RENAISSANCE LEARNING

Using STAR™ Data for Progress Monitoring and Specific Learning Disability Identification

Introduction

Renaissance Learning™ strongly supports the data-driven decision making approach commonly known as Response to Intervention (RTI). As more states adopt the RTI process for identifying students with specific learning disabilities (SLD), educators are asking how STAR assessments fit within the RTI process.

According to RTI experts, a variety of test types, including computer-adaptive tests, can be used for RTI. (Kovaleski, VanDerHeyden, Shapiro, 2013). STAR Early Literacy™, STAR Reading™, and STAR Math™ are computer-adaptive assessments that generate valid and reliable data for screening and progress monitoring (Shapiro, 2011; Shapiro and Dennis, 2014; Shapiro and Gibbs, 2014; US DOE, 2010, 2011, and 2012).

Since 2008, when the US Department of Education created the National Center on Response to Intervention, and later the National Center for Intensive Intervention, to evaluate screening and progress monitoring tools, STAR assessments have continuously met high standards for reliability and validity.

Further, current research has found both STAR Reading and STAR Math to be sensitive to incremental growth and, therefore, will detect student development throughout the year in reading comprehension, math calculation and math problem solving (Shapiro and Gibbs, 2014; Shapiro and Dennis, 2014).

STAR assessments are general outcome measures that can be used to directly assess and progress monitor three of the eight areas of specific learning disabilities: reading comprehension, math calculation, and math problem solving[1].

- STAR Reading—reading comprehension; valid estimate of oral reading fluency for grades 1-4
- STAR Math—math calculation and/or math problem solving; To understand how the STAR Math scaled score accurately reflects both computation and problem solving, see page 18 of the STAR Math Technical Manual. This section explains that research conducted during item calibration demonstrated that STAR Math items in various strands were strongly unidimensional, thus justifying the use of a single scaled score for reporting purposes (Renaissance Learning, 2014).
- STAR Early Literacy—there is strong evidence that STAR Early Literacy is an accurate measure of early reading behavior. It is a general outcome measure that includes items in general readiness, phonemic awareness, phonics, vocabulary, comprehension, and structural analysis. STAR Early Literacy also provides a very valid estimate of oral reading fluency for grades 1-3. As such, STAR Early Literacy can be used as a basic reading or fluency indicator within a body of evidence.

[1] According to the federal Individuals with Disabilities Education Act (IDEA) of 2004 (Section 300.8(c)(10), the eight areas of specific learning disabilities are: oral expression, listening comprehension, written expression, basic reading skill, reading fluency skills, reading comprehension, math calculation, and math problem solving/ reasoning. *http://www2.ed.gov/legislation/FedRegister/finrule/2006-3/081406a.html*

RENAISSANCE LEARNING

Different scores for different purposes

There are several types of scores in STAR and they are used in different reports and for different purposes. Scaled scores determine a student's placement in the learning progression. Instructional decisions should be based on that placement as reflected in the record book, the diagnostic reports, and the instructional planning reports. Goals are then set and monitored using scaled scores and research-based growth norms as calculated in the goal-setting wizard and reported on the progress monitoring report.

Here, you'll learn how to combine scaled scores with suggested skills or skill and domain scores for a holistic approach to progress monitoring with STAR assessments.

For Response to Intervention, the following STAR reports are suggested. For more explanation, see Table 1.

- Progress Monitoring, grades 1-12: STAR Reading/STAR Math, Student Progress Monitoring Report
- Progress Monitoring, grades K-3: STAR Early Literacy, Student Progress Monitoring Report
- Informing instruction, grades 1-12: STAR Reading/STAR Math, Instructional Planning Report; record book
- Informing instruction, Pre-K-1 (also, students in higher grades still working on foundational skills): STAR Early Literacy, Diagnostic Report

Table 1. Different scores for different purposes

	Scaled Score	Skill and Domain Scores
Reports to use for RTI	• Instructional Planning Report/Record Book • Student Progress Monitoring Report	• Diagnostic Report
Description	• Most important score • Ties to all other scores • STAR Reading/STAR Math scale is 0–1400 • STAR Early Literacy scale is 300–900	• Estimate of student proficiency in content and skills at grade level • Scale is 1–99
Purpose	• Measure growth • Monitor progress • Placement into learning progression	• Inform instruction at grade level • Reflect growth in grade specific skills
Grade level or developmental level	• Informs instruction at developmental level for all STAR assessments	• Informs instruction at grade level for STAR Reading and STAR Math • Informs instruction at developmental level for STAR Early Literacy
How it informs instruction	• Statistically linked to learning progression • Provides entry point into a teachable order of skills students are likely ready to learn	• Estimate of performance across skills and domains
How it is determined	• Raw score that is based on difficulty of the questions presented to the student and whether or not the student answered correctly	• Based on scaled score • Represents percent of grade level[2] items in STAR item bank a student is estimated to get correct if administered every item in the bank[3]

[2] Grade level items for STAR Reading and STAR Math. K-3 items for STAR Early Literacy.

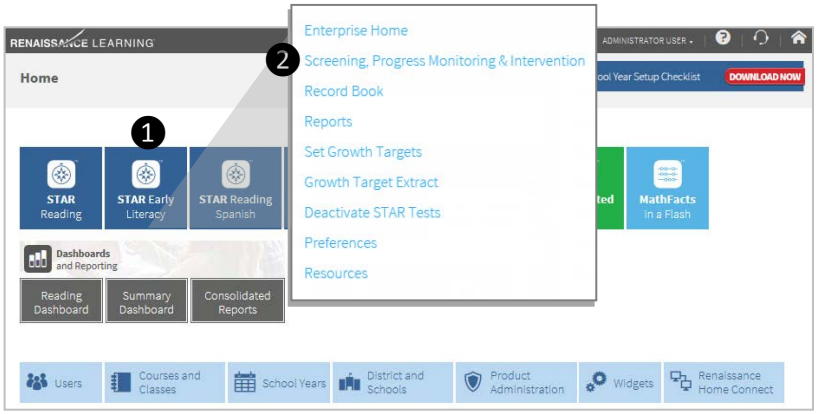
[3] STAR is a 'living test.' New items are continuously added to the item bank.

RENAISSANCE LEARNING

Step 1: Setting goals for progress monitoring

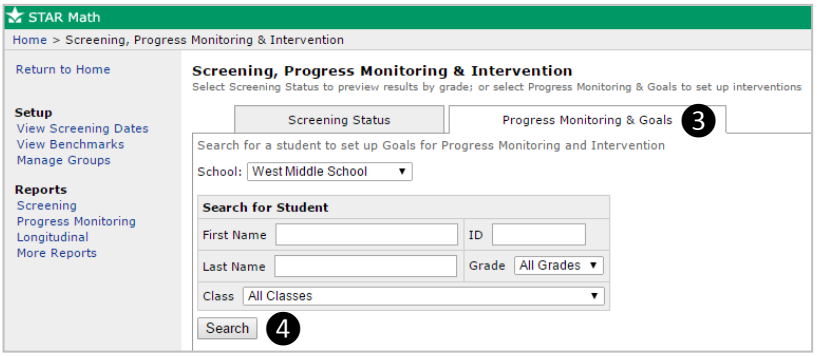
1. In Renaissance Place™, choose STAR Early Literacy, STAR Reading, or STAR Math. (For STAR 360™ customers, choose Early Literacy Assessments, Reading Assessments, or Math Assessments.)

2. Then select **Screening, Progress Monitoring, & Intervention**.



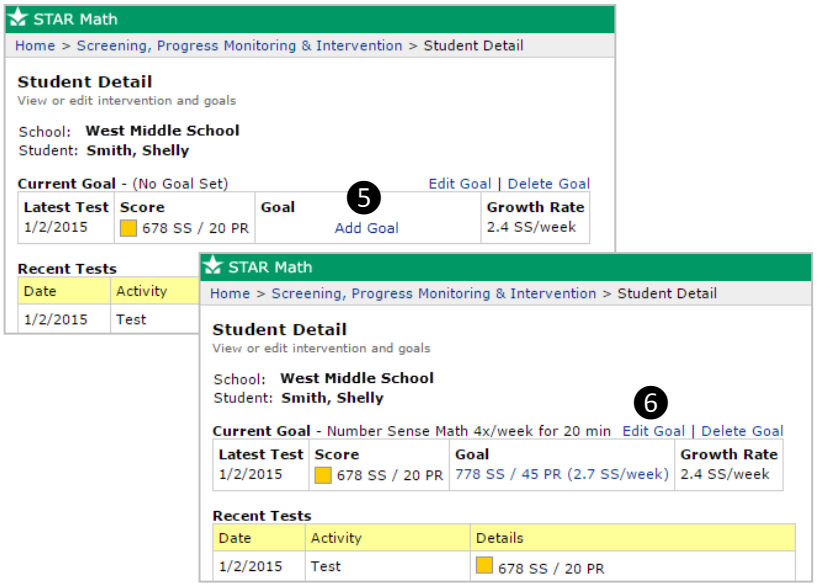
3. Select the **Progress Monitoring & Goals tab**.

4. Enter student information under Search for Student and click **Search**. Click the student's name.



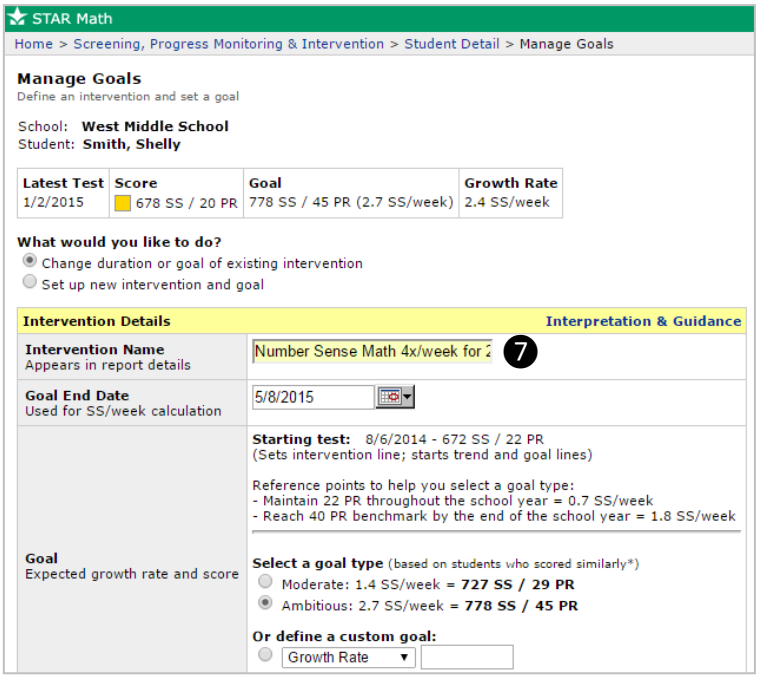
5. To set up a new intervention and goal, click **Add Goal**.

6. To change the duration or goal of an existing intervention, click **Edit Goal**.

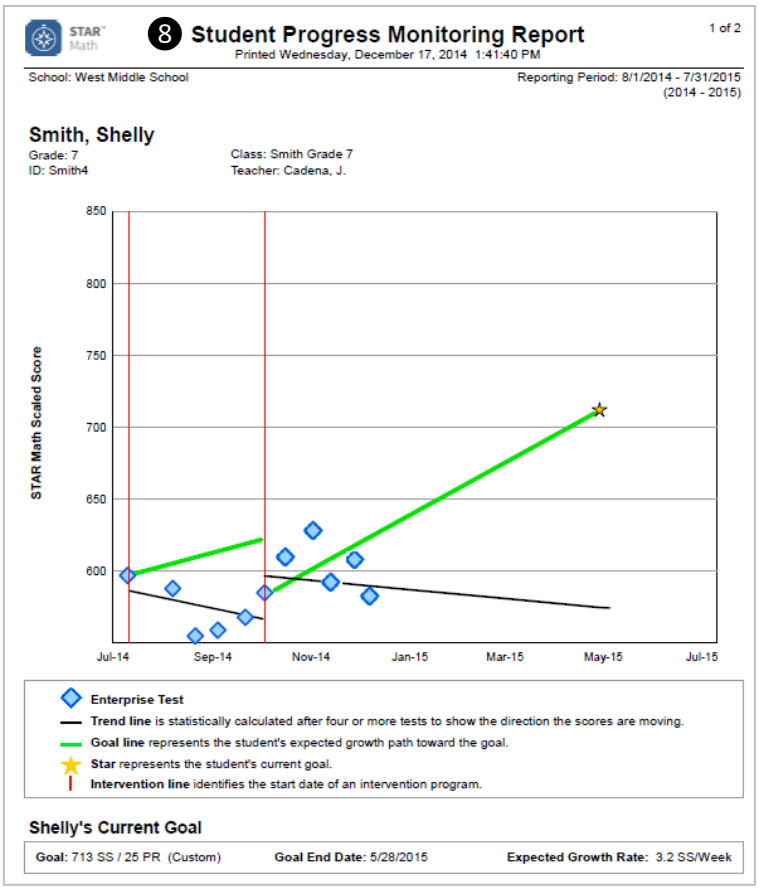


RENAISSANCE LEARNING

7 Enter intervention details.



8 Run the **Student Progress Monitoring Report**. Weekly growth rates are reported on page two of the report after four tests are taken. The more weeks of testing, the more the fluctuations in growth rates will level out.



More about STAR weekly growth rates and rate of improvement:

Weekly growth rates indicate the scaled score change by which students can be expected to grow per week. To calculate the trend line on this Progress Monitoring Report, also known as the rate of improvement or slope, STAR uses an ordinary least squares regression equation.

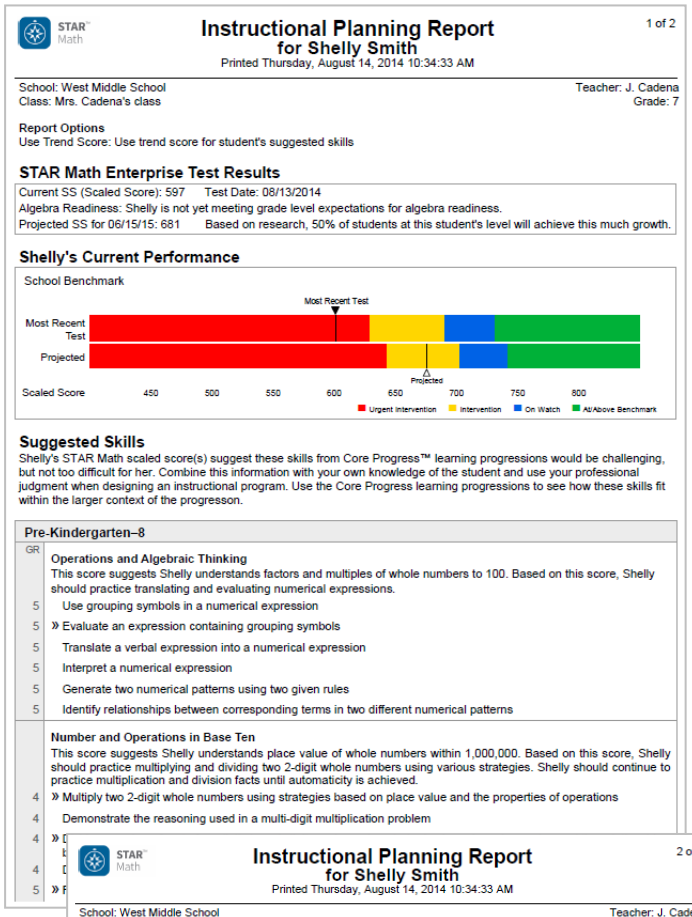
To learn more about setting interventions and goals or weekly growth rates in scaled scores, see the Interpretation and Guidance document.[4]

[4] http://doc.renlearn.com/KMNet/R004381110GJ1C9F.pdf

RENAISSANCE LEARNING

Step 2: Connecting scaled scores with learning progressions

In STAR assessments, progress monitoring data is automatically connected to a learning progression. Instructional decisions are based on suggested skills from the learning progression, included on the Instructional Planning Report.



STAR Math

Instructional Planning Report
for Shelly Smith
Printed Thursday, August 14, 2014 10:34:33 AM

1 of 2

School: West Middle School
Class: Mrs. Cadena's class

Teacher: J. Cadena
Grade: 7

Report Options
Use Trend Score: Use trend score for student's suggested skills

STAR Math Enterprise Test Results

Current SS (Scaled Score): 597 Test Date: 08/13/2014
Algebra Readiness: Shelly is not yet meeting grade level expectations for algebra readiness.
Projected SS for 06/15/15: 681 Based on research, 50% of students at this student's level will achieve this much growth.

Shelly's Current Performance

School Benchmark

Most Recent Test
Projected
Scaled Score 450 500 550 600 650 700 750 800
Urgent Intervention | Intervention | On Watch | At/Above Benchmark

Suggested Skills
Shelly's STAR Math scaled score(s) suggest these skills from Core Progress™ learning progressions would be challenging, but not too difficult for her. Combine this information with your own knowledge of the student and use your professional judgment when designing an instructional program. Use the Core Progress learning progressions to see how these skills fit within the larger context of the progresson.

Pre-Kindergarten–8

GR

Operations and Algebraic Thinking
This score suggests Shelly understands factors and multiples of whole numbers to 100. Based on this score, Shelly should practice translating and evaluating numerical expressions.

5 Use grouping symbols in a numerical expression
5 » Evaluate an expression containing grouping symbols
5 Translate a verbal expression into a numerical expression
5 Interpret a numerical expression
5 Generate two numerical patterns using two given rules
5 Identify relationships between corresponding terms in two different numerical patterns

Number and Operations in Base Ten
This score suggests Shelly understands place value of whole numbers within 1,000,000. Based on this score, Shelly should practice multiplying and dividing two 2-digit whole numbers using various strategies. Shelly should continue to practice multiplication and division facts until automaticity is achieved.

4 » Multiply two 2-digit whole numbers using strategies based on place value and the properties of operations
4 Demonstrate the reasoning used in a multi-digit multiplication problem

STAR Math

Instructional Planning Report
for Shelly Smith
Printed Thursday, August 14, 2014 10:34:33 AM

2 of 2

School: West Middle School
Class: Mrs. Cadena's class

Teacher: J. Cadena
Grade: 7

Pre-Kindergarten–8

GR

Number and Operations in Base Ten
5 » Divide a whole number of up to four digits by a 2-digit whole number using strategies based on place value and the relationship between multiplication and division

Measurement and Data
This score suggests Shelly understands how to solve problems with the same and different area and perimeter of rectangles. Based on this score, Shelly should practice measuring and sketching angles of specified measure.

4 WP: Solve a problem using the area and perimeter formulas for rectangles (P)
4 Represent measurement data with a line plot that has a fractional scale to eighths
4 Solve a problem involving addition or subtraction of fractions by using information presented in a line plot with a fractional scale to eighths
4 Recognize an angle as a geometric shape that is formed wherever two rays share a common endpoint
4 Measure an angle in whole-number degrees using a protractor
4 Sketch an angle of specified measure
4 Solve an addition or subtraction problem to find an unknown angle measure on a diagram

Geometry
This score suggests Shelly understands how to name, identify, and draw basic geometric elements. Based on this score, Shelly should practice drawing and identifying a line of symmetry in figures.

4 Classify a 2-dimensional figure
4 Identify a line-symmetric figure
4 Explain why a figure is line-symmetric
4 » Draw a line of symmetry (C)
5 Define elements of the coordinate system

Number and Operations — Fractions
This score suggests Shelly understands how to add or subtract fractions with like denominators. Based on this score, Shelly should practice performing operations with fractions or mixed numbers with unlike denominators.

4 WP: Multiply a fraction by a whole number
4 Convert a fraction in tenths to an equivalent fraction in hundredths
4 Add two fractions with unlike denominators of 10 and 100 using equivalent fractions
4 » Express a fraction with a denominator of 10 or 100 as a decimal
4 » Compare two decimals through hundredths using standard symbols
4 Justify the result of a comparison of two decimals through hundredths
5 » Add or subtract fractions or mixed numbers with unlike denominators

Student example:

i. Begin with scaled score

Shelly Smith, a 7th grade student, achieved a scaled score of 597 in STAR Math during fall screening. Using the Instructional Planning Report, we know that Shelly is performing between a 4th and 5th grade level.

ii. Connect scaled scores with skills

Shelly's teacher plans an intervention and sets a goal for her (see example from previous pages).

The suggested skills listed on the Instructional Planning Report are where a scaled score of 597 places Shelly on the math learning progression, which includes both problem solving and computation skills. For example, "Draw a line of symmetry" (computation (C)) and "Word Problem: solve a problem using the area and perimeter formulas for rectangles" (problem solving (P)).

The ***focus skills*** (denoted by ») are the most critical skills to learn at each grade level. While not a recipe for intervention, they are helpful for informing intervention as they are skills specific to Shelly's developmental level.

iii. A holistic approach: using scaled scores to connect with skills and to progress monitor

As Shelly continues in the intervention, her teacher uses the Instructional Planning Report from fall, winter, and/or spring screening to ensure Shelly is working on skills appropriate to her developmental level.

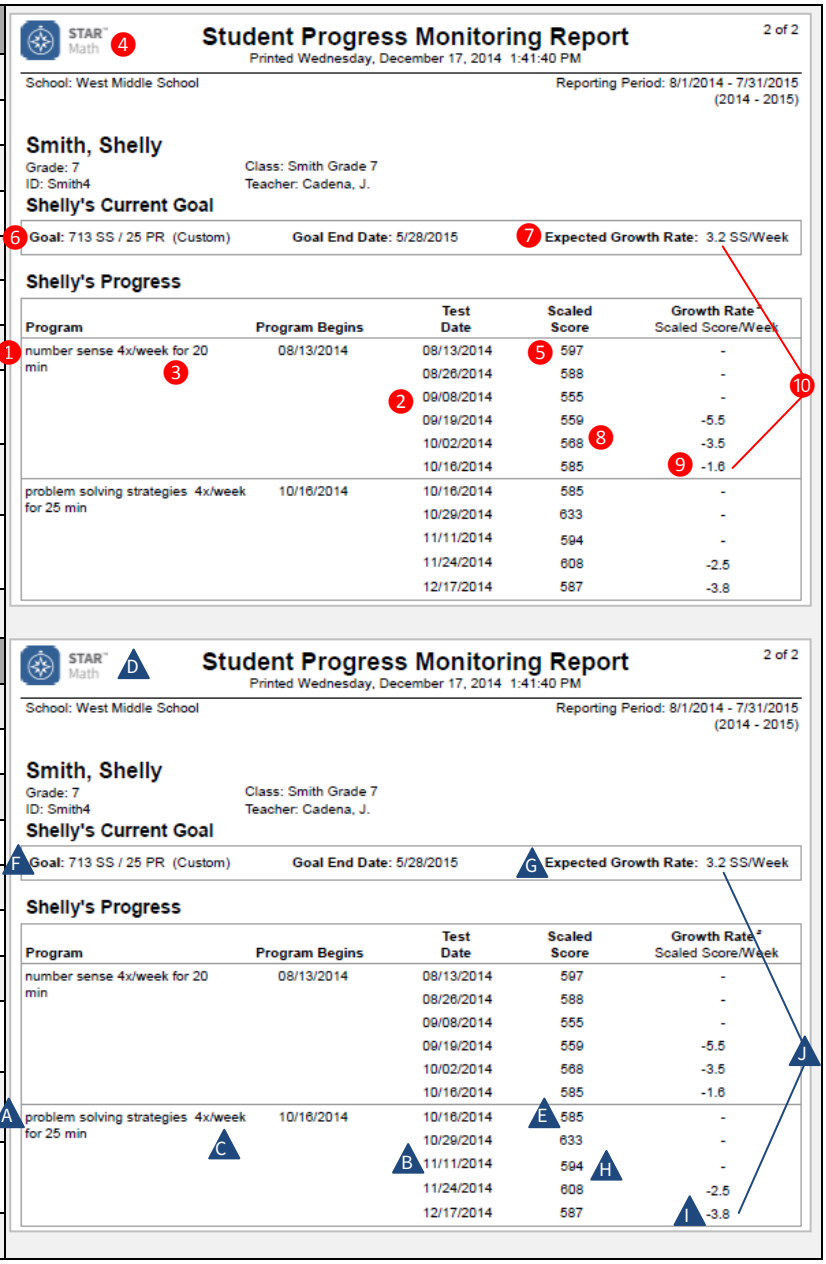
Her teacher uses the Student Progress Monitoring Report more frequently to determine if Shelly is responding to intervention. If she is not showing improvement, her teacher will adjust the intervention and continue to monitor her progress. Research from RTI experts suggests the duration of eight to 15 weeks for an intervention (Ardoin et al., 2013).

RENAISSANCE LEARNING

Step 3: Progress monitoring and SLD identification

This example[5] shows how to use the Student Progress Monitoring Report within RTI-based progress monitoring and for SLD identification. Kovalski, VanDerHeyden, and Shapiro (2013) include an example of Rate of Improvement progress monitoring with STAR on pp. 65-67 in *The RTI Approach to Evaluating Learning Disabilities*.

Intervention 1	
1 Name	number sense
2 Dates	September-October 2014
3 Frequency	4 times per week
3 Duration	20 minutes per session
4 Measure	STAR Math
5 Baseline	597 scaled score
6 Goal score	713 scaled score
7 Goal rate of improvement	3.2 scaled scores per week
8 Weekly scores	597, 588, 555, 559, 568, 585 (bi-weekly testing)
9 Rate of improvement	-1.6 scaled scores per week[6]
10 Goal met?	No
Intervention 2	
A Name	Problem solving strategies
B Dates	October 2014 – January 2015
C Frequency	4 times per week
C Duration	30 minutes per session
D Measure	STAR Math
E Baseline	585 scaled score
F Goal score	713 scaled score
G Goal rate of improvement	3.2 scaled scores per week
H Weekly scores	585, 633, 594, 608, 587 (bi-weekly testing)
I Rate of improvement	-3.8 scaled scores per week
J Goal met?	No



STAR Math 4 — **Student Progress Monitoring Report** — 2 of 2

Printed Wednesday, December 17, 2014 1:41:40 PM

School: West Middle School — Reporting Period: 8/1/2014 - 7/31/2015 (2014 - 2015)

Smith, Shelly

Grade: 7 — Class: Smith Grade 7

ID: Smith4 — Teacher: Cadena, J.

Shelly's Current Goal

6 **Goal:** 713 SS / 25 PR (Custom) — **Goal End Date:** 5/28/2015 — 7 **Expected Growth Rate:** 3.2 SS/Week

Shelly's Progress

Program	Program Begins	Test Date	Scaled Score	Growth Rate* Scaled Score/Week
1 number sense 4x/week for 20 min 3	08/13/2014	08/13/2014	5 597	-
		08/26/2014	588	-
		2 09/08/2014	555	-
		09/19/2014	559	-5.5
		10/02/2014	568 8	-3.5
		10/16/2014	585	9 -1.6
problem solving strategies 4x/week for 25 min	10/16/2014	10/16/2014	585	-
		10/29/2014	633	-
		11/11/2014	594	-
		11/24/2014	608	-2.5
		12/17/2014	587	-3.8

10

STAR Math D — **Student Progress Monitoring Report** — 2 of 2

Printed Wednesday, December 17, 2014 1:41:40 PM

School: West Middle School — Reporting Period: 8/1/2014 - 7/31/2015 (2014 - 2015)

Smith, Shelly

Grade: 7 — Class: Smith Grade 7

ID: Smith4 — Teacher: Cadena, J.

Shelly's Current Goal

F **Goal:** 713 SS / 25 PR (Custom) — **Goal End Date:** 5/28/2015 — G **Expected Growth Rate:** 3.2 SS/Week

Shelly's Progress

Program	Program Begins	Test Date	Scaled Score	Growth Rate* Scaled Score/Week
number sense 4x/week for 20 min	08/13/2014	08/13/2014	597	-
		08/26/2014	588	-
		09/08/2014	555	-
		09/19/2014	559	-5.5
		10/02/2014	568	-3.5
		10/16/2014	585	-1.6
A problem solving strategies 4x/week for 25 min C	10/16/2014	10/16/2014	E 585	-
		10/29/2014	633	-
		B 11/11/2014	594 H	-
		11/24/2014	608	-2.5
		12/17/2014	587	I -3.8

J

[5] This example is adapted from the National Center on Learning Disability. http://www.rtinetwork.org/images/TOOLKIT/rti-based_sld_determination_worksheet_11__16.pdf

[6] STAR uses an ordinary least squares regression equation to calculate rate of improvement.

RENAISSANCE LEARNING

Citations

Ardoin, S. P., Christ, T. J., Morena, L. S., Cormier, D. C., & Klingbeil, D. A. (2013). A systematic review and summarization of the recommendations and research surrounding Curriculum-Based Measurement of oral reading fluency (CBM-R) decision rules. *Journal of school psychology*, *51*(1), 1–18.

Kovaleski, J., VanDerHeyden, A. M., & Shapiro, E. S. (2013). *The RTI approach to evaluating learning disabilities*. New York: Guilford Publications.

Renaissance Learning. (2014a). *STAR Early Literacy benchmarks, cut scores, and growth rates*. Wisconsin Rapids, WI: Author. Retrieved from https://resources.renlearnrp.com/us/STAREarlyLiteracy/SELRTICutScores.pdf

Renaissance Learning. (2014b). *STAR Math benchmarks, cut scores, and growth rates*. Wisconsin Rapids, WI: Author. Retrieved from https://resources.renlearnrp.com/us/STARMath/SMRTICutScores.pdf

Renaissance Learning. (2014c). *STAR Reading benchmarks, cut scores, and growth rates*. Wisconsin Rapids, WI: Author. Retrieved from https://resources.renlearnrp.com/us/STARReading/SRRTICutScores.pdf

RTI Action Network. (2014). *RTI-based specific learning disability determination worksheet*. Retrieved from http://www.rtinetwork.org/images/TOOLKIT/rti-based_sld_determination_worksheet_11__16.pdf

Shapiro, E. S., & Dennis, M. S. (2014, February). *Comparing computer adaptive and curriculum-based measurement methods for monitoring mathematics*. Poster presented at the 22nd Pacific Coast Research Conference, San Diego, CA.

Shapiro, E. S., & Gibbs, D. P. (2014). *Comparison of progress monitoring with computer adaptive tests and curriculum based measures*. Bethlehem, PA: Center for Promoting Research to Practice, Lehigh University. Available online from http://doc.renlearn.com/KMNet/R0057324CE9DD5FD.pdf

U.S. Department of Education: National Center on Intensive Intervention. (2012). *Review of progress monitoring tools*. Washington, DC: Author. Available online from http://www.intensiveintervention.org/chart/progress-monitoring

U.S. Department of Education: National Center on Response to Intervention. (2011). *Review of screening tools*. Washington, DC: Author. Available online from http://www.rti4success.org/resources/tools-charts/screening-tools-chart

U.S. Department of Education: National Center on Response to Intervention. (2010). *Review of progress-monitoring tools*. Washington, DC: Author. Available online from https://web.archive.org/web/20120813035500/http://www.rti4success.org/pdf/progressMonitoringGOM.pd

PO Box 8036 | Wisconsin Rapids, WI 54495-8036 | (800) 338-4204 | www.renaissance.com