	65	78	79	21	52	69	36	58	80	35	81	82	83	17	84	71			
120																																			120	
117																																				117
114							1																				1									114
111												1																								111
108	2			1	2		1		1	1		2			1	1																			108	
105			1	1	2				3	1					1	1					1	1		1											105	
102	1		1	2	2		1		3	2	1	1			1	1					1	2		1											102	
99		1	1	5	3		2		5	1		1			3	1		2		1	2														99	
96	1	1	2	5	3	1	2	3	3	1		1			4	1	1	4		3	1						1							96		
93	2	1		7	4	1	3	4	3	2		1			2	1		3			2														93	
90	5	2		5	4	1	3	4	4	2	2	2		1	5	1		3			1														90	
87			3	12	3	1	3	2	7	5		1			5	2		3	1		1		1		1	1									87	
84	3	2		6	2	1	3	2	4	3		1			13	1		7			5		1												84	
81	3	2	2	6	4	1	3	2	3	3	1	1			3	3		5	2		5		2	3			1								81	
78	2	1	1	5	4	1	1	4	11	6		2		1	9	4		5	2		3		2	1				1							78	
75		2	1	9	3	1	1	2	9	4	1	3			6	1		7			4		1												75	
72	1		3	9	3		3	1	8	5		5			7	3		11	1		4		1			1									72	
69	1		2	7	1		1	3	3	3		5			7	3		7	2		3		1												69	
66	1	1		2	6		2	2	7	2		3			5	4		8	2		6		3												66	
63				3			2	2	4	5	1	2		1	10	1		6			3		1												63	
60	1			3		2	1	3	6	2	1	1			9	2		5	1		3		3												60	
57				3	4		2	3	2	1		2			6	1		7			4		1												57	
54			2	2	4	2	2	3	4	2	1	2		1	5	2		7	1		6		5												54	
51			1		1		2	2	1	2		1			5	3		4			3		3												51	
48			1				1	2	2	2	1	2			6	2		4	1		5		2												48	
45					1		3		2		1	1			2	3		1			5		2												45	
42				1			1		1		1	1			2	2		4			3		1												42	
39				1			1		1	1		1		1	3			1			1		3												39	
36							1		2	2		1			2			2			1		1												36	
33				2					3	2					1			2			2		1												33	
30				1					3						1			1			3															30
27				1					2						1			1			2															27
24															1						1															24
21		1																	1																	21
18															1																					18
15															1																					15
12																																				12
9																																				9
6																																				6
3																																				3
0-2																																				0-2
Total	23	12	24	95	48	12	36	38	103	52	11	41	22	10	122	35	33	105	17	83	75	20	24	17		66	19	17	36	42	49	19	11	Total		
Q3	93.4			90.8	92.0		94.0	86.3	88.4	85.0		86.3	85.5		84.8	81.3	77.8	77.9	79.1	80.4	81.1	87.0	73.0	81.8		71.1	73.9	69.8	69.0	70.5	72.8	58.9		Q3		
Md	86.5	85.5	82.5	81.8	81.0	78.0	78.0	76.5	76.2	74.4	73.5	72.3	72.0	72.0	71.1	69.5	69.5	69.2	68.3	67.3	66.8	66.0	64.5	63.8	61.5	60.0	58.5	57.8	57.0	56.0	53.1	48.5	47.3	Md		
Q1	80.6		72.0	71.5	67.0		58.5	62.5	62.9	63.6		63.4	58.5		59.3	53.8	54.4	51.7	48.8	54.3	50.3	60.0	44.0	54.8		47.5	44.1	48.4	47.5	47.0	35.3		Q1			
Range	62-110	23-100	49-105	29-105	45-107	55-97	36-116	48-98	31-108	33-106	47-104	40-111	37-92	39-91	19-110	37-105	45-98	32-100	25-92	24-104	12-103	57-104	37-92	32-107	45-87	11-115	32-85	37-79	17-97	25-101	17-91	7-72	22-71	Range		

Distributions of less than ten cases were excluded.

TABLE X

DISTRIBUTIONS OF SCORES MADE ON ACHIEVEMENT TEST, LEVEL I, FORM B, BY FIRST-YEAR STUDENTS OF ACCOUNTING IN ELEVEN COLLEGES

	120	115	127	37	90	56	128	129	103	130	62	
177-178												177-178
176												176
172												172
168												168
164												164
160												160
156		1										156
152												152
148								2				148
144		1			2							144
140												140
136	1	1		1	1	1		1				136
132	1											132
128	3	3		2	1	1				1		128
124	7	2			4							124
120	3	1	1	1	1							120
116	7	1			4	1	1			1		116
112	6	1	1		1	1	1					112
108	5	3	1	2	5	2	1					108
104	6	5		1	9	1	1		1	1		104
100	3		2	6	9	1		1	1	1	1	100
96	3	2		3	9	1	1		4	1	1	96
92	5	1	1		7	3			3	1	1	92
88	1	1	1		9	2	1	1	2		1	88
84	3	2	3	3	10	3	1	1	5		3	84
80	3	1		1	6	1	2		8		1	80
76	2	5			5	3			3	1	2	76
72	1	1		2	5		3		6	1	2	72
68	2			2	2	1		2	4	2	3	68
64	1	1		1	3	2	4	2	9	2	4	64
60	1	1		1	2	1		1	5	2	1	60
56	1				2	1	2	1	2	3	3	56
52					1		1		5	3	6	52
48		1		1	1		1	1	6	1	3	48
44						4		2	1		4	44
40						1	1		2	1	6	40
36				1				1	3		2	36
32		1		1					4		3	32
28									2	1	4	28
24						1			1		4	24
20								1	3		1	20
16												16
12												12
8											1	8
4												4
0-3										1	1	0-3
Total	65	36	10	29	99	31	21	14	81	21	58	Total
Q3	119.3	120.0		103.8	105.4	97.0	91.0		82.4	95.0	68.7	Q3
Md	108.4	104.8	98.0	98.0	94.0	84.7	74.0	70.0	66.9	66.0	52.0	Md
Q1	93.0	79.2		72.5	82.5	63.0	64.3		50.8	53.7	37.0	Q1
Range	58-136	33-159	84-120	32-138	49-155	26-137	42-118	23-148	20-102	6-130	0-100	Range

Distributions of five or less cases were excluded.



TABLE XII  
DISTRIBUTIONS OF SCORES MADE ON ACHIEVEMENT TEST, LEVEL II, FORM A, BY SENIORS IN ACCOUNTING IN TWENTY-SIX COLLEGES

	11	8	91	113	59	29	26	14	114	41	9	45	21	10	40	62	76	30	115	56	116	22	66	117	118	119		
150																											150	
147																												147
144										1																		144
141				1	1	1	2			1																		141
138					1								1				1				1						1	138
135				1	1	1	1		1					1														135
132	1	1	1	1	1	1	3		2	1	1			2							1		1				132	
129	1			1			1		1					1														129
126		2			1	3	1		6	2	2			1		1					2		1				126	
123			1	3	2	5	2		5		1			3						2							123	
120	1		2	2		4	2		7				2	2		1			1	1							120	
117		1		2	3	4	3		11	1	6		2	2			3				1			1			117	
114	1	2			3	5	4		10	2			1	3			1		1					3			114	
111	2			3	1	5	2		12	2		1	1	2			1		4	1			3				111	
108				2	1	1	2		11	3	2		3	3		2	2		2	2	1		1				108	
105		1		2		7	1	1	12	2	4	2	3	1		1	3		5	1			2				105	
102			1		2	4	2		17	1	4	2	2	2	1	1	1		1	1			1		1		102	
99			1	1		7	2	2	10	2	2	3	1	4	1	1	1		3	3			1		1		99	
96	1	1	1	1	1	4	2	2	16	5	1	5	1	6	2	2	6		5	1		1	2	3	1		96	
93			1	1	1	4	1	2	6	1	2	2	1	2	2	1	4		5	1		1	1	3	1		93	
90						6	6	2	7	1	2	2	2	3	2	1	3		6	1		1	2	1			90	
87			1	2		1	3		17	1	2	2	1	3	2	1	4		6	1		1	2	1			87	
84		1				1	4		13	3	2	1	3	4	3	2	3		4	1		1	3	1			84	
81		1			1	2	4	1	10	2	1	1	4	2	1	1	3		2	1		1	2			2	81	
78		1			2	1	4		4	2	3	3	2	4	1	1	1		4	5		1	2	5			78	
75					1	2	4	1	5	2	1	3	1	1	2	1	1		4	1		1	3			1	75	
72				1			2	1	7	4	1	1	1	1	1	2	2		3	2		2	2	1	1		72	
69					2	2			4	1	4	1	4	1	1	1	1		3	1		1	4	2	1		69	
66					1				5	1	2	1	3	1					2	2			2	2			66	
63							2		2	1	4	1	2	4	1	1	2		3	3		1	3	2		1	63	
60					1			1	2	1	4	1	3	3	1	1	7		1	2		1	2	2		1	60	
57				1		1		1	1	1	1		1	1	1	2	2		3	4		1	3	2		1	57	
54									4	1			1	5					3	2			3	3		2	54	
51									1	1						1	3		3	2			1	2		1	51	
48					1		1		2			1				1	1		3	2			5	3			48	
45									3		1			1			4		3	4			1	3		1	45	
42									1				2				1		1	2		2	2				42	
39														1			1		1				2				39	
36						1			1		1			1				1	2	1		1	1			1	36	
33									2					2					1	1							33	
30									2				1	1					2	2							30	
27					1				2		1			2					1	1		1					27	
24																												24
21																												21
18																												18
15																												15
12														1														12
9																												9
6																												6
3																												3
0-2																												0-2
Total	7	11	8	25	26	81	56	13	229	43	46	22	48	69	17	24	61	8	76	48	19	6	56	48	6	10	Total	
Q3				123.8	119.5	116.5	120.6		112.4	110.3	108.8	99.5	110.0	101.1	95.6	102.0	96.6		97.5	93.0	87.8		99.0	94.0			Q3	
Md	115.5	114.8	112.5	112.5	106.5	104.6	100.5	99.8	98.7	93.9	93.0	91.5	90.0	86.6	86.5	84.0	82.5	81.0	81.0	78.6	76.5	76.5	76.0	70.5	64.5	64.5	Md	
Q1				99.8	76.5	92.1	86.3		84.1	77.6	70.1	79.5	70.5	62.3	76.9	72.0	60.1		63.0	54.0	56.3		55.5	56.0			Q1	
Range	97-132	80-133	89-133	58-143	27-141	38-141	48-142	60-122	32-139	52-146	29-134	49-111	32-139	14-136	57-115	40-129	32-136	37-114	25-125	29-137	39-133	28-97	31-132	39-117	45-104	38-135	Range	

Distributions of less than five cases were excluded.

TABLE XIII

DISTRIBUTIONS OF SCORES MADE ON ACHIEVEMENT TEST, LEVEL II, FORM B, BY SENIORS IN ACCOUNTING IN THIRTEEN COLLEGES

	121	120	123	37	42	126	122	68	115	125	78	124	34	
150														150
147														147
144														144
141														141
138														138
135								1						135
132														132
129			1											129
126	1					1			1					126
123			1			1								123
120			2											120
117		1	5						1	1				117
114	2		4	1							1			114
111	1		3	1			1				1		1	111
108			3			4								108
105	1		5			6			1				1	105
102	1		2		2	2			2	2		2		102
99	1	1	5	1		3					1			99
96	1		2			3	1			1				96
93	1	2	6	1	1	8	1	2	2	5		2		93
90	1		12		1	8				3				90
87	1	1	3	1	1	2			4	1				87
84	1	1	3			13	1		5			3	2	84
81	1		6	1		6		1	7	1	1	2	1	81
78			2	2	1	13	1		6		2	4		78
75			3			10			2	1	4		1	75
72			2			6		1	3		1	4		72
69		1	2			8		1	9		3	2	2	69
66			1			3			3		5	3		66
63					1	7		2	3		3	3		63
60			1			1			1	2	3	3	1	60
57			2			2			2		5	2	1	57
54	1		1			3	1	1	4		5	1	1	54
51						3			5	1	4	6	3	51
48			4			1			2		1	1	1	48
45						1			2		2	1		45
42						1			3		2	2		42
39						1				1		3	1	39
36									2	1				36
33								1				1	1	33
30											3			30
27											1			27
24														24
21													1	21
18											1			18
15														15
12														12
9														9
6														6
3														3
0-2														0-2
Total	13	7	81	8	7	123	7	8	71	12	57	49	17	Total
Q3			107.3			94.2			83.7	100.5	84.8	78.6	83.3	Q3
Md	100.5	93.8	92.6	91.5	91.5	81.8	79.5	78.0	71.8	69.0	67.5	67.5	61.5	Md
Q1			82.2			71.9			56.8	51.0	55.9	53.1	51.3	Q1
Range	54-126	70-117	48-129	79-114	63-104	41-126	56-115	35-135	36-128	38-119	20-115	34-103	23-112	Range

Distributions of less than five cases were excluded.

TABLE XIV

DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM C, BY FIRST-YEAR STUDENTS OF ACCOUNTING IN TWENTY-ONE COLLEGES

	8	9	131	115	5	80	127	132	98	81	12	48	42	133	134	17	91	64	72	84	135		
128-130																						128-130	
124																							124
120																							120
116																							116
112																							112
108																							108
104																							104
100																							100
96																							96
92																							92
88						2																	88
84																							84
80		1				1						1											80
76		2				1							1				1						76
72		2			1				1														72
68	1	5	2	2	4	3		1	2	1	1	2										68	
64		9	1	3	2	7		1	5	1	3	3										64	
60	3	11	1	2	4	7		2	10	1	5	1		2								60	
56	1	11		3	4	5		2	6	3	4	6										56	
52	1	12	2	5	4	6		2	28	8	3	15										52	
48	1	5	3	10	13	12		2	22	11	11	14										48	
44		8	1	2	3	8		2	37	10	10	7										44	
40		7	2	2	3	8		2	28	8	10	13										40	
36		2		5	4	3		4	23	15	2	19										36	
32		3	1	1	5	3		4	24	4	8	18										32	
28				1	5	5		1	24	8	14	14										28	
24	1	1		1	2	2			9	9	7	11										24	
20		1		1	1	1			8	6	6	7										20	
16						1			3		2	8										16	
12									3		1	2										12	
8									1	1	1	1										8	
4											1	1										4	
0-3														1								0-3	
Total	8	80	15	36	48	73	27	23	234	80	89	143	53	32	34	65	19	111	14	96	24	Total	
Q3		63.3	68.5	57.3	60.0	61.2		56.5	50.8	49.8	49.7	50.1	44.6	48.0	42.8	41.8	52.3	43.6		45.6	33.3	Q3	
Md	60.0	56.4	53.0	50.8	50.8	50.2	47.7	45.0	43.1	41.5	41.0	38.2	37.1	37.0	36.0	34.2	34.0	34.0	32.0	31.5	28.0	Md	
Q1		47.0	47.0	42.0	44.0	41.6		36.8	33.8	34.0	29.2	29.9	28.1	32.0	31.0	24.1	23.8	25.9		26.2	23.0	Q1	
Range	27-70	23-80	34-72	21-69	32-77	19-89	28-66	30-68	15-73	11-69	4-69	5-81	8-66	2-65	17-56	5-77	15-70	7-67	15-45	13-64	10-39	Range	

Distributions of five or less cases were excluded.

TABLE XV

DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM C  
BY SECOND-YEAR STUDENTS OF ACCOUNTING IN EIGHT COLLEGES

	8	131	72	136	137	133	91	134	
128-130									128-130
124									124
120									120
116									116
112									112
108									108
104									104
100									100
96					1				96
92									92
88	1								88
84					1				84
80									80
76		1				1			76
72	3	1		1	3				72
68	1	1			9				68
64	2	1		1	16				64
60	3	2	1	2	15		1		60
56	5	1	1	2	16	1		1	56
52		3	1	3	36	1	1		52
48			1	2	44				48
44	2		1	1	44	1	6	2	44
40	2	2		3	43	3	1	3	40
36		2		2	28		1	2	36
32				2	18		1	4	32
28					6			2	28
24			1	1	1			2	24
20				1	3				20
16									16
12									12
8									8
4									4
0-3									0-3
Total	19	14	6	21	284	7	11	16	Total
Q3	69.0			57.5	54.9			42.7	Q3
Md	60.7	56.0	52.0	49.0	47.9	46.0	45.7	36.0	Md
Q1	56.6			38.5	41.4			32.0	Q1
Range	40-89	36-78	26-60	20-75	22-96	40-77	35-61	24-57	Range

Distributions of five or less cases were excluded.

TABLE XVI

DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM C, BY SENIORS IN ACCOUNTING IN ELEVEN COLLEGES

	121	8	91	89	68	10	124	52	61	71	64	
128-130												128-130
124												124
120												120
116												116
112												112
108												108
104												104
100												100
96												96
92												92
88		2										88
84	1					1	1			1		84
80	5	1				2						80
76	1	1	1	2	1	2						76
72	3	1	2	1		6	2			1		72
68						6	4	2			1	68
64	2	2		4	1	5	3	1	2	2	1	64
60	1		1	2	2	4	2	2	2	1	1	60
56					2	8	9	4	2	1	2	56
52		1	1	1	1	6	9	6	3	2	4	52
48			1	1		4	6	6	4	1	4	48
44						8	7	4	3	3	5	44
40						5	5	2	1	4	7	40
36				1	1	5	1	4	1		2	36
32				1		3			1	1	2	32
28									1		2	28
24												24
20												20
16												16
12												12
8												8
4												4
0-3												0-3
Total	13	8	6	13	8	65	49	31	20	16	31	Total
Q3						68.5	59.9	57.3	58.0	60.0	53.3	Q3
Mid	78.0	76.0	68.0	64.5	60.0	56.8	54.4	51.7	51.0	48.0	46.0	Mid
Q1						45.6	47.6	45.8	45.3	43.0	41.0	Q1
Range	63-85	55-90	48-78	34-78	39-78	34-85	38-86	36-71	29-66	35-85	28-69	Range

Distributions of five or less cases were excluded.

TABLE XVII

DISTRIBUTIONS OF SCORES MADE ON ORIENTATION TEST, FORM A, BY FIRST-YEAR STUDENTS OF ACCOUNTING IN TWELVE COLLEGES

	138	15	14	25	76	79	66	2	26	83	45	52	
128-130													128-130
124													124
120				1									120
116													116
112							1						112
108		1	1		1								108
104				1			1						104
100				1	3		1		1				100
96		2	2	5	3				1				96
92		1		9	6						1		92
88	1	2		4	1		1		1				88
84	2			6	3			1	6				84
80	2	1	1	12	4	1	2	2	8	2	1		80
76	2		1	9	10	2	5	3	11	1			76
72	1	2	1	15	13	3	6	5	32				72
68	3	5	5	20	11		6	4	18			1	68
64	1	5	5	18	16	1	9	8	29			2	64
60	2	4	2	20	18	3	14	5	20	3		4	60
56	3	5	4	15	14	8	12	11	45	1		2	56
52	1			20	22	3	10	15	47	2		9	52
48		4	1	19	12	6	14	15	51	1		4	48
44		1	3	22	18	3	21	18	56	1		6	44
40			4	14	10	4	13	15	54	4		4	40
36		1		8	11	2	13	5	49	3		5	36
32	1	2	1	4	7	4	10	7	39	1		4	32
28				2	3	3	6	9	23	1		4	28
24			1	2	2	2	3	6	17			7	24
20				2	3		2	2	16			5	20
16							1		12	1		2	16
12			1	1			1	1	5				12
8											1		8
4													4
0-3													0-3
Total	19	38	33	230	191	46	155	132	548	21	131	38	Total
Q3	80.5	75.0	70.2	73.5	70.6	59.8	62.9	58.2	59.7	61.0	55.2	53.5	Q3
Mid	70.0	65.6	63.0	61.2	58.1	51.3	51.0	48.8	48.2	46.0	43.4	43.0	Mid
Q1	59.7	57.2	45.7	48.5	46.6	40.5	40.8	40.8	38.0	39.0	35.2	34.5	Q1
Range	35-90	34-108	15-108	12-121	20-111	26-84	13-114	15-84	12-100	19-87	9-109	21-73	Range

Distributions of five or less cases were excluded.

#### IV

### OBSERVATIONS CONCERNING THE ACCOUNTING ORIENTATION TEST AT THE UNIVERSITY OF PENNSYLVANIA

by Thomas A. Budd, University of Pennsylvania

For some years the American Institute of Accountants has made available to a considerable number of universities and colleges its Accounting Orientation Test and has from time to time published the results. In the earlier years the proportion of veterans in the entering classes was so high that the personnel of these classes varied considerably from the normal. Many of the students were beyond the usual age and a considerable number had past experience either in education of collegiate grade in business activity. The fall of 1948 marked the first definite approach to that which might be considered the normal for Freshman classes. The proportion of veterans decreased considerably and the average age and experience more nearly approached that which may be expected in future classes. An appraisal of the efficiency of the Orientation Test under these more normal conditions is therefore in order.

At the Wharton School of Finance and Commerce of the University of Pennsylvania the Orientation Test was given in September, 1948, to 840 entering students. Of these 100 were admissions at the graduate level and approximately 120 had previous college experience. The remaining 620 were close to the following standard: they were approximately 18 years of age, they came directly from secondary schools, and they had no extended business experience. Of these 620, one-half, or 310, were assigned to the course in elementary accounting during the fall term. In the Wharton School, the course in elementary accounting is given during five hours each week for one term. The results of the Orientation Test plus the students' achievement in their first course in accounting are therefore now available for this group. Data for the remaining 310 will be available in June when the other one-half of the class has completed its elementary course. Since the students were assigned to the two groups at random by the Registrar's office a sample of 310 would seem to be a fair cross-section of the class. Furthermore, it may be stated that both the Orientation Test and the course in elementary accounting are required of all entering students.

The grading system at the Wharton School includes six letter grades; A, B, C, and D which are passing grades; E, conditional which may be removed by a re-examination; and F, failure. For the guidance of the Faculty, percentages are assigned to the various grades as follows: "A", 100 - 93; "B", 92 - 85; "C", 84 - 77; "D", 76 - 70. Although there is no official specification as to percentages for grades of "E" and "F", the Accounting Department gives a grade of "E" for an average between 60 and 69; and a grade of "F" for one below 60.

For purposes of comparison with the scores on the Orientation Test, the grades made by the students in the elementary accounting course were divided into three groups: "A" and "B", indicating more than average achievement; "E" and "F", indicating unsatisfactory work; with "C" and "D" constituting a neutral or "twilight" zone. These three groups of grades were then applied to the scores of the students on the Orientation Test with the following result:

Orientation Test	Achievement in Elementary Accounting						
	<u>"A" and "B"</u>		<u>"C" and "D"</u>		<u>"E" and "F"</u>		<u>Total</u>
I Quartile	46	(64%)	24	(33%)	2	(3%)	72
II Quartile	33	(41%)	39	(48%)	9	(11%)	81
III Quartile	24	(30%)	48	(59%)	9	(11%)	81
IV Quartile	<u>11</u>	<u>(14%)</u>	<u>36</u>	<u>(47%)</u>	<u>29</u>	<u>(39%)</u>	<u>76</u>
	114		147		49		310

To meet the possible objection that a grade of "C" (between 77 and 84) might indicate satisfactory achievement, the results were also subdivided into two groups with "A", "B", and "C" in the one group and "D", "E", and "F" in the other group. This grouping resulted in the following:

Orientation Test	Achievement in Elementary Accounting						
	<u>"A", "B" and "C"</u>			<u>"D", "E" and "F"</u>			<u>Total</u>
I Quartile	61	(85%)		11	(15%)		72
II Quartile	60	(74%)		21	(26%)		81
III Quartile	44	(54%)		37	(46%)		81
IV Quartile	<u>24</u>	<u>(32%)</u>		<u>52</u>	<u>(68%)</u>		<u>76</u>
	189			121			310

It seems quite evident from the above figures that there is a high correlation between Orientation Test scores and the later achievement of the students in the top and lowest quartiles. There are exceptions, however, and they need further study. In the top quartile of the Orientation Test there were 11 students who received grades of "D" and "E" in accounting.

An analysis of the records of these students reveals that in five cases the quantitative part of the Orientation Test score was abnormally low; in two cases the students had a very poor scholastic record in all subjects; and in one case there was evidence of long illness. The remaining three cases showed no apparent cause for the inadequate grade in accounting. Since application as well as aptitude is necessary for good scholastic grades, lack of this essential may well have been the cause.

In the second quartile of the Orientation Test, there were 21 students who received grades of "D", "E" or "F". An analysis of the records of these men shows that six received abnormally low scores in the quantitative section of the Orientation Test; twelve were deficient in courses other than accounting, and one was ill during part of the term. No causes were found for the other two men.

In the lowest quartile of the Orientation Test, 11 men were able to make grades of "B" in their accounting course. The reason for this is more difficult to find. It would seem that seven of these men should have been re-tested for aptitude inasmuch as their quantitative scores were entirely too low when compared with their previous quantitative scores on the Scholastic Achievement Test.

From the above data it seems fair to come to the conclusion that the Orientation Test is reasonable, accurate and is a valuable tool particularly in segregating men who have high aptitude and those whose aptitude is definitely low. It is probable that somewhat more attention should be given to the quantitative score. It is suggested that, if possible, a method be devised which would place a student whose mathematical aptitude is unusually low in a lower position than that occasioned by his total score.