

Preliminary Linking of Star Reading® and Star Math® to the Performance Evaluation for Alaska's Schools (PEAKS)



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Introduction

At Renaissance, we know that as an educator, chief among your responsibilities is making decisions about how to allocate limited resources to best serve diverse student needs. A good assessment system supports your efforts, by providing timely, relevant information to help address key questions about which students are on track to meet important standards and who may need additional assistance.

Assessments that identify early any students at risk of missing academic standards are especially useful, as they inform instructional decisions to improve student performance and reduce gaps in achievement. Assessments that do this while taking little time away from instruction are particularly valuable. *Interim assessments*, one of three broad categories of educational assessment,¹ indicate which students are on track to meet later expectations (Perie, Marion, Gong, & Wurtzel, 2007).

This preliminary linking study applied results from two interim assessments, Renaissance Star Reading® and Renaissance Star Math®, to help you predict whether individual students are on track or need more assistance to succeed on the year-end summative Performance Evaluation for Alaska's Schools (PEAKS) tests in English Language Arts (ELA) and mathematics in grades 3 through 10.²

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Preliminary Study

To determine if Star Reading and Star Math can predict student achievement on the end-of-year PEAKS tests in ELA and mathematics, we conducted a preliminary linking of Star Reading and Star Math to the PEAKS assessments.

We began by obtaining statewide performance level distribution data for the PEAKS from the public data provided in the 2016–2017 Report Card to the Public provided by the Alaska Department of Education & Early Development. The information included the percentage of students tested in each grade who were *Far Below Proficient*, *Below Proficient*, *Proficient*, and *Advanced*.

Next, we gathered all Star Reading and Star Math test records from 2016–2017 for Alaska. The reading sample included 6,819 Star Reading students from 67 schools. The math sample included 3,170 Star Math students from 47 schools.

Renaissance then conducted a preliminary linking of the Star test scale to the PEAKS by applying equipercentile linking analysis (Kolen & Brennan, 2004). We analyzed the distribution of Star scores to determine the scaled score corresponding to the same statewide percentile as a specific PEAKS level. The

¹ **Formative assessments** are short and frequent processes, embedded in instruction, that support learning and provide specific feedback on what students know and can do versus where gaps in knowledge exist. **Summative assessments** evaluate whether students have met a set of standards, and serve most commonly as year-end state-mandated tests. **Interim assessments** represent the middle ground, in terms of duration and frequency and can serve purposes including informing instruction, evaluating curriculum and student responsiveness to intervention, and forecasting performance on high-stakes summative year-end tests.

² Technical manuals are available for Star Reading and Star Math by request to research@renaissance.com.

preliminary cut scores presented in Table 1 represent the scaled scores corresponding to the statewide percentile of each PEAKS level.

PEAKS cut scores and corresponding preliminary Star score equivalents

PEAKS results are reported in scaled scores that are split into four achievement levels: *Far Below Proficient*, *Below Proficient*, *Proficient*, and *Advanced*. The main purpose of this study was to identify preliminary Star scores at the time of the state test that are approximately equivalent to the cut-off scores that separate the PEAKS levels. Table 1 displays these equivalent preliminary Star scores at the time of the state test for grades 3–10.³ The corresponding PEAKS cut scores can be found in Appendix B.

Table 1. Preliminary Star Reading® and Star Math® score equivalents at time of state test for each PEAKS achievement level range

Preliminary Star Reading® cut-score equivalents				
Grade	Far Below Proficient	Below Proficient	Proficient	Advanced
3	< 289	289 – 459	460 – 675	≥ 676
4	< 367	367 – 522	523 – 721	≥ 722
5	< 378	378 – 575	576 – 937	≥ 938
6	< 445	445 – 632	633 – 1083	≥ 1084
7	< 446	446 – 633	634 – 1084	≥ 1085
8	< 465	465 – 752	753 – 1234	≥ 1235
9	< 474	474 – 753	754 – 1235	≥ 1236
10	< 509	509 – 758	759 – 1277	≥ 1278
Preliminary Star Math® cut-score equivalents				
Grade	Far Below Proficient	Below Proficient	Proficient	Advanced
3	< 453	453 – 584	585 – 676	≥ 677
4	< 510	510 – 641	642 – 752	≥ 753
5	< 520	520 – 692	693 – 826	≥ 827
6	< 566	566 – 745	746 – 859	≥ 860
7	< 578	578 – 752	753 – 898	≥ 899
8	< 616	616 – 811	812 – 917	≥ 918
9	< 619	619 – 812	813 – 925	≥ 926
10	< 689	689 – 859	860 – 926	≥ 927

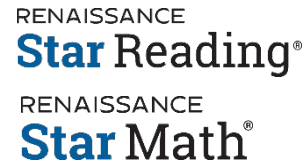
Next Steps

The cut-score equivalents presented in Table 1 are preliminary estimates of the Star Reading and Star Math scores corresponding with each PEAKS performance level and will be refined as more data become available. To learn more about the next steps for the PEAKS linking study or contribute data to support this linking project, please contact the Research Department at research@renaissance.com.

³ The preliminary Star Reading and Star Math cut-score equivalents presented in Table 1 apply only to the time of the state test. Some Renaissance reports adjust the Star Reading and Star Math cut-score equivalents based on date.

Appendix A: About Star Reading® and Star Math®

The computer-adaptive Star Reading and Star Math assessments serve multiple purposes including screening, progress monitoring, instructional planning, forecasting proficiency, standards mastery, and measuring growth. These highly reliable, valid, and efficient standards-based measures of student performance in reading and math provide valuable information regarding the acquisition of skills along a continuum of learning expectations. The assessments can be completed in about 20 minutes, and we recommend administering them two to five times a year for most purposes and more frequently when used for progress monitoring.



Star Reading and Star Math are highly rated for academic screening and academic progress monitoring by the National Center on Intensive Intervention.

National Center on
INTENSIVE INTERVENTION

at American Institutes for Research ■

Appendix B: PEAKS achievement levels

Table B1. PEAKS achievement level score ranges

PEAKS achievement level score ranges: ELA				
Grade	Far Below Proficient	Below Proficient	Proficient	Advanced
3	400 – 463	464 – 499	500 – 541	542 – 600
4	400 – 467	468 – 499	500 – 537	538 – 600
5	400 – 463	464 – 499	500 – 547	548 – 600
6	400 – 472	473 – 499	500 – 550	551 – 600
7	400 – 470	471 – 499	500 – 545	546 – 600
8	400 – 468	469 – 499	500 – 540	541 – 600
9	400 – 470	471 – 499	500 – 534	535 – 600
10	400 – 469	470 – 499	500 – 534	535 – 600
PEAKS achievement level score ranges: Mathematics				
Grade	Far Below Proficient	Below Proficient	Proficient	Advanced
3	400 – 457	458 – 499	500 – 553	554 – 600
4	400 – 459	460 – 499	500 – 558	559 – 600
5	400 – 461	462 – 499	500 – 567	568 – 600
6	400 – 453	454 – 499	500 – 553	554 – 600
7	400 – 450	451 – 499	500 – 558	559 – 600
8	400 – 447	448 – 499	500 – 561	562 – 600
9	400 – 449	450 – 499	500 – 569	570 – 600
10	400 – 444	445 – 499	500 – 567	568 – 600

References

- Kolen, M. J., & Brennan, R. R. (2004). *Test equating scaling and linking: Methods and practices*. New York, NY: Springer Science+Business Media.
- Perie, M., Marion, S., Gong, B., & Wurtzel, J. (2007). *The role of interim assessments in a comprehensive assessment system*. Aspen, CO: Aspen Institute.
- Renaissance Learning. (2018a). *Star Math technical manual*. Wisconsin Rapids, WI: Author. Available by request to research@renaissance.com
- Renaissance Learning. (2018b). *Star Reading technical manual*. Wisconsin Rapids, WI: Author. Available by request to research@renaissance.com

Independent technical reviews of Star Reading® and Star Math®

- U.S. Department of Education: National Center on Intensive Intervention. (2018a). *Review of academic progress monitoring tools* [Review of Star Math]. Washington, DC: Author. Retrieved from <https://charts.intensiveintervention.org/chart/progress-monitoring>
- U.S. Department of Education: National Center on Intensive Intervention. (2018b). *Review of academic progress monitoring tools* [Review of Star Reading]. Washington, DC: Author. Retrieved from <https://charts.intensiveintervention.org/chart/progress-monitoring>
- U.S. Department of Education: National Center on Intensive Intervention. (2018c). *Review of academic screening tools* [Review of Star Math]. Washington, DC: Author. Retrieved from <https://charts.intensiveintervention.org/chart/academic-screening>
- U.S. Department of Education: National Center on Intensive Intervention. (2018d). *Review of academic screening tools* [Review of Star Reading]. Washington, DC: Author. Retrieved from <https://charts.intensiveintervention.org/chart/academic-screening>
- U.S. Department of Education: National Center on Response to Intervention. (2010a). *Review of progress monitoring tools* [Review of STAR Math]. Washington, DC: Author. Retrieved from <https://web.archive.org/web/20120813035500/http://www.rti4success.org/pdf/progressMonitoringGOM.pdf>
- U.S. Department of Education: National Center on Response to Intervention. (2010b). *Review of progress monitoring tools* [Review of STAR Reading]. Washington, DC: Author. Retrieved from <https://web.archive.org/web/20120813035500/http://www.rti4success.org/pdf/progressMonitoringGOM.pdf>
- U.S. Department of Education: National Center on Response to Intervention. (2011a). *Review of screening tools* [Review of STAR Math]. Washington, DC: Author. Retrieved from <https://web.archive.org/web/20171027185735/http://www.rti4success.org:80/resources/tools-charts/screening-tools-chart>
- U.S. Department of Education: National Center on Response to Intervention. (2011b). *Review of screening tools* [Review of STAR Reading]. Washington, DC: Author. Retrieved from <https://web.archive.org/web/20171027185735/http://www.rti4success.org:80/resources/tools-charts/screening-tools-chart>