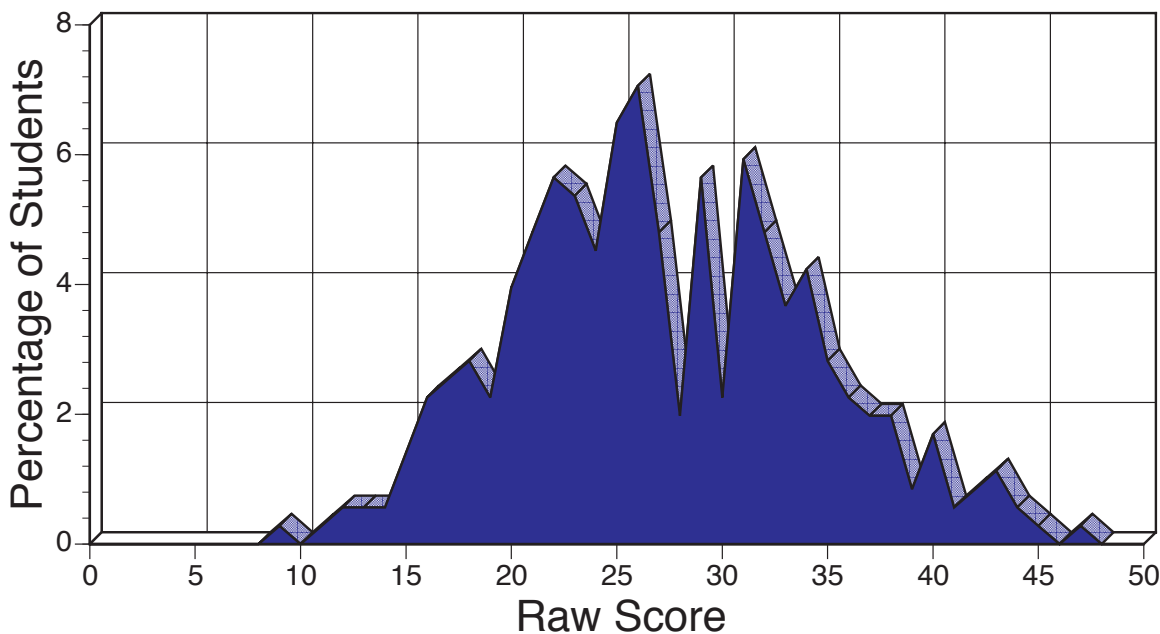


**American Chemical Society Division of Chemical Education
Preliminary Norms – Physical Chemistry (Quantum) Form 2013**

Score	Percentile	Score	Percentile	Score	Percentile
50	-----100	31	----- 69	12	----- 1
49	-----100	30	----- 65	11	----- 0
48	-----100	29	----- 61	10	----- 0
47	-----100	28	----- 57	9	----- 0
46	-----100	27	----- 54	8	----- 0
45	-----100	26	----- 48	7	----- 0
44	----- 99	25	----- 41	6	----- 0
43	----- 98	24	----- 36	5	----- 0
42	----- 97	23	----- 31	4	----- 0
41	----- 97	22	----- 25	3	----- 0
40	----- 95	21	----- 20	2	----- 0
39	----- 94	20	----- 16	1	----- 0
38	----- 93	19	----- 12	0	----- 0
37	----- 91	18	----- 10		
36	----- 89	17	----- 7	Mean	27.11
35	----- 86	16	----- 5	Std. deviation	7.10
34	----- 83	15	----- 3	Median	26.8
33	----- 79	14	----- 2	KR-21 reliability	0.77
32	----- 74	13	----- 1	Std error/meas	3.41

Based on the scores of 354 students in 19 colleges.



EXPLANATIONS

The difficulty index is the percentage of students who responded correctly to an item. The discrimination index measures the performance on the item of students who did well on the test overall relative to those who did poorly. The frequencies with which incorrect responses are chosen are expressed as percentages. For additional information, obtain *Writing Tests and Interpreting Test Statistics – A Practical Guide* from the ACS DivCHED Examinations Institute.

**ITEM STATISTICS – PHYSICAL CHEMISTRY
(Quantum Mechanics) FORM 2013**

Item	Diff Index	Disc Index	% 1st wrong	% 2nd wrong	% 3rd wrong	Item	Diff Index	Disc Index	% 1st wrong	% 2nd wrong	% 3rd wrong
1	0.821	0.206	4.8	13.1	0.0	26	0.353	0.365	13.9	35.3	21.8
2	0.706	0.238	7.1	12.7	9.5	27	0.607	0.444	3.6	20.6	15.1
3	0.782	0.302	4.8	5.6	11.5	28	0.337	0.317	23.8	33.7	36.9
4	0.540	0.556	7.5	29.8	8.7	29	0.520	0.508	15.5	18.3	13.9
5	0.655	0.492	6.0	65.5	19.0	30	0.631	0.619	15.1	10.7	10.7
6	0.647	0.159	28.2	64.7	3.2	31	0.548	0.365	7.1	3.6	34.1
7	0.294	0.381	16.7	26.2	27.4	32	0.401	0.143	24.2	40.1	9.5
8	0.560	0.302	17.5	15.1	11.5	33	0.587	0.349	16.3	15.5	9.1
9	0.492	0.095	3.6	49.2	39.7	34	0.298	0.349	9.5	23.4	36.9
10	0.556	0.302	11.9	15.9	16.3	35	0.504	0.143	13.9	26.6	8.7
11	0.500	0.397	6.3	50.0	35.7	36	0.567	0.365	3.2	32.1	7.5
12	0.437	0.317	3.6	43.7	23.4	37	0.631	0.317	23.0	63.1	3.2
13	0.575	0.286	23.4	15.9	2.8	38	0.587	0.444	4.4	23.0	13.5
14	0.532	0.413	42.1	4.4	0.4	39	0.849	0.302	5.6	7.1	1.6
15	0.373	0.333	7.1	37.3	12.3	40	0.611	0.270	9.1	61.1	14.3
16	0.548	0.397	13.5	9.9	21.8	41	0.706	0.302	5.6	15.5	7.9
17	0.409	0.349	7.5	40.9	43.3	42	0.722	0.270	2.0	11.1	14.3
18	0.472	0.429	27.0	6.3	19.4	43	0.595	0.413	20.2	11.9	7.1
19	0.500	0.302	9.9	12.7	27.0	44	0.444	0.508	7.9	44.4	34.1
20	0.671	0.460	11.1	19.8	2.0	45	0.655	0.429	3.6	7.5	22.6
21	0.333	0.159	34.1	31.0	1.6	46	0.365	0.444	28.2	17.5	17.1
22	0.548	0.254	17.1	9.5	18.7	47	0.575	0.429	17.5	11.5	13.1
23	0.706	0.270	25.8	1.2	2.0	48	0.587	0.413	8.3	58.7	13.1
24	0.540	0.460	13.9	23.4	8.7	49	0.516	0.460	10.7	19.0	18.3
25	0.567	0.508	11.9	24.6	6.7	50	0.790	0.302	4.0	0.8	15.9

Item statistics based on the scores of 252 students from 14 schools

SCHOOLS SUPPLYING DATA FOR NORMS AND ITEM STATISTICS

Albright College / *Reading, PA*
 Berea College / *Berea, KY*
 Bowdoin College / *Brunswick, ME*
 University of Colorado – Colorado Springs / *Colorado Springs, CO*
 Concordia University Wisconsin / *Mequon, WI*
 Framingham State University / *Framingham, MA*
 Freed-Hardeman University / *Henderson, TN*
 Hood College / *Frederick, MD*
 Ithaca College / *Ithaca, NY*
 Lebanon Valley College / *Annville, PA*
 Macalester College / *St. Paul, MN*
 Manhattanville College / *Purchase, NY*
 Michigan State University / *East Lansing, MI*
 Monmouth University / *West Long Branch, NJ*
 Saginaw Valley State University / *University Center, MI*
 St. John Fisher College / *Rochester, NY*
 Seattle Pacific University / *Seattle, WA*
 Virginia Commonwealth University / *Richmond, VA*
 Weber State University / *Ogden, UT*