2012 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 5000 students participating from 250+ schools across the United States and Canada as well as schools in China and Italy! 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.

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
  - "PhysicsBowl 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 gift certificate (limit one) awarded from Vernier Software & Technology (except if the school already won a Top 5 award in the other division)
  - "PhysicsBowl Champion" T-shirts awarded to the five top students from the *1st place* school in each region from AAPT.
  - A rattleback from Arbor Scientific.

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:
  - Divisions 01 & 02: A copy of "Quantum Mechanics in a Nutshell" - Princeton University Press
  - Div. 02 only: A copy of "Introduction to Classical Mechanics" from Cambridge University Press.
  - Div. 01 only: A book from Princeton University Press
- To the 1st place student in each Division by Region
  - A copy of "Mad about 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

We had the good fortune of having many wonderful sponsors again 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 last 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 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 often are 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 is a very difficult task for those of us not actually at the schools in question, but a good rule of thumb… if your school has "math, science" and/or "technology" in its name, it should probably be in region 01! ☺

Based on recent trends, the PhysicsBowl Advisory Board will again be looking at the competitive balance in regions. Some regions are really starting to boom as far as the number of schools and we shall see what we can do to make it as fair a playing field as we can. 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 (2013), regions will be revised.

Finally, we are happy to report that between student and team winners, 29% of the schools that entered this year won some kind of prize!

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

Division 01 had an average score of **17.0** (close to last year's average). Statistically, the easiest question was #1 (95% correct) while the most difficult question was #33 (9 % correct).

Division 02 statistics were very close to last year's contest as well with an average of **16.0**. Statistically, the easiest question was #17 (91% correct) while the most difficult question was #35 (11% correct)

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 = **17.0** with a standard deviation of 5.9
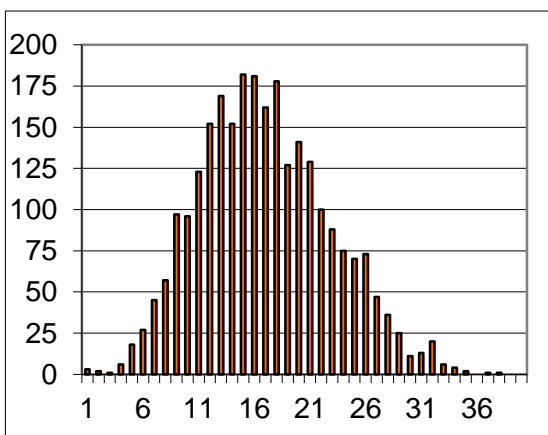Average Score for Division 02 = **16.0** with a standard deviation of 5.6

Figure 1. Division 01... # students vs. Score   Figure 2. Division 02.... # students vs. Score
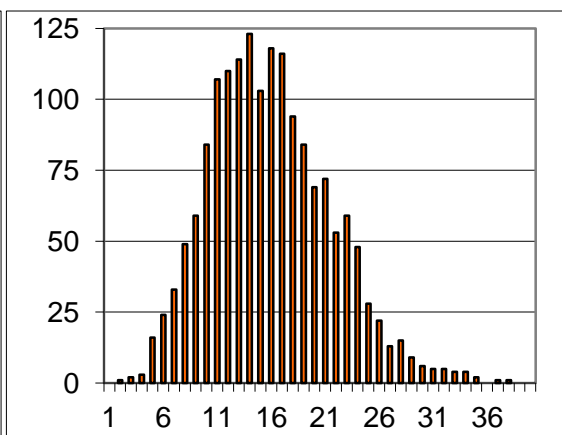
We look forward to having you participate in next year's contest… and please let your colleagues at schools near you know about the contest! We are considering how to expand the contest to include more schools and students next year as well as making some more changes with the contest to improve it. 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,

Michael C. Faleski

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American Association of Physics Teachers

TOP TEN OVERALL DIVISION 01 SCORES

#	Reg	Score	Student	School	City	State
1	04	38	Kong, Lisa F.	Homeschool	Lititz	PA
2	14	37	Yu, William	Olympia Institute	San Francisco	CA
3	04	35*	Lai, Jeffrey P.	Millburn HS	Millburn	NJ
4	03	35	Wu, Henry	Univ. of Toronto Schools	Toronto	ON
5	14	34*	Nair, Prem Q.	Monta Vista HS	Cupertino	CA
6	15	34*	Hua, Mai	Gao Xin No. 1 HS	Xi'an	China
7	15	34*	Fu, Zihang	Gao Xin No. 1 HS	Xi'an	China
8	04	34	Nahar, Sunny	Bensalem HS	Bensalem	PA
9	03	33*	Kim, David H.	Great Neck South HS	Great Neck	NY
10	04	33*	Balaji, Bhaskaran V.	Unionville High School	Kennett Square	PA

TOP TEN OVERALL DIVISION 02 SCORES

#	Reg	Score	Student	School	City	State
1	13	38	Shen, Bobby	Dulles High School	Sugar Land	TX
2	02	37	Wells, Michael W.	Home School	Weston	MA
3	04	35*	Dai, Alan X.	North Allegheny Sn. HS	Wexford	PA
4	14	35	Lee, Cheuk Hang	Olympia Institute	San Francisco	CA
5	14	34*	Swaminathan, Ashvin A	The Harker School	San Jose	CA
6	14	34*	Jung, Shah A.	Mission San Jose HS	Fremont	CA
7	03	34*	Guan, Melody Yunjia	Univ. of Toronto Schools	Toronto	ON
8	06	34	Xie, Jiaqi	Cypress Bay High	Weston	FL
9	01	33*	Yip, Richard B.	Stuyvesant High School	New York	NY
10	14	33*	Qu, Jason	The Bishop's School	La Jolla	CA

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 33 both in Divisions 01 and 02 that did not make the top 10 overall because of the tiebreaks.

Highest Scoring *Division 01* Students in each Region

Reg	Score	Student	School	City	State
01	32*	Bhandarkar, Archis	Thomas Jefferson HS	Alexandria	VA
02	32	Hora, Kashish	Glastonbury High School	Glastonbury	CT
03	28*	Ren, Mark	Smithtown High School	Saint James	NY
04	32*	Zou, Perry X.	Millburn High School	Millburn	NJ
05	32*	Aycock, Jonathan M.	East Chapel Hill HS	Chapel Hill	NC
06	31	Krehbiel, Lexie L.	West Shore Jr/Sr HS	Melbourne	FL
07	29*	Kent, Katrina R.	The Columbus Academy	Gahanna	OH
08	33	Fei, Kevin C.	Carmel High School	Carmel	IN
09	31	Wang, Alex C.	Libertyville High School	Libertyville	IL
10	29	Lu, Kevin Z.	Edina Cntr Acad. Excellence	Eden Prairie	MN
11	31*	Bowman, Adam J.	Montgomery Bell Academy	Nashville	TN
12	23	Ho, Ethan N.	Ridgeview Classical Schools	Fort Collins	CO
13	32	Hsu, Gene C.	William P. Clements HS	Sugar Land	TX
14	33*	Weia, Kevin	Olympia Institute	San Francisco	CA
15	32*	Yang, Yuwen	Gao Xin No. 1 High School	Xi'an	China

Second Highest Scoring *Division 01* Students in each Region

Reg	Score	Student	School	City	State
01	32*	Sell, Connor D.	Oklahoma School of Sci/Math	Oklahoma City	OK
02	29	Hoover, Darren C.	Glastonbury High School	Glastonbury	CT
03	28*	Zhou, Cyrus	Great Neck South High School	Great Neck	NY
04	32*	Boix, Enric	Princeton High School	Princeton	NJ
05	32	Li, Tony W.	Raleigh Charter High School	Raleigh	NC
06	29*	Melton, Jacob D.	Coral Glades High School	Coral Springs	FL
07	29	Cohen, Russell M.	Hawken School	Gates Mills	OH
08	30	Segaran, Joshua R.	Carmel High School	Carmel	IN
09	30	Wolf, Nathan R.	Libertyville High School	Libertyville	IL
10	27*	Jones, Nicholas P.	Minnetonka High School	Minnetonka	MN
11	31	Tidwell, Hunter W.	Montgomery Bell Academy	Nashville	TN
12	22	Van Maren, Aidan	Ridgeview Classical Schools	Fort Collins	CO
13	30	Zhao, Grant Z.	William P. Clements HS	Sugar Land	TX
14	33*	Lee, Kevin K.	University HS-Irvine	Irvine	CA
15	32	Shang, Weiran	Gao Xin No. 1 High School	Xi'an	China

* = place determined by tiebreaker

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Highest Scoring *Division 02* Students in each Region

Reg	Score	Student	School	City	State
01	30	Seksaria, Kalki S.	Thomas Jefferson HS	Alexandria	VA
02	27	Ying, Max	Hopkins School	New Haven	CT
03	28	Hou, Nicholas	Great Neck South HS	Great Neck	NY
04	31	Seaman, Michael J.	Homeschool	Short Hills	NJ
05	31	Xu, Yang	Middleburg Academy	Middleburg	VA
06	33	Zheng, Claus C.	Walton High School	Marietta	GA
07	28	Petrack, Josh G.	Hawken School	Gates Mills	OH
08	27	Chen, Allen J.	Troy High School	Troy	MI
09	29	Honold, Nathan	Libertyville High School	Libertyville	IL
10	26*	Bohart, Isaac C.	St. John's Prep School	Collegeville	MN
11	25	Andress, James M.	Oak Ridge High School	Oak Ridge	TN
12	29	Li, Shuyang	Clayton High School	Clayton	MO
13	31*	Suh, Daniel G.	TestBrain Prep Center	Carrollton	TX
14	33	Sridhar, Rahul	The Harker School	San Jose	CA
15	25	Li, Xinran	WHBC of Wuhan Foreign Lang	Wuhan	China

Second Highest Scoring *Division 02* Students in each Region

Reg	Score	Student	School	City	State
01	29*	Hernandez, Felipe	Louisiana Sch. Math/Sci/Arts	Natchitoches	LA
02	26	Wang, Ziqi	Branford High School	Branford	CT
03	25	Zhan, Eric	Univ. of Toronto Schools	Toronto	ON
04	30	Meng, Henry	Millburn High School	Millburn	NJ
05	30	Ying, Victor A.	Richard Montgomery HS	Rockville	MD
06	32	Park, Edward S.	Walton High School	Marietta	GA
07	26	Dasarathy, Anirudh	Hawken School	Gates Mills	OH
08	25*	Li, Maxwell W.	Troy High School	Troy	MI
09	28	Lample, Christopher	Libertyville High School	Libertyville	IL
10	26	Gaetz, Christian R.	St. John's Prep School	Collegeville	MN
11	24*	Curtis, Gray G.	Montgomery Bell Academy	Nashville	TN
12	28*	Sharma, Apoorva	Clayton High School	Clayton	MO
13	31	Shen, Lilly	William P. Clements HS	Sugar Land	TX
14	32*	Sun, Jeffrey	Mission San Jose High School	Fremont	CA
15	24	Roy, Kunal	Interlake High School	Bellevue	WA

* = place determined by tiebreaker

TOP FIVE OVERALL DIVISION 01 TEAM SCORES

#	Reg	Score	School	City	State
1	15	*163*	Gao Xin No.1 HS	Xi'an	China
2	14	*162*	Olympia Institute	San Francisco	CA
3	01	*156*	Thomas Jefferson HS for Sci & Tech	Alexandria	VA
4	04	*155*	Millburn High School	Millburn	NJ
5	14	*150**	Monta Vista High School	Cupertino	CA

TOP FIVE OVERALL DIVISION 02 TEAM SCORES

#	Reg	Score	School	City	State
1	14	*158*	The Harker School	San Jose	CA
2	14	*144*	Mission San Jose HS	Fremont	CA
3	14	*139*	Westview High School	San Diego	CA
4	13	*138*	Dulles High School	Sugar Land	TX
5	06	*137*	Cypress Bay High	Weston	FL

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

Highest Scoring *Division 01* Schools in each Region

Reg	Score	School	City	State
01	128	School for the Talented & Gifted	Dallas	TX
02	119	Guilford High School	Guilford	CT
03	135	Great Neck South High School	Great Neck	NY
04	134	Princeton High School	Princeton	NJ
05	143	Raleigh Charter High School	Raleigh	NC
06	125	Coral Glades High School	Coral Springs	FL
07	132	The Columbus Academy	Gahanna	OH
08	113	De La Salle Collegiate HS	Warren	MI
09	139	Libertyville High School	Libertyville	IL
10	130	Minnetonka High School	Minnetonka	MN
11	143	Montgomery Bell Academy	Nashville	TN
12	105	Ridgeview Classical Schools	Fort Collins	CO
13	136	Dulles High School	Sugar Land	TX
14	150	The Harker School	San Jose	CA
15	145	Cambridge International School	Shanghai	China

Second Highest Scoring *Division 01* Schools in each Region

Reg	Score	School	City	State
01	123	Oklahoma School of Science & Math	Oklahoma City	OK
02	114	New Canaan High School	New Canaan	CT
03	131	Don Mills Collegiate Institute	Toronto	ON
04	128	North Allegheny Senior HS	Wexford	PA
05	137	Woodberry Forest School	Woodberry Forest	VA
06	124	West Shore Jr/Sr HS	Melbourne	FL
07	119	Hawken School	Gates Mills	OH
08	105	Plymouth High School	Canton	MI
09	126	Vernon Hills High School	Vernon Hills	IL
10	86	Middleton High School	Middleton	WI
11	115	Baton Rouge Magnet High School	Baton Rouge	LA
12	78	Valor Christian High School	Highlands Ranch	CO
13	132	William P. Clements HS	Sugar Land	TX
14	146	Arcadia High School	Arcadia	CA
15	121	Mountain View High School	Vancouver	WA

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Highest Scoring *Division 02* Schools in each Region

Reg	Score	School	City	State
01	131	Thomas Jefferson HS for Sci&Tech	Alexandria	VA
02	119	Hopkins School	New Haven	CT
03	122	Great Neck South HS	Great Neck	NY
04	129	Millburn High School	Millburn	NJ
05	122	Thomas S. Wootton HS	Rockville	MD
06	114	Walton High School	Marietta	GA
07	114	Hawken School	Gates Mills	OH
08	121	Carmel High School	Carmel	IN
09	135	Libertyville High School	Libertyville	IL
10	113	Edina Center for Academic Excellence	Eden Prairie	MN
11	105	Montgomery Bell Academy	Nashville	TN
12	130	Clayton High School	Clayton	MO
13	124	William P. Clements High School	Sugar Land	TX
14	132	San Diego Math Circle @ UCSD	Poway	CA
15	113	WHBC of Wuhan Foreign Lang.	Wuhan	China

Second Highest Scoring *Division 02* Schools in each Region

Reg	Score	School	City	State
01	129	Stuyvesant High School	New York	NY
02	105	Newtown High School	Sandy Hook	CT
03	111	Herricks High School	New Hyde Park	NY
04	111	Watchung Hills Regional HS	Warren	NJ
05	102	Richard Montgomery HS	Rockville	MD
06	107	American Heritage School	Plantation	FL
07	107	Beavercreek High School	Beavercreek	OH
08	107	Troy High School	Troy	MI
09	111	Vernon Hills High School	Vernon Hills	IL
10	96	St. John's Prep School	Collegeville	MN
11	104	Oak Ridge High School	Oak Ridge	TN
12	93	Millard South High School	Omaha	NE
13	104	Ronald Reagan High School	San Antonio	TX
14	131*	The Bishop's School	La Jolla	CA
15	109	Western Canada HS	Calgary	AB

* = place determined by tiebreaker