



# AMIRA

L E A R N I N G

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## Linking STAAR to Istation Math

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## Linking STAAR to Istation Math

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DATE

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# Executive Summary

This study provides the proficiency projection of the Istation Math Formative Assessment on the State of Texas Assessments of Academic Readiness (STAAR) Math assessment for third through fifth grades. Classification accuracy is also provided. The sample consisted of 6,459 students from two school districts in Texas in the 2022–2023 school year. Students took Istation Math in the beginning-of-the-year (BOY), middle-of-the-year (MOY), and end-of-the-year (EOY) assessment months and STAAR during the spring assessment month.

The Pearson Product Moment correlations of Istation Math MOY and STAAR range from 0.79 to 0.81 and 0.85 to 0.87 for Istation Math EOY and STAAR at spring benchmarking. They indicate strong relationships between Istation Math and the STAAR Math assessment.

The linking study between STAAR and Istation Math is conducted using multinomial logistic regression. A low probability of attaining a level was  $\leq .330$ , a medium probability of attaining a level was .331–.660, and a high probability of attaining a level was set at  $\geq .661$ .

At MOY, to achieve a high probability of attaining the STAAR *Meets* performance level, students had to attain Istation Math overall scores at the following percentile ranks:

Third grade: 50th  
Fourth grade: 50th  
Fifth grade: 50th

To achieve a high probability of attaining the STAAR *Masters* performance level, students had to attain Istation Math overall scores at the following percentile ranks:

Third grade: 75th  
Fourth grade: 75th  
Fifth grade: 85th

At EOY, students had to attain Istation Math scores at the following percentile ranks to have a high probability of attaining the STAAR *Meets* performance level:

Third grade: 65th  
Fourth grade: 70th  
Fifth grade: 60th

To achieve a high probability of attaining the STAAR *Masters* performance level, students had to attain Istation Math scores at the following percentile ranks:

Third grade: 95th  
Fourth grade: 90th  
Fifth grade: 95th

Classification accuracy analyses were conducted. At MOY, the area under the curve (AUC) ranged from 0.79 to 0.81, indicating that the percentage of students correctly classified on the Istation Math with respect to the STAAR Math assessment was approximately 81% across grades. Sensitivity ranged from 0.82 to 0.85, indicating that approximately 83% of students who performed above the cut point on Istation Math attained the *Meets* performance level or above on the STAAR assessment. Specificity ranged from 0.75 to 0.81, indicating that approximately 78% of students who performed below the cut point on Istation Math did not attain *Meets* or above on the STAAR assessment. Istation Math accurately predicted meeting math proficiency on the STAAR assessment about 81% of the time at the MOY.

At EOY, the AUC ranged from 0.82 to 0.85, indicating that approximately 83% of students were correctly classified on the Istation Math with respect to the STAAR Math assessment across grades. Sensitivity ranged from 0.74 to 0.75, indicating that approximately 75% of students who performed above the cut point on Istation Math attained the *Meets* performance level or above on the STAAR assessment. Specificity ranged from 0.89 to 0.95, indicating that approximately 92% of students who performed below the cut point on Istation Math did not attain *Meets* or above on the STAAR assessment. Istation Math accurately predicted meeting math proficiency on the STAAR assessment about 81% of the time at EOY.

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## Introduction

This study provides the proficiency projection of Istation Math Formative Assessment (Istation Math) observed scores on the STAAR Math scores for grades 3 through 5. Students took these two assessments during the 2022–2023 school year, and a correlational study and classification accuracy were also conducted.

Regular administration of Istation assessments (either monthly or three times each school year during benchmarking assessment months) and the administration of the STAAR in the spring present an opportunity for conducting a linking study between the Istation Math and STAAR Math assessments. The results from this study can be helpful for teachers and school administrators in preparing students for the STAAR assessment in the spring.

The Istation Math assessments have strong correlations with other state assessments, and linking studies with other assessments demonstrated that Istation Math can be used to project student proficiency on end-of-year assessments:

- NWEA MAP (Jeans, 2024)
- ACT Aspire (Patarapichayatham & Locke, 2020)
- Ohio AIR (Patarapichayatham & Locke, 2020)

All information can be found on our website ([www.istation.com](http://www.istation.com)).

## Background

### Istation Math Assessment

The Istation Math assessment is a computerized adaptive test (CAT) using the two-parameter Item Response Theory. Istation assessments gather and report frequent information about student progress in critical domains throughout and across academic years. The assessments accomplish this by delivering monthly tests that target critical areas to inform instruction. With adequate computer resources, it is possible to administer Istation assessments to an entire classroom, school, or district in a single day. Student results are immediately available online for teachers and administrators, illustrating each student's past and present performance and skill growth. Teachers are alerted when students are not making adequate progress so that the instructional program can be modified before a pattern of failure becomes established (Ketterlin-Geller, 2021).

The Istation Math Formative Assessment measures students' abilities and identifies deficits in critical areas to provide continuous differentiated instruction. Istation Math is available for prekindergarten through eighth grade students and has a continuous vertical scale that assesses math ability across these grades. In addition to detailed reports, Istation provides teachers and other school personnel with links to teaching resources and targeted intervention strategies (Ketterlin-Geller, 2021). Scaled scores range between 100 and 900. There are five performance levels for Istation Math:

- Level 1: at or below the 20th percentile rank
- Level 2: between the 21st and 40th percentile rank
- Level 3: between the 41st and 60th percentile rank
- Level 4: between the 61st and 80th percentile rank
- Level 5: at or above the 81st percentile rank.

## STAAR Math Assessment

STAAR Math is the state testing program for Texas students in grades 3 through 8. The Texas Education Agency (TEA), in collaboration with the Texas Higher Education Coordinating Board (THECB) and Texas educators, developed the STAAR program in response to requirements set forth by the 80th and 81st Texas legislatures. STAAR is an assessment program designed to measure how students have learned and can apply the knowledge and skills defined in the state-mandated curriculum standards (<http://tea.texas.gov>).

Students receive a performance level and a numerical scaled score that corresponds to the knowledge, skills, and abilities that students must demonstrate to be classified into one of four levels:

- *Does Not Meet Grade Level:* Performance in this category indicates that students are **unlikely to succeed in the next grade or course without significant, ongoing academic intervention**. Students in this category do not demonstrate a sufficient understanding of the assessed knowledge and skills.
- *Approaches Grade Level:* Performance in this category indicates that students are **likely to succeed in the next grade or course with targeted academic intervention**. Students in this category generally demonstrate the ability to apply the assessed knowledge and skills in familiar contexts.
- *Meets Grade Level:* Performance in this category indicates that students have a **high likelihood of success in the next grade or course but may still need some short-term, targeted academic intervention**. Students in this category generally demonstrate the ability to think critically and apply the assessed knowledge and skills in familiar contexts.
- *Masters Grade Level:* Performance in this category indicates that students are **expected to succeed in the next grade or course with little or no academic intervention**. Students in this category demonstrate the ability to think critically and apply the assessed knowledge and skills in varied contexts, both familiar and unfamiliar.

Table 1 shows cut scores associated with these performance levels by grade level.

This study aims to predict students' performance on STAAR Math based on their Istation Math scores. There are two objectives in the current study:

- ( 1 ) Use Istation Math scores from the middle-of-year (MOY) benchmark month to predict STAAR outcomes.
- ( 2 ) Use Istation Math scores from the end-of-year (EOY) benchmark month to predict STAAR outcomes.

**Table 1.** STAAR Math Scale Score Ranges by Performance Level

Grade	Does Not Meet	Approaches	Meets	Masters
3	955-1344	1360-1454	1471-1579	≥1600
4	1009-1448	1462-1544	1557-1670	≥1690
5	1094-1500	1515-1620	1634-1757	≥1776

## Methodology

### Analytical Sample

The analytical sample consisted of third through fifth grade students from two school districts in Texas in the 2022-2023 school year. Only students who had valid Istation Math scores and STAAR scores were included in the analyses.

Table 2 presents the analytic sample breakdown by grade, totaling 6,459 students. There were 1,083 students from District A and 5,376 students from District B. Students took the Istation Math Formative Assessment at the BOY, MOY, and EOY assessment months and took STAAR in the spring. Table 3 has the demographic breakdown by district and grade. Demographic data for District A was not provided. Therefore, the data presented are from the National Center for Education Statistics ([www.nces.ed.gov](http://www.nces.ed.gov)).

**Table 2.** Sample Size by District and Grade

Grade	A	B	Total
3	568	1938	2506
4	499	1796	2295
5	16	1642	1658

**Table 3.** Sample Demographic Characteristics by District

	Demographic Characteristics	Percentage
A	Gender: Female/Male	53%/47%
	Race/Ethnicity: Black or African American	7%
	Race/Ethnicity: Hispanic or Latino origin	17%
	Race/Ethnicity: White/Non-Hispanic	65%
	Race/Ethnicity: Asian or Other	11%
	Emergent Bilingual	
	Special Education	
B	Gender: Female/Male	49%/51%
	Race/Ethnicity: Black or African American	10%
	Race/Ethnicity: Hispanic or Latino origin	50%
	Race/Ethnicity: White/Non-Hispanic	32%
	Race/Ethnicity: Asian or Other	8%
	English as a Second Language	11%
	Special Education	18%

## Analytical Approach

To provide teachers and administrators with the information they need to determine whether a student is likely to reach the *Meets* performance level or above on the STAAR assessment, Pearson product-moment correlations were conducted to confirm the correlation in performance between the two assessments. Next, multinomial logistic regression determined the probabilities of reaching *Approaches* (level 2), *Meets* (level 3), or *Masters* (level 4) on the STAAR assessment. The analysis used the Istation Math score as the predictor and the STAAR performance levels as outcome variables. Students with Istation Math scores ranging from the 1st to the 99th percentile ranks were part of the analysis. A selection of 20 Istation Math scaled scores

in MOY and EOY, corresponding to the following percentile ranks, was made: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 99. The model was adapted for each grade individually. The study focused on performance levels 2 through 4.

The probability of achieving the STAAR performance level 2 (*Approaches*) or above is computed by adding the probabilities of levels 2 through 4. The probability of achieving the STAAR performance level 3 (*Meets*) or above is computed by adding the probabilities of levels 3 and 4. The probability of achieving STAAR performance level 4 (*Masters*) is the probability only for level 4. The analyses were computed using Stata 18.5 software. Finally, classification accuracy analyses determined Istation Math cut points that assist in differentiating students who will or will not achieve level 3 *Meets* or higher on the STAAR Math assessment.

## Results

### Istation Math and STAAR Descriptive Statistics

Table 4 presents the descriptive statistics for Istation Math and STAAR performance by grade and district.

**Table 4.** *Istation Math and STAAR Mean Score and Standard Deviation (SD) by Grade and District*

District	Grade	Istation BOY (SD)	Istation MOY (SD)	Istation EOY (SD)	STAAR Score (SD)
A	3	485.57 (34.11)	512.37 (43.22)	538.44 (59.55)	1472.05 (151.37)
	4	505.52 (33.32)	527.29 (47.48)	558.66 (64.43)	1550.95 (162.76)
	5	532.06 (41.11)	555.00 (58.67)	577.00 (76.51)	1663.25 (154.78)
B	3	481.46 (28.03)	501.07 (36.57)	535.84 (48.82)	1471.30 (148.81)
	4	509.69 (28.06)	524.85 (39.13)	568.39 (54.31)	1584.17 (159.48)
	5	518.69 (32.49)	544.31 (46.26)	578.36 (56.43)	1667.55 (141.93)

Table 5 presents the proportion of students in each STAAR level by grade and district. Generally, both districts' largest proportion of third and fifth grade students were in the *Approaches* and *Meets* performance levels. However, most fourth grade students

in District A were in the Approaches performance band and lower, and most fourth grade students in District B were in the *Meets* performance band and higher.

**Table 5.** *Percentage of Students in STAAR Performance Levels by District and Grade*

District	Grade	Does Not Meet	Approaches	Meets	Masters
A	3	22%	32%	27%	19%
	4	31%	24%	24%	20%
	5	13%	38%	26%	20%
B	3	24%	28%	28%	20%
	4	23%	23%	29%	25%
	5	11%	31%	36%	22%

## Correlational Study: Istation Math and STAAR

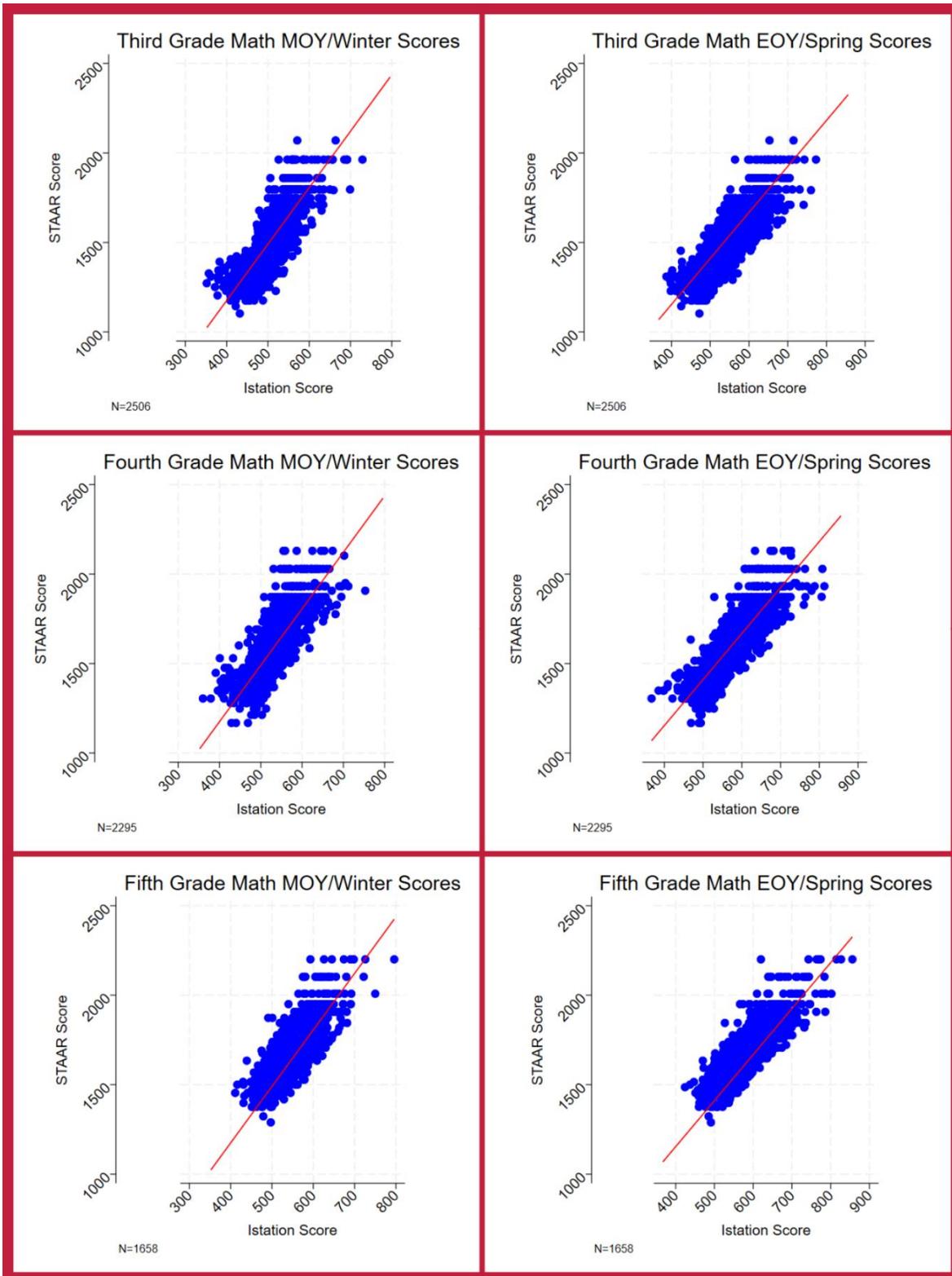
Table 6 shows the Pearson product-moment correlation coefficients between Istation Math and STAAR scores for MOY and EOY. The coefficients for grades 3 through 5 range from .79 to .87, indicating a strong relationship between Istation Math and the STAAR Math assessment. If a student does well on Istation Math, then it is likely that the student will do well on the STAAR assessment. Figures 1 and 2 show the correlations between Istation Math and STAAR scores by grade at MOY and EOY benchmark periods, respectively.

**Table 6.** *Pearson Product-Moment Correlation Coefficients between Istation Math and STAAR Math*

Grade	Istation Math MOY	Istation Math EOY
3	0.80*	0.86*
4	0.79*	0.87*
5	0.81*	0.85*

\* $p < 0.001$

**Figure 1.** Pearson Product-Moment Correlations between Istation and STAAR by Grade at MOY and EOY



## Linking Study: Istation Math and STAAR Math

Tables 7 and 8 are concordance tables derived from statistical linking procedures directly linking Istation Math scores and STAAR assessment levels. Concordance tables serve as valuable tools for various stakeholders, including educators, parents, administrators, researchers, and policymakers, by offering essential information to assess students' academic performance. These tables provide a more comprehensive understanding of students' abilities and progress. Moreover, concordance tables aid in identifying strengths and weaknesses in specific subject areas, assisting in developing targeted interventions and support programs. Furthermore, these tables contribute to the establishment of consistent academic standards and expectations, promoting a unified approach to evaluating and enhancing educational outcomes.

The probabilities of meeting a STAAR performance level were divided into low, medium, and high. Students with a probability of  $\leq .330$  had a *low* probability of achieving a level. Those with a probability of  $.331-.660$  had a *medium* probability, and students with a probability of  $\geq .661$  had a *high* probability of attaining *Approaches* or higher.

### Probabilities for the Middle of the Year

The MOY table for third through fifth grade shows that students in these grades need to be at the 50th percentile or above to have a high probability of achieving *Meets* or higher.

**Table 7.** Third through Fifth Grade Proficiency Projection for Istation Math at MOY

Grade	Overall Score	Percentile	Approaches Probability	Approaches	Meets Probability	Meets	Masters Probability	Masters
3	440	5	0.102	Low	0.003	Low	0.000	Low
	457	10	0.243	Low	0.016	Low	0.000	Low
	469	15	0.408	Medium	0.050	Low	0.001	Low
	478	20	0.558	Medium	0.106	Low	0.004	Low
	485	25	0.676	High	0.176	Low	0.010	Low
	493	30	0.794	High	0.287	Low	0.025	Low
	499	35	0.864	High	0.389	Medium	0.045	Low
	505	40	0.916	High	0.499	Medium	0.078	Low
	511	45	0.952	High	0.609	Medium	0.126	Low
	517	50	0.974	High	0.710	High	0.190	Low
	523	55	0.987	High	0.796	High	0.270	Low
	529	60	0.994	High	0.863	High	0.362	Medium
	535	65	0.997	High	0.913	High	0.460	Medium
	542	70	0.999	High	0.951	High	0.572	Medium
	549	75	1.000	High	0.974	High	0.674	High
	557	80	1.000	High	0.988	High	0.771	High
	566	85	1.000	High	0.995	High	0.851	High
	577	90	1.000	High	0.999	High	0.916	High
	593	95	1.000	High	1.000	High	0.965	High
624	99	1.000	High	1.000	High	0.994	High	
4	457	5	0.070	Low	0.002	Low	0.000	Low
	474	10	0.177	Low	0.015	Low	0.000	Low
	486	15	0.319	Low	0.048	Low	0.002	Low
	495	20	0.466	Medium	0.105	Low	0.006	Low
	503	25	0.612	Medium	0.194	Low	0.016	Low
	510	30	0.734	High	0.302	Low	0.034	Low
	516	35	0.823	High	0.413	Medium	0.061	Low
	523	40	0.899	High	0.549	Medium	0.109	Low
	529	45	0.943	High	0.659	Medium	0.167	Low
	535	50	0.969	High	0.754	High	0.238	Low

	541	55	0.985	High	0.831	High	0.320	Low
	547	60	0.993	High	0.888	High	0.409	Medium
	553	65	0.997	High	0.929	High	0.499	Medium
	559	70	0.999	High	0.956	High	0.586	Medium
	566	75	0.999	High	0.976	High	0.677	High
	574	80	1.000	High	0.989	High	0.765	High
	583	85	1.000	High	0.995	High	0.841	High
	594	90	1.000	High	0.998	High	0.904	High
	611	95	1.000	High	1.000	High	0.958	High
	641	99	1.000	High	1.000	High	0.991	High
5	468	5	0.413	Medium	0.026	Low	0.000	Low
	486	10	0.611	Medium	0.078	Low	0.001	Low
	498	15	0.735	High	0.146	Low	0.002	Low
	508	20	0.822	High	0.229	Low	0.005	Low
	516	25	0.878	High	0.312	Low	0.010	Low
	524	30	0.920	High	0.407	Medium	0.020	Low
	531	35	0.947	High	0.495	Medium	0.033	Low
	537	40	0.964	High	0.571	Medium	0.050	Low
	543	45	0.976	High	0.645	Medium	0.074	Low
	550	50	0.986	High	0.724	High	0.112	Low
	556	55	0.991	High	0.783	High	0.155	Low
	562	60	0.995	High	0.835	High	0.208	Low
	568	65	0.997	High	0.878	High	0.271	Low
	575	70	0.998	High	0.917	High	0.354	Medium
	582	75	0.999	High	0.946	High	0.445	Medium
	590	80	1.000	High	0.968	High	0.551	Medium
	600	85	1.000	High	0.985	High	0.673	High
	611	90	1.000	High	0.994	High	0.783	High
	628	95	1.000	High	0.998	High	0.894	High
	659	99	1.000	High	1.000	High	0.975	High

## MOY Istation Math and STAAR at Winter Benchmarking

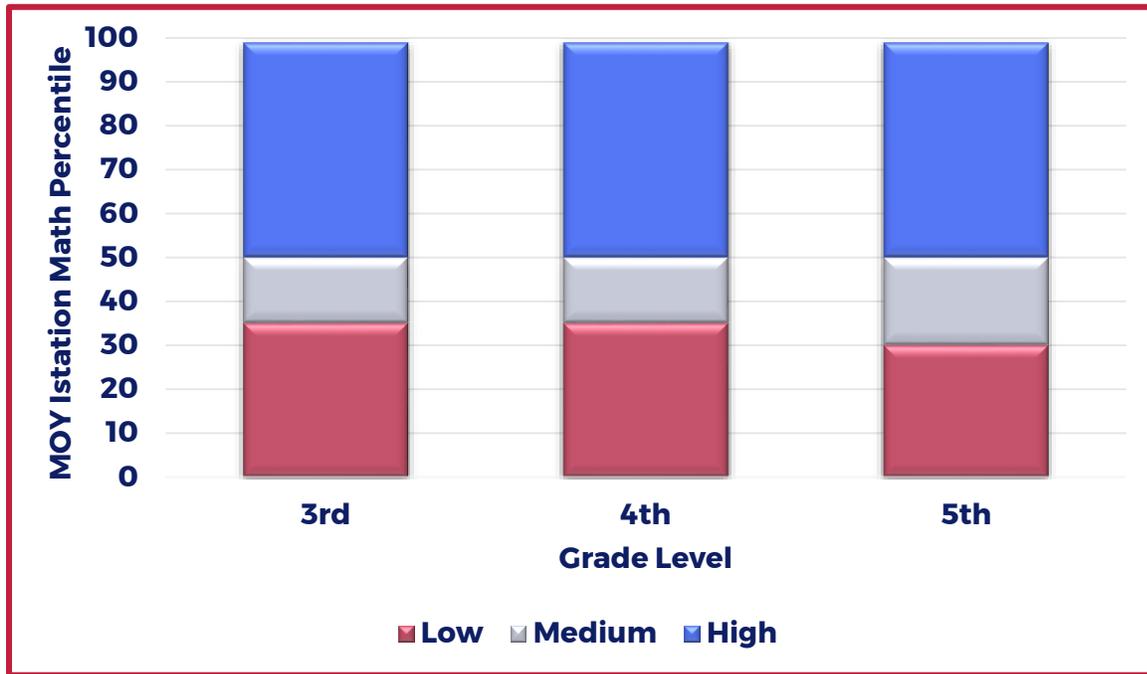
Figure 3 represents the MOY Istation Math percentiles associated with the probabilities of attaining the STAAR *Meets* performance level by grade.

Third grade students who attained an Istation Math score around 499–511 (35th to 45th percentile ranks) had a medium probability of achieving the STAAR *Meets* level or higher. Students with scores higher than 517 had a high probability of reaching the *Meets* level or higher. Students who attained an Istation Math score around 549 (75th percentile) had a high probability of reaching the STAAR *Masters* level.

Fourth grade students who attained an Istation Math score around 516–529 (35th to 45th percentile ranks) had a medium probability of achieving the STAAR *Meets* level or higher. Students with scores higher than 535 had a high probability of reaching the *Meets* level or higher. Students who attained an Istation Math score around 566 (75th percentile) had a high probability of reaching the STAAR *Masters* level.

Fifth grade students who attained an Istation Math score around 524–543 (30th to 45th percentile ranks) had a medium probability of achieving the STAAR *Meets* level or higher. Students with scores higher than 550 had a high probability of reaching the *Meets* level or higher. Students who attained an Istation Math score around 600 (85th percentile) had a high probability of reaching the STAAR *Masters* level.

**Figure 3.** MOY Istation Math Percentiles and STAAR Math Meets Probabilities by Grade



## Probabilities for the End of the Year

The EOY table for third through fifth grade shows that students in the third grade need to be at the 65th percentile or above to have a high probability of achieving *Meets* or higher. Students in the fourth grade need to be at the 70th percentile or above, and students in fifth grade need to be at the 60th percentile to have a high probability of achieving *Meets* or higher.

**Table 9.** Third through Fifth Grade Proficiency Projection for Istation Math at EOY

Grade	Overall Score	Percentile	Approaches Probability	Approaches	Meets Probability	Meets	Masters Probability	Masters
3	443	5	0.038	Low	0.000	Low	0.000	Low
	462	10	0.108	Low	0.001	Low	0.000	Low
	474	15	0.201	Low	0.005	Low	0.000	Low
	484	20	0.317	Low	0.014	Low	0.000	Low
	493	25	0.450	Medium	0.035	Low	0.001	Low
	501	30	0.580	Medium	0.070	Low	0.002	Low
	508	35	0.690	High	0.121	Low	0.004	Low
	515	40	0.787	High	0.196	Low	0.008	Low
	521	45	0.855	High	0.280	Low	0.015	Low
	528	50	0.914	High	0.396	Medium	0.030	Low
	534	55	0.948	High	0.504	Medium	0.049	Low
	541	60	0.973	High	0.627	Medium	0.082	Low
	547	65	0.986	High	0.721	High	0.120	Low
	554	70	0.994	High	0.812	High	0.177	Low
	562	75	0.998	High	0.887	High	0.257	Low
	571	80	0.999	High	0.941	High	0.362	Medium
	580	85	1.000	High	0.971	High	0.475	Medium
	593	90	1.000	High	0.991	High	0.634	Medium
610	95	1.000	High	0.998	High	0.798	High	
643	99	1.000	High	1.000	High	0.950	High	
4	460	5	0.014	Low	0.000	Low	0.000	Low
	479	10	0.048	Low	0.001	Low	0.000	Low
	491	15	0.099	Low	0.003	Low	0.000	Low
	501	20	0.176	Low	0.010	Low	0.000	Low
	510	25	0.282	Low	0.024	Low	0.000	Low
	518	30	0.407	Medium	0.050	Low	0.001	Low
	525	35	0.531	Medium	0.089	Low	0.001	Low
	532	40	0.656	Medium	0.147	Low	0.003	Low
	539	45	0.766	High	0.224	Low	0.007	Low
	545	50	0.842	High	0.305	Low	0.013	Low

	552	55	0.907	High	0.409	Medium	0.025	Low
	558	60	0.944	High	0.502	Medium	0.041	Low
	565	65	0.970	High	0.607	Medium	0.069	Low
	572	70	0.985	High	0.703	High	0.108	Medium
	580	75	0.994	High	0.796	High	0.171	Medium
	588	80	0.998	High	0.867	High	0.253	Medium
	598	85	0.999	High	0.929	High	0.378	Medium
	610	90	1.000	High	0.970	High	0.542	High
	628	95	1.000	High	0.993	High	0.755	High
	660	99	1.000	High	1.000	High	0.942	High
5	471	5	0.243	Low	0.003	Low	0.000	Low
	491	10	0.424	Medium	0.016	Low	0.000	Low
	504	15	0.562	Medium	0.038	Low	0.000	Low
	515	20	0.676	High	0.074	Low	0.000	Low
	524	25	0.761	High	0.122	Low	0.001	Low
	532	30	0.826	High	0.183	Low	0.002	Low
	540	35	0.878	High	0.260	Low	0.004	Low
	547	40	0.915	High	0.342	Medium	0.008	Low
	554	45	0.943	High	0.433	Medium	0.015	Low
	560	50	0.961	High	0.514	Medium	0.024	Low
	567	55	0.976	High	0.607	Medium	0.039	Low
	574	60	0.985	High	0.694	High	0.062	Low
	581	65	0.992	High	0.770	High	0.094	Low
	588	70	0.995	High	0.833	High	0.139	Low
	596	75	0.998	High	0.889	High	0.205	Low
	605	80	0.999	High	0.934	High	0.301	Low
	615	85	1.000	High	0.966	High	0.426	Medium
	627	90	1.000	High	0.986	High	0.584	Medium
645	95	1.000	High	0.997	High	0.782	High	
678	99	1.000	High	1.000	High	0.951	High	

## EOY Istation Math and STAAR at Spring Benchmarking

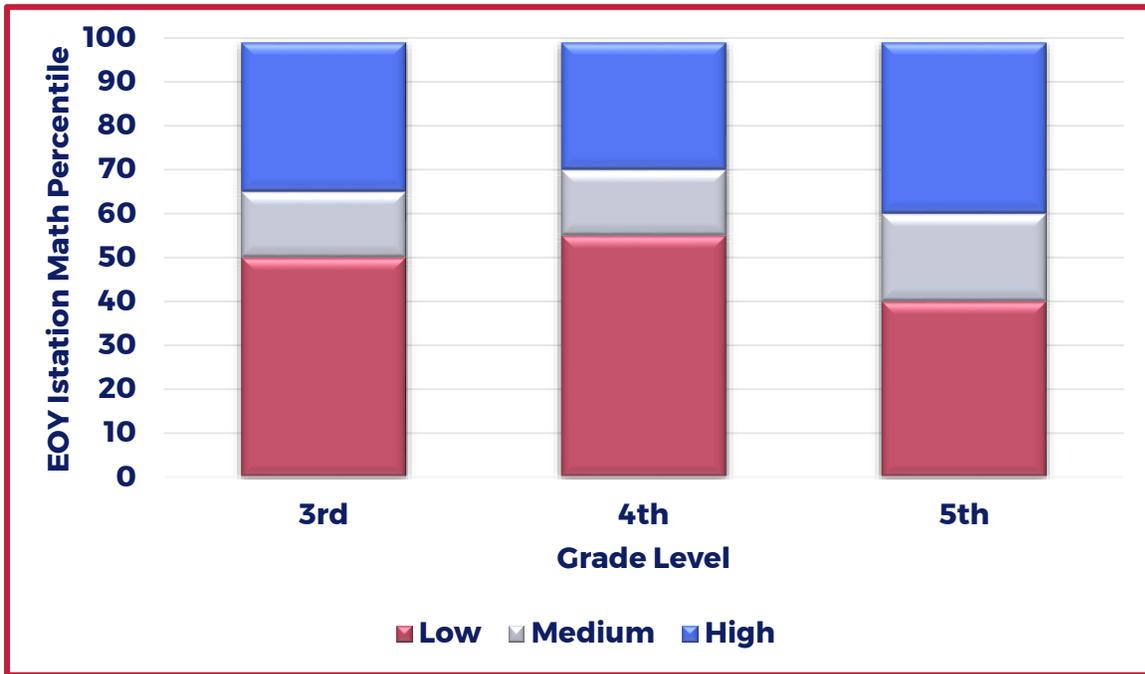
Figure 4 represents the EOY Istation Math percentiles associated with the probabilities of attaining the STAAR *Meets* performance level by grade.

Third grade students who attained an Istation Math score around 528–541 (50th to 60th percentile ranks) had a medium probability of achieving the STAAR *Meets* level or higher. Students with scores higher than 547 had a high probability of reaching the *Meets* level or higher. Students who attained an Istation Math score around 610 (95th percentile) had a high probability of reaching the STAAR *Masters* level.

Fourth grade students who attained an Istation Math score around 552–565 (55th to 65th percentile ranks) had a medium probability of achieving the STAAR *Meets* level or higher. Students with scores higher than 572 had a high probability of reaching the *Meets* level or higher. Students who attained an Istation Math score around 610 (90th percentile) had a high probability of reaching the STAAR *Masters* level.

Fifth grade students who attained an Istation Math score around 547–567 (40th to 55th percentile ranks) had a medium probability of achieving the STAAR *Meets* level or higher. Students with scores higher than 574 had a high probability of reaching the *Meets* level or higher. Students who attained an Istation Math score around 645 (95th percentile) had a high probability of reaching the STAAR *Masters* level.

**Figure 4.** EOY Istation Math Percentiles and STAAR Math Meets Probabilities by Grade



## Classification Accuracy: Istation Math and STAAR

Classification accuracy was conducted to predict whether students in the sample would achieve *Meets* level or higher on the STAAR Math assessment. A higher classification accuracy rate indicates stronger congruence between the Istation Math and STAAR assessments. Classification accuracy was conducted for third through eighth grade Istation Math at MOY, Istation Math at EOY, and STAAR of *Meets* level or higher. Classification accuracy analyses were performed to determine Istation Math cut points that could help differentiate students who would or would not attain *Meets* or higher on the STAAR assessment.

**Table 11.** *Percentage of Students in STAAR Performance Levels by Grade*

Grade	Does Not Meet	Approaches	Meets	Masters
3	23%	29%	28%	20%
4	25%	23%	28%	24%
5	11%	31%	36%	22%

Classification accuracy of Istation cut scores were performed at the 30th, 35th, 40th, 45th, 50th, 55th, 60th, 65th, 70th, 75th, and 80th percentiles and STAAR *Meets* level or higher. The AUC, sensitivity, specificity, positive predictive power, negative predictive power, and overall rate were computed and compared to determine the best Istation Math cut point to identify students who would most likely meet the *Meets* level or higher on the STAAR assessment. Results in Table 12 show that the 30th to 40th percentile was the best cut score across grade levels on Istation Math at MOY and EOY.

### MOY Classification Accuracy: Istation Math and STAAR

Classification accuracy analyses were conducted. At MOY, the area under the curve (AUC) ranged from 0.79 to 0.82, indicating that the percentage of students correctly classified on the Istation Math with respect to the STAAR Math assessment was approximately 81% across grades. Sensitivity ranged from 0.82 to 0.85, indicating that approximately 83% of students who performed above the cut point on Istation Math attained the *Meets* performance level or above on the STAAR assessment. Specificity

ranged from 0.75 to 0.81, indicating that approximately 78% of students who performed below the cut point on Istation Math did not attain *Meets* or above on the STAAR assessment. Istation Math accurately predicted meeting math proficiency on the STAAR assessment about 81% of the time at the MOY.

## EOY Classification Accuracy: Istation Math and STAAR

At EOY, the AUC ranged from 0.82 to 0.85, indicating that approximately 83% of students were correctly classified on the Istation Math with respect to the STAAR Math assessment across grades. Sensitivity ranged from 0.74 to 0.75, indicating that approximately 75% of students who performed above the cut point on Istation Math attained the *Meets* performance level or above on the STAAR assessment. Specificity ranged from 0.89 to 0.95, indicating that approximately 92% of students who performed below the cut point on Istation Math did not attain *Meets* or above on the STAAR assessment. Istation Math accurately predicted meeting math proficiency on the STAAR assessment about 81% of the time at EOY.

**Table 12.** Classification Accuracy Indices by Benchmark and Grade

Grade	Cut Point	Benchmark	AUC	Sensitivity	Specificity
3	45th	Winter	.81	.82	.81
	45th	Spring	.83	.74	.93
4	45th	Winter	.82	.85	.79
	45th	Spring	.85	.75	.95
5	40th	Winter	.79	.83	.75
	40th	Spring	.82	.75	.89

## Conclusion

This research establishes a significant positive link between students' scores in Istation Math and their STAAR outcomes, particularly from third through fifth grade. Both MOY and EOY scores on Istation Math are reliable indicators for predicting STAAR Math assessment performance. These correlations are particularly strong in the mentioned grades, with Pearson product-moment correlation coefficients ranging from 0.79 to 0.87.

Furthermore, the findings reveal a consistent trend: as students achieve higher scores in Istation Math, their chances of reaching or surpassing the *Meets* performance level on the STAAR assessment increase. This pattern is evident across different grade levels, though the exact scores required for reaching the *Meets* performance level vary. The classification accuracy analysis supports this, showing that about 81% of students' performance can be accurately predicted based on their Istation Math scores.

These results highlight the utility of Istation Math as a tool for monitoring student progress and predicting their performance in key assessments like STAAR. For educators and school administrators, these insights are invaluable for designing targeted interventions and enhancing learning outcomes. This study reinforces the role of the Istation Math Formative Assessment in educational settings, proving its effectiveness in guiding instructional strategies and fostering student achievement.

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