



QUANTILE[®] FRAMEWORK FOR MATHEMATICS



QUANTILE[®] MEASURES OVERVIEW

What is the Quantile Framework?

A Universal Measure for Students and Mathematics Materials

Quantile measures provide a way to:

- Differentiate instruction with ability-appropriate resources.
- Monitor and track growth.
- Communicate with parents and educators about a student's mathematics ability.

QUANTILE MEASURES FOR STUDENTS

A student's Quantile measure is the numeric representation of a student's mathematics ability. The Quantile scale is a developmental scale ranging from emerging mathematician measures at 400Q below zero for early learners to above 1600Q for advanced abilities. The higher the student's Quantile measure, the greater their mathematics ability.



Over 20 million students from 50 U.S. states and other countries receive Quantile measures from over 40 state and classroom mathematics assessments and programs.

QUANTILE MEASURES FOR MATERIALS

A Quantile measure for mathematics materials is the numeric representation of the difficulty of a mathematics lesson or activity. The higher the material's Quantile measure, the more difficult the mathematics skills and concepts in the materials. The Quantile scale is a developmental scale ranging from measures at 400Q below zero for early math materials to above 1600Q for advanced math materials.



More than 600 math textbooks and software programs with 80,000 lessons and over 3,100 online resources have received Quantile measures.

What makes Quantile measures actionable?

The Quantile Framework for Mathematics is a scientifically valid approach to matching students with mathematics materials they are ready to learn. This match can occur because both students' abilities and mathematics lesson and activity difficulties are measured on the same scale in the same metric. The Quantile scale helps to connect students to mathematics materials at their unique ability levels – both today and as their mathematics abilities grow.

Quantile measures can inform instructional decisions. Connecting students with mathematics materials in their Quantile range helps educators to differentiate instruction. For example, when all students in a classroom are taught the same lesson, Quantile measures help predict which students might need extra help and which ones might need enrichment.

A student's Quantile measure indicates the mathematics material the student is likely to be ready to learn. When a mathematics lesson or activity's Quantile measure matches a student's Quantile measure, the student is expected to have a 50 percent comprehension rate. This means that a student with a Quantile measure of 1030Q is ready to learn a lesson measured at 1030Q. Because mathematics concepts build on one another, a student needs to be ready for the demand of the material, but also needs to have learned and been successful with prerequisite material in the curriculum.

The difference between the Quantile measure of a lesson and a student's Quantile measure gauges how difficult that skill or concept may be for a child to learn.

The image is a composite graphic. On the left is a portrait of a young boy with dark, curly hair wearing a blue t-shirt. To his right is a vertical list of Quantile measures: 1055Q, 1050Q, 1045Q, 1040Q, 1030Q (highlighted in a blue box), 1020Q, 1015Q, 1010Q, and 1000Q. Further right are three mathematical diagrams: a white box with the equation $(3x^2)^3 = 27x^6$, a green trapezoid with the formula $A = b \cdot h$, and a blue trapezoid with the formula $A = \frac{1}{2}(b_1 + b_2)$. At the bottom right is a triangle with a horizontal base, a vertical height line, and an angle of $(2n+10)^\circ$ at the top left and 60° at the top right.

Why trust Quantile measures?

Beginning in 1984, leaders at the National Institute of Child Health and Human Development (NICHD) supported the founding mission of connecting test results with instruction by funding MetaMetrics with a series of grants. That work resulted in MetaMetrics' flagship measurement system, the Lexile® Framework for Reading. In 2006, MetaMetrics developed the Quantile Framework for Mathematics. Much like the Lexile Framework, the Quantile Framework places the mathematics curriculum, teaching resources, and students on a common, developmental scale, enabling educators to match students with instructional materials by readiness level, forecast their understanding, and monitor their progress.

STATES RELY ON OUR METRIC

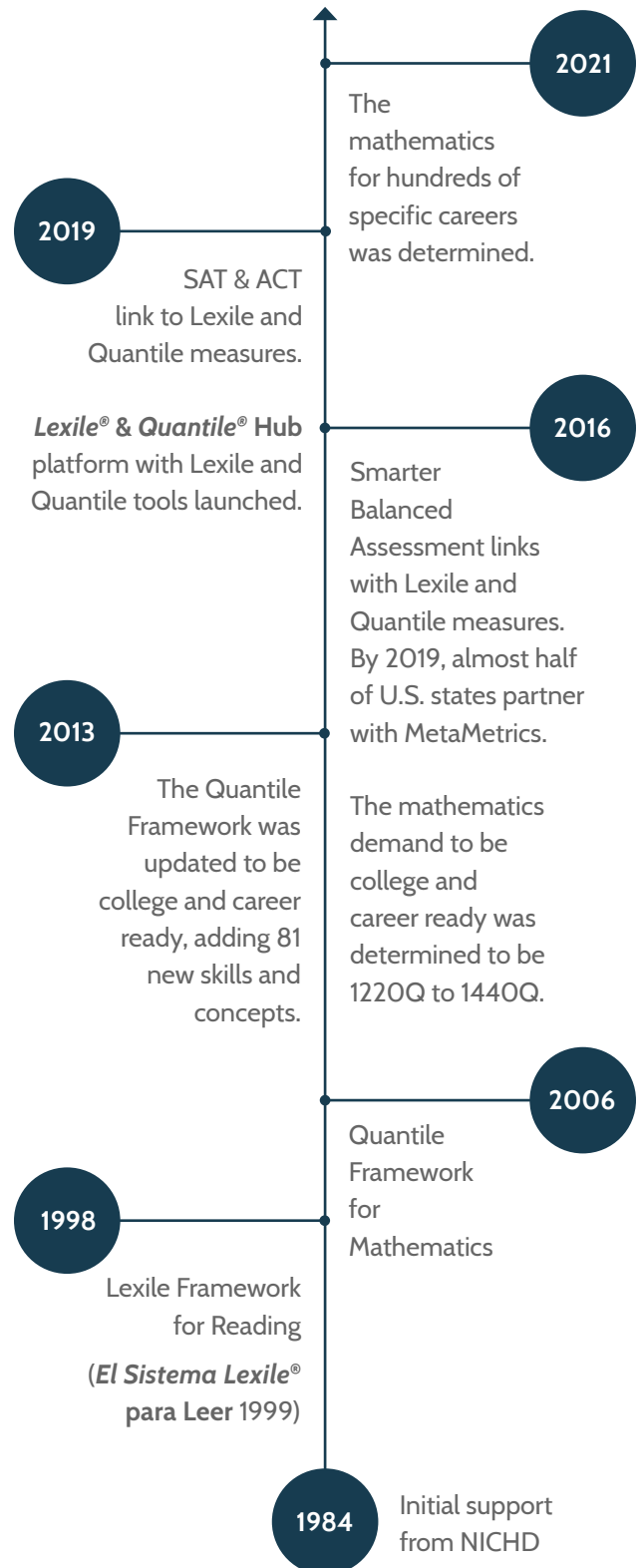
"By providing Lexile and Quantile measures we are able to personalize learning for every child and ensure they graduate prepared for success."

—SUPERINTENDENT MOLLY SPEARMAN
South Carolina Department of Education

"We see these measures as being able to help guide educators as they develop these individual learning strategies."

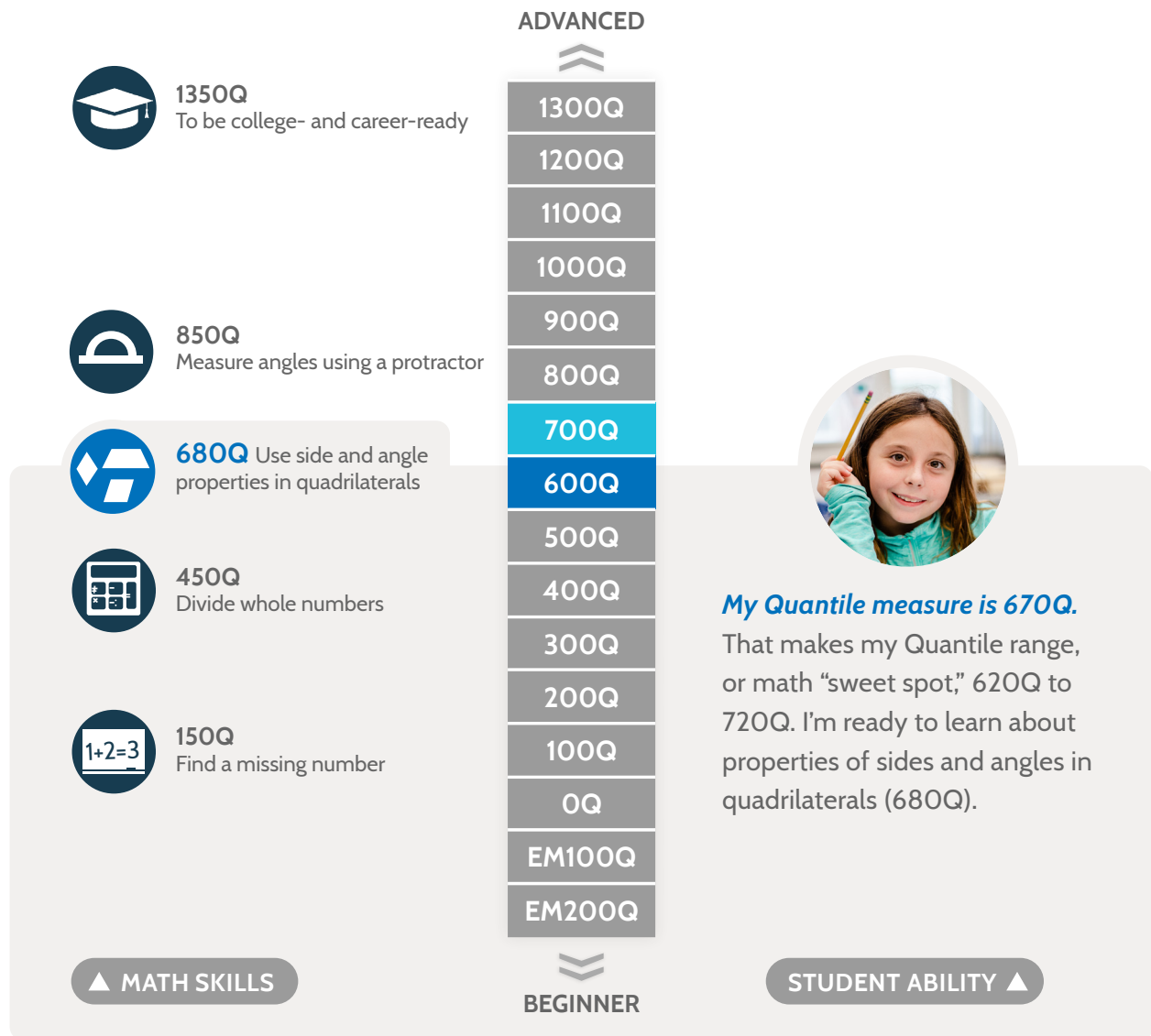
—DR. RANDY WATSON
Kansas Commissioner of Education

THE HISTORY OF METAMETRICS



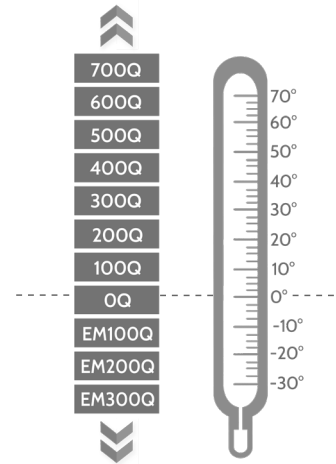
Matching Students With Mathematics Materials

Quantile measures provide valuable information about a student's mathematics ability. For optimal learning and growth, a student should practice mathematics within a Quantile range of 50Q above and 50Q below his or her Quantile measure. For example, a student with a Quantile measure of 670Q would be ready for instruction on mathematics materials that are between 620Q to 720Q.



What about Quantile measures below 0Q?

Emerging Mathematician (EM) is a code given to students and mathematics materials that are below 0Q on the Quantile scale. Just like -10 degrees is higher (warmer) than -30 degrees on a thermometer, a EM100QQ math lesson is more complex than a EM300Q math lesson. The lower the number following the EM code, the more advanced the math ability of the student and the difficulty of the math lesson is. The higher the number, the less complex the lesson of the math ability of the student is.



Once students have Quantile measures, teachers can use the **Quantile[®] Math Skills Database** to easily differentiate instruction for students using targeted, free resources appropriately matched to students by Quantile measure and math content. Teachers can access this tool at hub.lexile.com/math-skills-database. The Math Skills Database is one of many tools available to educators in the Lexile[®] & Quantile[®] Hub.

FIND NEW AND ENHANCED TOOLS AT THE LEXILE & QUANTILE HUB



The Lexile & Quantile Hub is a convenient online platform that provides educators and parents with easy access to more than a dozen math and reading tools. Visit Hub.Lexile.com.



MetaMetrics[®]

Find Us Online

MetaMetricsInc.com

Quantiles.com