

Grades 2–8



# *Vmath* Third Edition 2015–2016 Results

## Vmath Third Edition 2015–2016 Results

This report presents results for students receiving instruction using *Vmath*® *Third Edition* during the 2015–2016 school year. Data for 2015–2016 school year were pulled from VPORT®, the Voyager Sopris Learning data management system, after the vast majority of districts finished their school year.

*Vmath Third Edition* uses the Progress Assessment of Mathematics (PAM), created by MetaMetrics®, developer of The Quantile® Framework for Mathematics, to monitor and measure growth in mathematical skills across the school year. There are three benchmarks each year. Each 30-item test yields a Quantile Score that indicates students' optimal learning range and monitors progress toward grade-level goals.

Quantile scores indicate what mathematic content a student is ready for and what they already understand. MetaMetrics also established cut scores by grade for a basic level of performance and a proficient level of performance. The categorical change from below basic to basic and proficient is also used in this report.

## National Results

During the 2015–2016 school year, 5,095 students who received *Vmath Third Edition* instruction have PAM scores for the beginning of the year (BOY), middle of the year (MOY), and end of the year (EOY). These students were from 67 districts across 26 states in 205 schools. Figure 1 shows the results for students with matched scores for the whole group and for each *Vmath Third Edition* level. The BOY PAM average Quantile and EOY PAM average Quantile are shown for each program level.

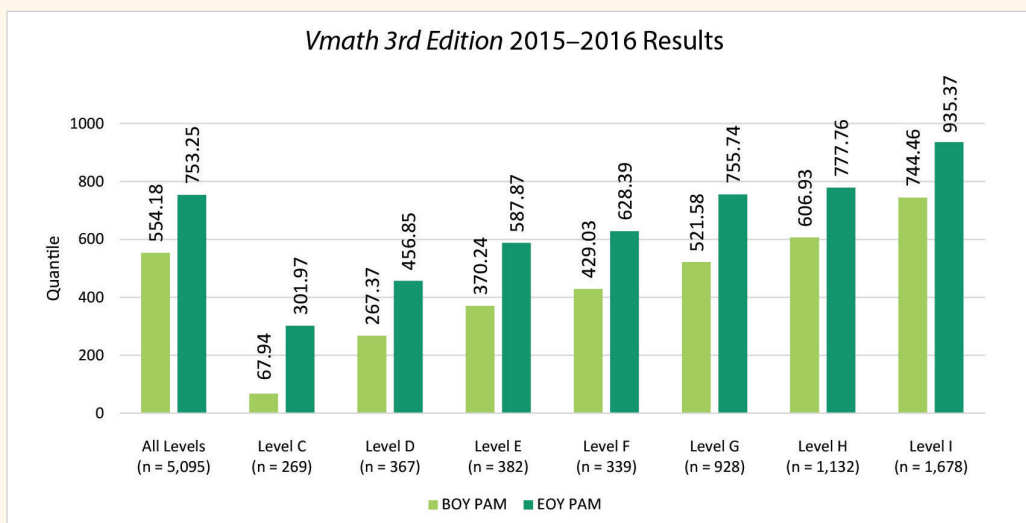


Figure 1. *Vmath Third Edition* 2015–2016 Results by Program Level

Table 1 provides additional detail about the results shown in Figure 1. Table 1 presents the program level, the number of students for each level, the BOY and EOY average Quantile, and the Quantile growth between BOY and EOY. For each program level, an effect size<sup>1</sup> was calculated.

Table 1. *Vmath Third Edition* 2015–2016 Detailed Results by Level

Program Level	Number of Students	BOY Quantile Average	EOY Quantile Average	Quantile Growth	Effect Size
All	5,095	554.18	753.25	199.07	0.80
Level C	269	67.94	301.97	234.03	1.03
Level D	367	267.37	456.85	189.48	0.85
Level E	382	370.24	587.87	217.63	1.20
Level F	339	429.03	628.39	199.36	1.15
Level G	928	521.58	755.74	234.16	1.55
Level H	1,132	606.93	777.76	170.83	1.14
Level I	1,678	744.46	935.37	190.91	1.12

<sup>1</sup> Effect sizes are based on the beginning of year (BOY) and end of the year (EOY) score means. Effect sizes are calculated by dividing the difference between BOY and EOY means by the pooled standard deviation of the BOY and EOY score means.

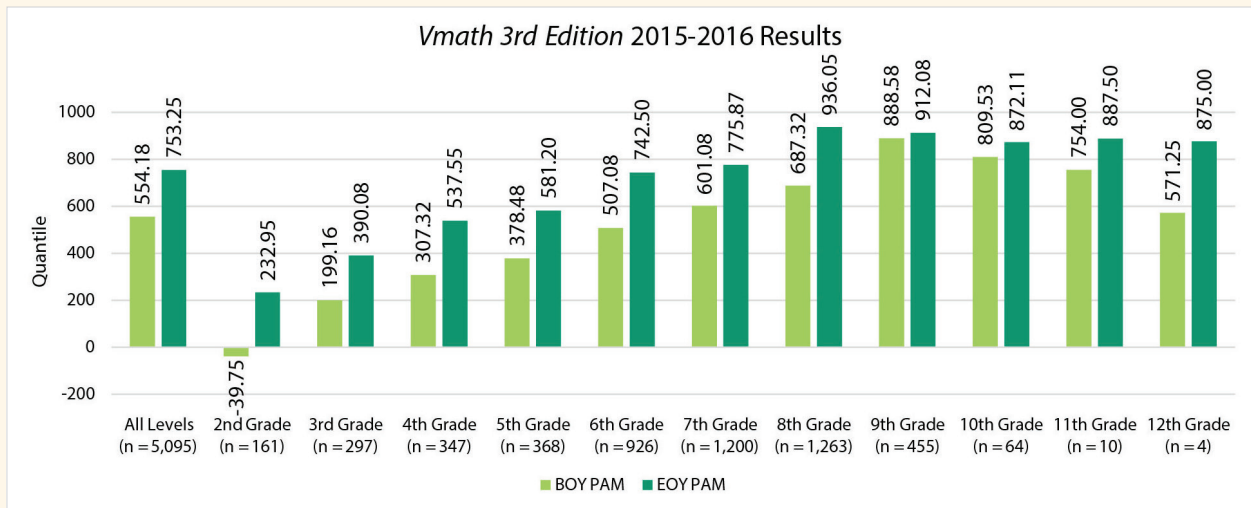
**For the entire group (n = 5,095), the effect size is 0.80.** The effect sizes for each level are shown in Table 1. A paired samples t-test was conducted to compare the BOY and EOY Quantile means. There was a statistically significant difference between the BOY and EOY scores for all students receiving *Vmath Third Edition* instruction and for students at each program level ( $p < .000$ ).

Table 2 shows the distribution of students by program and grade level, showing some students are receiving *Vmath Third Edition* at a level other than the recommended program level. While this is not a recommended practice and *Vmath Third Edition* is not meant to be a core replacement, Table 2 shows there are circumstances where off-level placement is occurring. The majority of students receiving instruction (note bolded numbers in Table 2) are receiving instruction from the appropriate program level.

**Table 2. *Vmath Third Edition* 2015–2016 Students by Program and Grade Levels**

2015–2016 <i>Vmath</i> Students		Grade Levels											Total Students
		2nd Grade	Third Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade	9th Grade	10th Grade	11th Grade	12th Grade	
Program Levels	Level C	159	67	22	8	3	4	6	0	0	0	0	269
	Level D	2	<b>230</b>	72	34	8	6	0	11	3	0	1	367
	Level E	0	0	<b>252</b>	61	27	12	8	18	3	1	0	382
	Level F	0	0	1	<b>265</b>	44	15	1	5	7	1	0	339
	Level G	0	0	0	0	<b>826</b>	80	21	1	0	0	0	928
	Level H	0	0	0	0	8	<b>1,083</b>	24	0	8	6	3	1,132
	Level I	0	0	0	0	10	0	<b>1,203</b>	420	43	2	0	1,678
<b>Total Students</b>		161	297	347	368	926	1,200	1,263	455	64	10	4	5,095

Figure 2 shows the results for students with matched scores for the whole group and for each grade level. Notice in Figure 2, the majority of students are shown between 2nd and 8th grade, with only 533 students (10 percent) in grades above the 8th, typically associated with program level I. Also notice the curve of the bars between 2nd and 8th grade follows the same curve of the program levels because the majority of students are receiving instruction at the correct program level.



**Figure 2. *Vmath Third Edition* 2015–2016 Results by Grade Level**

Table 3 provides additional detail about the results shown in Figure 2. Table 3 presents the grade level, the number of students for each grade, the BOY and EOY average Quantile with percentile ranks by grade, and the Quantile growth between BOY and EOY. The Typical Quantile Growth column shows what MetaMetrics determined to be one year of growth made by typical students (performing at the 50th percentile) by grade, up to the 8th grade. **Students receiving *Vmath Third Edition* instruction exceeded the typical growth, except for third grade which was 9Q short. In the later levels, students exceeded the typical growth by two to four times.** For each grade level, an effect size was calculated. Effect sizes are not calculated for groups with fewer than 10 students.

\* Effect size information is based on Cohen (1988). Effect sizes of 0.2 are considered small, 0.5 are medium, and 0.8 are large. Generally, effect sizes of 0.3 or more are considered educationally meaningful.

Table 3. *Vmath Third Edition 2015–2016 Detailed Results by Grade Levels*

Grade Level	Number of Students	BOY Quantile Average	BOY Percentile Rank	EOY Quantile Average	EOY Percentile Rank	Quantile Growth	Typical Quantile Growth	Effect Size
All	5,095	554.18		753.25		199.07		0.80
2nd Grade	161	-39.75	12	232.95	36	272.70	200Q	1.46
Third Grade	297	199.16	17	390.08	28	190.92	200Q	1.02
4th Grade	347	307.32	13	537.55	36	230.23	150Q	1.28
5th Grade	368	378.48	14	581.20	29	202.72	130Q	1.27
6th Grade	926	507.08	17	742.50	44	235.42	80Q	1.57
7th Grade	1,200	601.08	19	775.87	43	174.79	50Q	1.15
8th Grade	1,263	687.32	21	936.05	60	248.73	50Q	1.61
9th Grade	455	888.58	51	912.08	49	23.50		0.14
10th Grade	64	809.53	30	872.11	33	62.58		0.35
11th Grade	10	754.00	12	887.50	25	133.50		0.72
12th Grade	4	571.25	2	875.00	20	303.75		

## Categorical Change

Another way of looking at the Quantile scores from the PAM is to determine the number of students who are able to score within the basic or above category between BOY and EOY. MetaMetrics determined and provided the cut scores for being in the basic category for each grade level. Table 4 shows the number and percent of students who were in the basic or above category at BOY and at EOY.

**For all students, the percent of students at or above basic by the end of the year goes from 43 percent at BOY to 75 percent at EOY, a change of 32 percentage points.**

Table 4. *Vmath Third Edition 2015–2016 Students At or Above Basic at BOY and EOY*

Product Level	Number of Students	Students At or Above Basic at BOY	% of Students	Students At or Above Basic at EOY	% of Students	Change in percentage points between BOY and EOY
All	5,095	2,210	43.38%	3,836	75.29%	31.91
Level C	269	66	24.54%	126	46.84%	22.30
Level D	367	121	32.97%	176	47.96%	14.99
Level E	382	98	25.65%	225	58.90%	33.25
Level F	339	93	27.43%	207	61.06%	33.63
Level G	928	345	37.18%	744	80.17%	43.00
Level H	1,132	479	42.31%	850	75.09%	32.77
Level I	1,678	1,008	60.07%	1,508	89.87%	29.80

## Results by Region

It is often interesting to see if there are regional differences in the results. Figure 3 shows all levels and results from the four regions of the country.

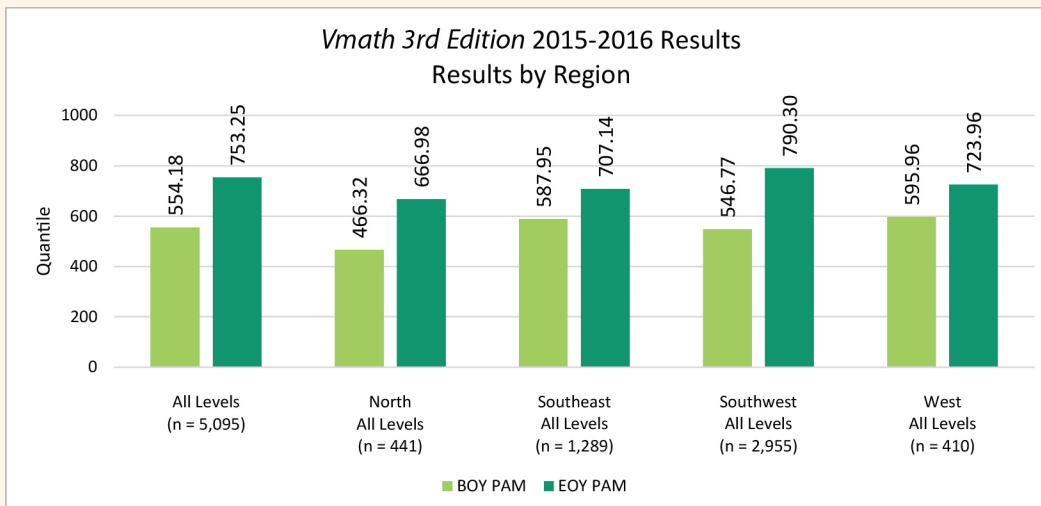


Figure 3. Vmath Third Edition 2015–2016 Results by Region

Table 5 shows additional details about Figure 3. Along with the Quantile averages at BOY and MOY, the Quantile growth and effect sizes for each region are shown. **The effect sizes for the regions are generally medium to large and educationally meaningful.**

Table 5. Vmath Third Edition 2015–2016 Detailed Results by Region.

Region (All Levels)	Number of Students	BOY Quantile Average	EOY Quantile Average	Quantile Growth	Effect Size
All	5,095	554.18	753.25	199.07	0.80
North	441	466.32	666.98	200.66	0.75
Southeast	1,289	587.95	707.14	119.19	0.39
Southwest	2,955	546.77	790.30	243.53	1.14
West	410	595.96	723.96	128.00	0.53

## Results for ELL Students and Students with Disabilities

When rostering students in VPORT for participation in *Vmath Third Edition*, demographic characteristics such as English Learner (EL) status and students with disability (SWD)—are optional. On occasion, districts provide this type of data about students voluntarily. Using data from students who were explicitly identified as EL or SWD, Figure 4 shows growth made by these groups of students compared to all students receiving instruction. It is highly likely there are additional students who would be identified as EL or SWD, but only those who were explicitly identified by the districts were included in this analysis. **Students explicitly identified as EL grew about 100 Quantiles more than all students combined and SWD grew about the same as all students combined.**

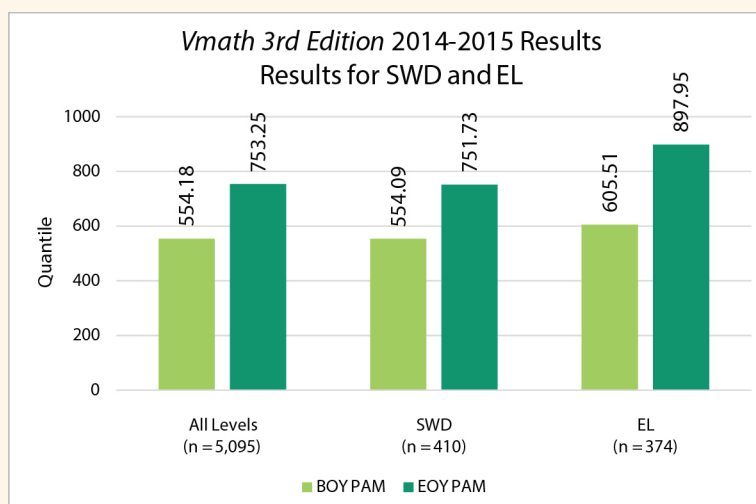


Figure 4. Vmath Third Edition 2015–2016 Results for SWD and ELL Status

Table 6 provides additional detail about Figure 4, including specific results for the *Vmath Third Edition* levels where 10 or more students have all three PAM scores. Subgroups of students with fewer than 10 students are not shown.

**Table 6. *Vmath Third Edition* 2015–2016 Detailed Results for SWD and EL**

Group	Level	Number of Students	BOY Quantile Average	EOY Quantile Average	Quantile Growth	Effect Size
All Students	All	5,095	554.18	753.25	199.07	0.80
SWD	All	410	554.09	751.73	197.64	1.17
	Level G	131	487.86	686.37	198.51	1.39
	Level H	135	575.70	733.56	157.86	1.18
EL	Level I	118	633.94	878.94	245.00	1.62
	All	374	605.51	897.95	292.44	1.69
	Level G	74	523.45	802.91	279.46	2.27
	Level H	131	582.90	868.51	285.61	1.67
	Level I	162	677.44	981.94	304.50	2.28

## Summary

*Vmath Third Edition* provides students the opportunity to master the critical foundations they need for success at their grade level. The 2015–2016 results show student Quantile averages are mostly below the average range (25th to 75th percentile) at the beginning of the year. At the end of the year, for all but one grade level (12th grade), the Quantile averages are at or well within the average range across all grades. Students in 8th grade have an EOY Quantile Average at the 60th percentile. Students in grades 6th, 7th, and 9th are at the 44th, 43rd, and 49th percentiles by the end of the year. Students receiving *Vmath Third Edition* are moving out of the below basic category into the basic and proficient categories. All students, except for students in Levels C and D, show 50 percent or more students are in the basic and proficient categories at the end of the year. ***Vmath Third Edition* 2015–2016 results show students are making significant progress toward closing the achievement gap with peers.**