



American Association of Physics Teachers **PHYSICSBOWL 2011**

2011 PhysicsBowl Results

Dear Physics Teachers,

Thank you for having your students participate in this year's AAPT PHYSICSBOWL contest. This year there were more than 4000 students participating from 200+ schools across the United States and Canada as well as schools in China, Japan, and the Republic of Korea. Enclosed are lists of the overall top 10 students in each division, the overall top 5 schools in each division, the first and second place schools in each division by region, and the first and second place students in each division by region. Several placings were determined by tie-breakers. For students, the answers were compared from the end of the test forward until the tie was resolved. For schools, the tie was broken by comparing the highest scoring students for each team. Unfortunately, we received many answer sheets which did not properly fill in the required information which resulted in the student's score being disqualified for consideration of either individual prizes or for the team score. This is an unfortunate necessity because of the amount of data that must be analyzed. In addition, packets needed to be received by April 22nd (two days past the stated deadline!). Packets received after this date were not scored.

This year, the following prizes are awarded:

- To the top overall school in each Division
 - \$100 gift certificate awarded from [Pasco Scientific](#)
- To the top 5 overall schools in each Division:
 - \$100 Gift certificate awarded from [Frey Scientific](#)
 - "Division Champion" T-shirts awarded to the five top students from each school from [AAPT](#).
- To the top two scoring schools in each region/division:
 - \$50 Vernier gift certificate (limit one) awarded from [Vernier Software & Technology](#) (except if the school already won a Top 5 award in the other division)
 - "Regional Champion" T-shirts awarded to the five top students from the 1st place school in each region from [AAPT](#)

All student winners will receive a copy of "Used Math" from [AAPT](#) as well as a TI-30 XS MultiView Scientific Calculator awarded from [Texas Instruments](#). In addition, student winners receive

- To the top 10 overall students in each Division:
 - A book from [Princeton University Press](#)
- To the 1st place student in each Division by Region
 - A copy of "Mad about Modern Physics" from [John Wiley & Sons](#)
- To the 2nd place student in each Division by Region
 - A Mysterious Glowing Ball from [Educational Innovations, Inc.](#)

A copy of this year's test along with solutions, as well as individual and team winners can be found at the following web site: <http://www.delta.edu/michaelfaleski/PhysicsBowl>



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We had the good fortune of having many wonderful sponsors this year. We hope to continue our relationship with these companies in the future. One way to ensure that this happens is for teachers to send thank you's to the companies when ordering materials and to use the gift certificates provided. It was learned this past year that only about 1/3 of all certificates are cashed in any given year. We hope that you use your certificates to help your physics program in the coming years.

Instructors can obtain the scores of their students from the AAPT website and that link will be provided to you in an email from the national office. Please realize that we were able to retrieve some scores (we are using a new data analysis system) that were disqualified for improperly recording the required information, but this was done after-the-fact. If the information was not encoded correctly, the student was immediately disqualified from winning prizes even though we may be able to link that student to your code now. Some students provided no codes, the wrong regions, no name, just a last name, etc. There are a lot of records and we cannot go back and fill in missing information. While it is unfortunate to disqualify anyone, these are the rules of the contest. Sadly, some very high scores were disqualified. If you still are missing a student's score... please email michaelfaleski@delta.edu with student information (CEEB, teacher codes, etc.) and we can try to find the information.

In addition, emails are often received about the competitive balance in some regions. That is, there are questions about whether some schools should really be competing in a regular region or Region 01. A few of these issues were looked at this year by the PhysicsBowl Advisory Board to make rulings as to whether some schools should have been competing in Region 01 and be moved. This will be one of the issues of focus this summer at the next PhysicsBowl Board meeting in Omaha, NE. We hope to have more guidelines and clarifications to make the playing field as fair as possible in regions. We are doing the best that we can and are not trying to be punitive to any schools. We ask that folks please be patient as we try to tackle a very difficult issue! Regardless, in the near future, regions will more than likely be revised. We are happy to report that between student and team winners, more than 36% of the schools that entered this year had a winner of some kind.



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The statistics from this year's contest are shown below.

Division 01 had an average score of 17.4 (the highest since 1994!) Statistically, the easiest question was #2 (89% correct) while the most difficult question was #35 (5 %)

Division 02 statistics were very close to last year's contest. Statistically, the easiest question was #12 (96%) while the most difficult question was #36 (13%)

The production of a challenging contest of only 40 questions that has a small percentage of very high scores while still not being overly difficult to discourage the majority of students is an enormous task. We will continue to write the best contest that we can and hope to make it even better next year!

Statistics for exam

Average Score for Division 01 = **17.4** with a standard deviation of 6.0

Average Score for Division 02 = **16.4** with a standard deviation of 5.3

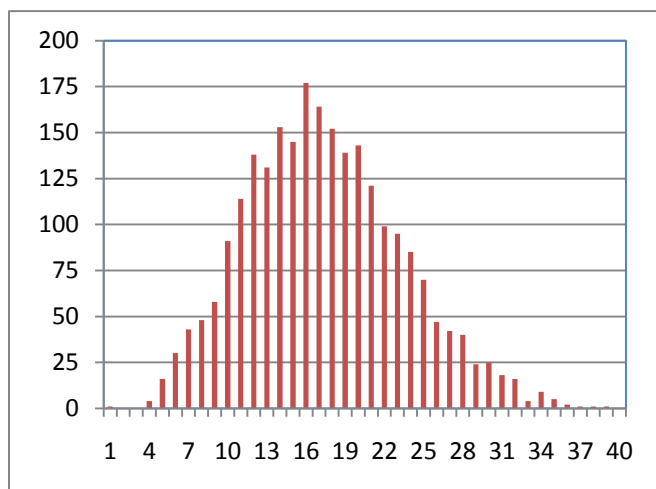


Figure 1. Division 01... # students vs. Score

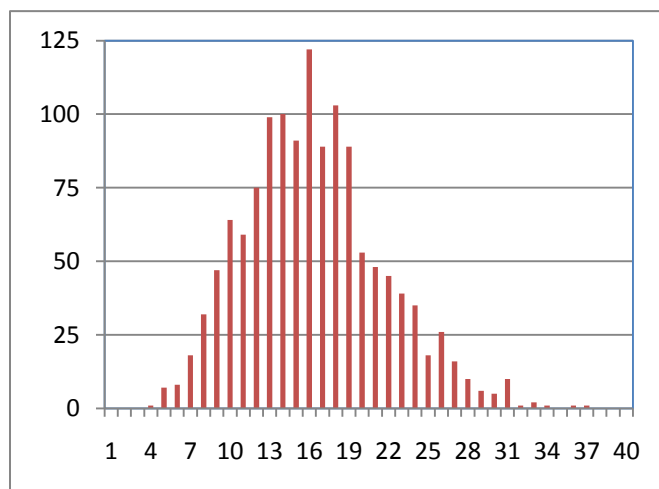


Figure 2. Division 02.... # students vs. Score

We look forward to having you participate in next year's contest... and please let your colleagues at schools near you know about the contest! We are considering how to expand the contest to include more schools and students next year as well as making some more changes with the contest to improve it. Work will continue on the PhysicsBowl website (please keep checking it) as we look to make some possibly more substantial changes in the near future.

Thank you for participating,

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NOTE: These students are “overall” winners and pulled out of the regular regional competition.

TOP TEN OVERALL DIVISION 01 SCORES

<u>#</u>	<u>Reg</u>	<u>Score</u>	<u>Student</u>	<u>School</u>	<u>City</u>	<u>State</u>
1	04	39	Meng, Henry	Millburn HS	Millburn	NJ
2	14	38	Luo, Mo	Mission San Jose HS	Fremont	CA
3	05	37	Ying, Victor A.	Richard Montgomery HS	Rockville	MD
4	01	36*	Zbarsky, Samuel	Montgomery Blair HS	Silver Spring	MD
5	06	36	Park, Edward S.	Walton HS	Marietta	GA
6	14	35*	Zhang, Yalun	Walnut HS	Walnut	CA
7	14	35*	Sun, Jeffrey	Mission San Jose HS	Fremont	CA
8	14	35*	Li, Benjamin	Arcadia HS	Arcadia	CA
9	11	35*	Scherrer, Joseph R.	Montgomery Bell Academy	Nashville	TN
10	01	35	Bourzutschky, Alexander	Montgomery Blair HS	Silver Spring	MD

TOP TEN OVERALL DIVISION 02 SCORES

<u>#</u>	<u>Reg</u>	<u>Score</u>	<u>Student</u>	<u>School</u>	<u>City</u>	<u>State</u>
1	01	37	Das Sarma, Andrew C.	Montgomery Blair HS	Silver Spring	MD
2	02	36	Wells, Michael	Boston Univ Academy	Boston	MA
3	14	34	Brown, Lucas A.	San Diego Math Circle	Poway	CA
4	03	33*	Zhang, Cyril	Don Mills Coll. Inst.	Toronto	ON
5	14	33	Sorensen, Matthew	Westview HS	San Diego	CA
6	02	32	Siegenfeld, Alexander F.	Hopkins School	New Haven	CT
7	09	31*	Chen, Moya P.	Vernon Hills HS	Vernon Hills	IL
8	14	31*	Du, George	Westview HS	San Diego	CA
9	14	31*	Qu, Jason	The Bishop's School	La Jolla	CA
10	13	31*	Chen, Kevin Y.	William P. Clements HS	Sugar Land	TX

Note: Ranking for tied scores is based on the tiebreaker rules... scoring from the end of the test to the front. There were multiple other scores of 31 in Division 02 that did not make the top 10 overall because of the tiebreaks.



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Highest Scoring *Division 01* Students in each Region

<u>Reg</u>	<u>Score</u>	<u>Student</u>	<u>School</u>	<u>City</u>	<u>State</u>
01	34*	Gural, Albert	Thomas Jefferson HS Sci/Tech	Alexandria	VA
02	34	Tomas, Albergo	Guilford High	Guilford	CT
	(tie)	Hoge, Connor	Guilford High	Guilford	CT
03	31	Rosenfeld, Brian	Great Neck South HS	Great Neck	NY
04	34	Krinsman, William	Millburn HS	Millburn	NJ
05	34	Du, Matthew	Thomas S. Wootton HS	Rockville	MD
06	32*	Wang, Charles	Walton HS	Marietta	GA
07	28	Heintz, Chris	West Geauga HS	Chesterland	OH
08	29*	Bai, David	Troy HS	Troy	MI
09	31	Tierney, Patrick	Iowa City West HS	Iowa City	IA
10	27*	Schwebach, Samuel	Minnetonka HS	Minnetonka	MN
11	32	Geiger, Jacob	White Station HS	Memphis	TN
12	32	Bolshakov, Artem	Ridgeview Classical Schools	Fort Collins	CO
13	28	Shen, Lilly	William P. Clements HS	Sugar Land	TX
14	33*	Chen, Lucy	Arcadia HS	Arcadia	CA
15	34*	Zhou, Shenhong	Gao Xin No.1 HS	Xi'an	China

Second Highest Scoring *Division 01* Students in each Region

<u>Reg</u>	<u>Score</u>	<u>Student</u>	<u>School</u>	<u>City</u>	<u>State</u>
01	34*	Li, Ruixin	Oklahoma School of Sci/Math	Oklahoma City	OK
02	34(tie)				
03	30*	Tong, Xiaonan	Great Neck North HS	Great Neck	NY
04	32	Wang, Joseph	Millburn HS	Millburn	NJ
05	30	Stensrud, Thorys	Providence High	Charlotte	NC
06	32	Heuser, Benjamin	West Shore Jr/Sr HS	Melbourne	FL
07	27	Petrack, Joshua	Hawken School	Gates Mills	OH
08	29	Aspelund, Sanders	Eisenhower HS	Shelby Twp	MI
09	30*	Pawlicki, Timothy	Libertyville HS	Libertyville	IL
10	27	Xue, Lewin	Wayzata HS	Plymouth	MN
11	31	Liang, Xinyu	Baton Rouge Magnet HS	Baton Rouge	LA
12	27	Dageforde, Pierce	Millard South HS	Omaha	NE
13	25*	Tsau, Isaiah	William P. Clements HS	Sugar Land	TX
14	33	Cho, Eunseo	West HS	Torrance	CA
15	34	Zhou, Zheng	Shanghai Normal University	Shanghai	China

* = place determined by tiebreaker



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Highest Scoring *Division 02* Students in each Region

<u>Reg</u>	<u>Score</u>	<u>Student</u>	<u>School</u>	<u>City</u>	<u>State</u>
01	29	Grimmer, Daniel	Oklahoma School of Sci/Math	Oklahoma City	OK
02	30	Kong, Brian	Milton Academy	Milton	MA
03	30	Bobrow, Eric	Great Neck South HS	Great Neck	NY
04	31	Qu, Ante	West Windsor-Plainsboro HS S	Princeton Junction	NJ
05	26	Zhu, Alexander	Thomas S. Wootton HS	Rockville	MD
06	27	Kirsche, Michael	Cypress Bay High	Weston	FL
07	28	Nainaparampil, Jeff	Beavercreek HS	Beavercreek	OH
08	29	Melemed, Aaron	Carmel HS	Carmel	IN
09	31*	Varner, Michael	Libertyville HS	Libertyville	IL
10	24	Joda, David	Arrowhead HS	Hartland	WI
11	25	Thibado, William	Memphis Univ School	Memphis	TN
12	28	Miller, Ian	Clayton HS	Clayton	MO
13	29	Barnhill, Connor	Martin HS	Arlington	TX
14	31*	Swaminathann, Ashvin	The Harker School	San Jose	CA
15	31	Ryoo, Sang Woo	Chungbuk Science HS	Cheongwon-gun, Chungcheonbuk-do	Republic of Korea

Second Highest Scoring *Division 02* Students in each Region

<u>Reg</u>	<u>Score</u>	<u>Student</u>	<u>School</u>	<u>City</u>	<u>State</u>
01	28*	Park, Seong	Gwinnett School of Math/Sci	Lawrenceville	GA
02	27*	Cheung, Weng-Him	Longmeadow HS	Longmeadow	MA
03	27	Olden-Cooligan, Ben	Northern Secondary School	Toronto	ON
04	30	Shahidain, Sadik	Princeton HS	Princeton	NJ
05	24	Li, Eileen	Thomas S. Wootton HS	Rockville	MD
06	26*	Kirsche, Zachary	Cypress Bay HS	Weston	FL
07	24	Posey, Nathaniel	Beavercreek HS	Beavercreek	OH
08	26	Liang, Mason	Troy HS	Troy	MI
09	31	Yang, May	Libertyville HS	Libertyville	IL
10	23	Jarchow, Mark	Arrowhead HS	Hartland	WI
11	23*	Garrett, Daniel	Memphis Univ School	Memphis	TN
12	27	Li, Shuyang	Clayton HS	Clayton	MO
13	27*	Brown, Garrett	Martin HS	Arlington	TX
14	31	Desai, Nikhil	EPGY	Stanford	CA
15	24	Lee, Matthew	Sir Winston Churchill Secondary	Vancouver	BC

* = place determined by tiebreaker



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NOTE: These schools are “overall” winners and are pulled out of the regular regional competition in the corresponding Division.

TOP FIVE OVERALL DIVISION 01 TEAM SCORES

<u>#</u>	<u>Reg</u>	<u>Score</u>	<u>School</u>	<u>City</u>	<u>State</u>
1	04	<i>166</i>	Millburn HS	Millburn	NJ
2	14	<i>165</i>	Mission San Jose HS	Fremont	CA
3	02	<i>164</i>	Guilford HS	Guilford	CT
4	15	<i>161</i>	Shanghai Normal University	Shanghai	China
5	06	<i>155</i>	Walton HS	Marietta	GA

TOP FIVE OVERALL DIVISION 02 TEAM SCORES

<u>#</u>	<u>Reg</u>	<u>Score</u>	<u>School</u>	<u>City</u>	<u>State</u>
1	09	<i>148</i>	Libertyville HS	Libertyville	IL
2	14	<i>140</i>	San Diego Math Circle	Poway	CA
3	09	<i>136*</i>	Vernon Hills HS	Vernon Hills	IL
4	14	<i>136</i>	Westview HS	San Diego	CA
5	01	<i>134</i>	Montgomery Blair HS	Silver Spring	MD

Note: The team tie-break is that the tie goes to the school with the highest scoring student.



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Highest Scoring *Division 01* Schools in each Region

<u>Reg</u>	<u>Score</u>	<u>School</u>	<u>City</u>	<u>State</u>
01	154	Thomas Jefferson HS for Sci & Tech	Alexandria	VA
02	136	Arlington HS	Arlington	MA
03	138	Great Neck South HS	Great Neck	NY
04	130	George Washington HS	Philadelphia	PA
05	140	Thomas S. Wootton HS	Rockville	MD
06	141	Northview HS	Johns Creek	GA
07	117	Hawken School	Gates Mills	OH
08	118	Ludington HS	Ludington	MI
09	143	Libertyville HS	Libertyville	IL
10	124	Minnetonka HS	Minnetonka	MN
11	143	Montgomery Bell Academy	Nashville	TN
12	125	Ridgeview Classical Schools	Fort Collins	CO
13	127	William P. Clements HS	Sugar Land	TX
14	154	West HS	Torrance	CA
15	154	Gao Xin No.1 HS	Xi'an	China

Second Highest Scoring *Division 01* Schools in each Region

<u>Reg</u>	<u>Score</u>	<u>School</u>	<u>City</u>	<u>State</u>
01	145	Montgomery Blair HS	Silver Spring	MD
02	133	Ellington HS	Ellington	CT
03	136	Ward Melville HS	East Setauket	NY
04	114	Watchung Hills Regional HS	Warren	NJ
05	137	Providence High	Charlotte	NC
06	139	West Shore Jr/Sr HS	Melbourne	FL
07	113	Beavercreek HS	Beavercreek	OH
08	112	De La Salle Collegiate HS	Warren	MI
09	138	Iowa City West HS	Iowa City	IA
10	108	Chippewa Fall Sr. HS	Chippewa Falls	WI
11	134	Oak Ridge HS	Oak Ridge	TN
12	77	Overland HS	Boulder	CO
13	107	Saint Mary's Hall School	San Antonio	TX
14	153	Arcadia HS	Arcadia	CA
15	140	Sir Winston Churchill Secondary	Vancouver	BC



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Highest Scoring *Division 02* Schools in each Region

<u>Reg</u>	<u>Score</u>	<u>School</u>	<u>City</u>	<u>State</u>
01	124	Oklahoma School of Sci/Math	Oklahoma City	OK
02	124	Milton Academy	Milton	MA
03	119	Don Mills Collegiate Inst.	Toronto	ON
04	131	West Windsor – Plainsboro HS S	Princeton Junction	NJ
05	117	Thomas S. Wootton HS	Rockville	MD
06	128	Cypress Bay High	Weston	FL
07	108	Hawken School	Gates Mills	OH
08	106	Carmel HS	Carmel	IN
09	102	Lincoln-Way North HS	Frankfort	IL
10	101	Arrowhead HS	Hartland	WI
11	91	Oak Ridge HS	Oak Ridge	TN
12	132	Clayton HS	Clayton	MO
13	126	Martin HS	Arlington	TX
14	130	The Harker School	San Jose	CA
15	110	Chungbuk Science HS	Cheongwon-gun, Chingcheongbuk-do	Rep. of Korea

Second Highest Scoring *Division 02* Schools in each Region

<u>Reg</u>	<u>Score</u>	<u>School</u>	<u>City</u>	<u>State</u>
01	122	Bergen County Academies	Hackensack	NJ
02	119	Hopkins School	New Haven	CT
03	113	Great Neck South HS	Great Neck	NY
04	122	Millburn HS	Millburn	NJ
05	86	Woodbury Forest School	Woodberry Forest	VA
06	118	Stanton College Prep School	Jacksonville	FL
07	106	Beavercreek HS	Beavercreek	OH
08	103	Eisenhower HS	Shelby Twp	MI
09	84	Governor French Academy	Belleville	IL
10	97	Marshfield HS	Marshfield	WI
11	87	Memphis Univ. School	Memphis	TN
12	72	Millard South HS	Omaha	NE
13	116	William P. Clements HS	Sugar Land	TX
14	117*	The Bishop's School	La Jolla	CA
15	100	Western Canada HS	Calgary	AB

* = place determined by tiebreaker