Quantiles:

Powerful New Way to Track Student Progress

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Indianapolis, Indiana
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"Algebra class will be important to you later in life because there's going to be a test six weeks from now."

The importance of algebra . . .

Q: **How important is algebra to a student's chance of attending college?**

A: Students who take a **year of algebra** and follow with a **year of geometry** nearly **DOUBLE** their chances of going to college -- by doing that alone!

Students who complete Algebra II are more than twice as likely to **GRADUATE** from college.

College Board and the National Math Panel

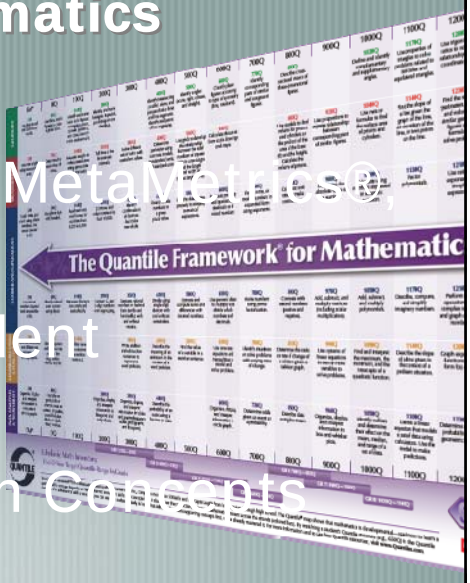
Challenges you face . . .

Which skill is the most difficult for students?

- Create equivalent amounts with different coins and bills 460Q
- Analyze patterns and translate the patterns into another pattern (e.g. from letters to numbers) 460Q
- Divide using single-digit divisors with and without remainders 460Q

The Quantile Framework ™ of Mathematics

- Developed by MetaMetrics®, Inc.
- Measures Student Achievement
- Measures Math Concepts



What is a Quantile Measure

- **Measures Student Achievement**
  A student's overall level of mathematical understanding
- **Measures Math Concepts**
  The "solvability" or difficulty level of math skills and concepts

Results

Effectively link assessment with instruction

Match learners to materials they're ready to learn

The Quantile Framework is NOT:

- An indicator of mastery of specific skills
- A list of mathematical skills
- A curriculum for mathematics
- A mathematics program
- A grade equivalent
- A measurement for a worksheet or a test

Quantiles: A New Way to Connect Assessment and Instruction

Quantiles make test scores "actionable"

- identify how well students will likely be able to solve problems and apply mathematics
- identify which skills and concepts students are ready to learn

Quantiles: A New Way to Connect Assessment and Instruction

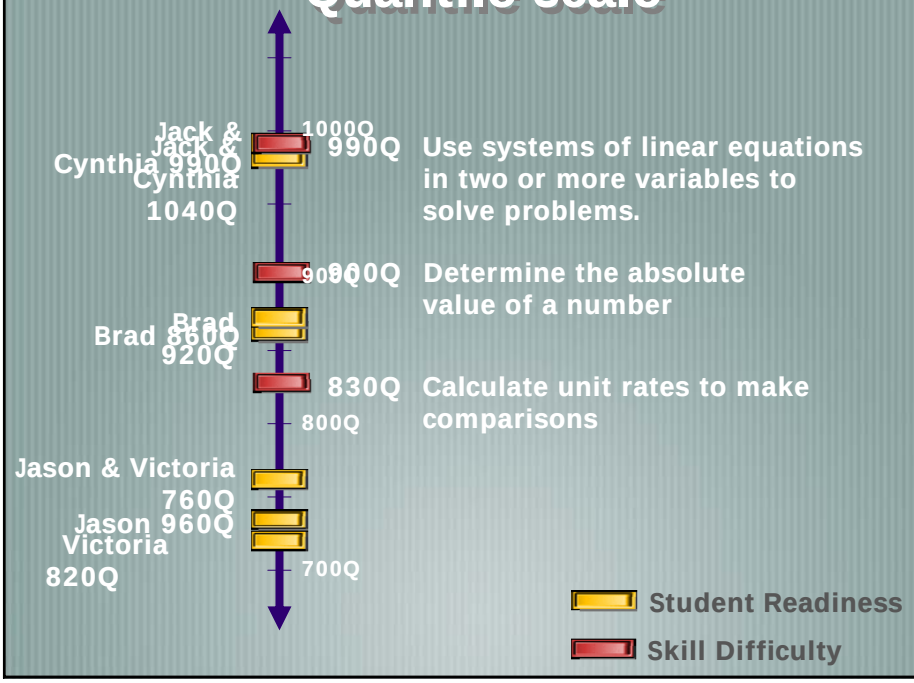
Quantiles make test scores "actionable"

- Facilitates differentiated instruction
- Enables benchmarking

Defining Key Terms

- **Quantile Measure**
  - When applied to Students = *readiness for instruction*
  - When applied to Skills & Concepts = *solvability level*
- **QTaxon**
  - A skill or concept included in the Quantile Framework taxonomy

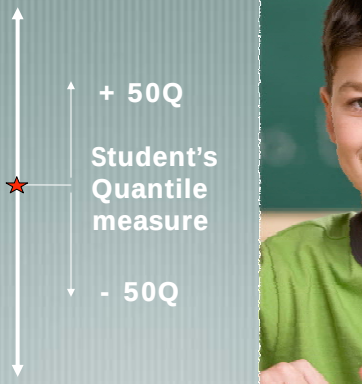
Quantile Scale



Using Quantile Ranges

Student's Instructional Quantile Range

Learning Frontier



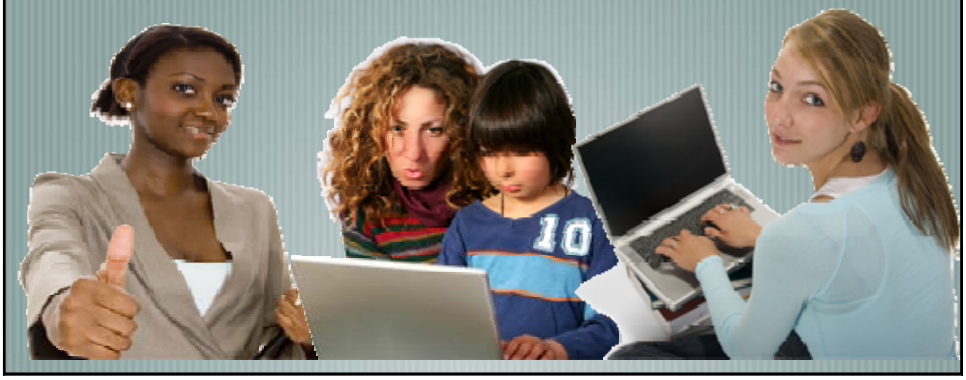
Grade Average Annual Increase for On-level Students

Grade	Annual Increase
2	150Q
3	205Q
4	110Q
5	85Q
6	85Q
7	40Q
8	65Q

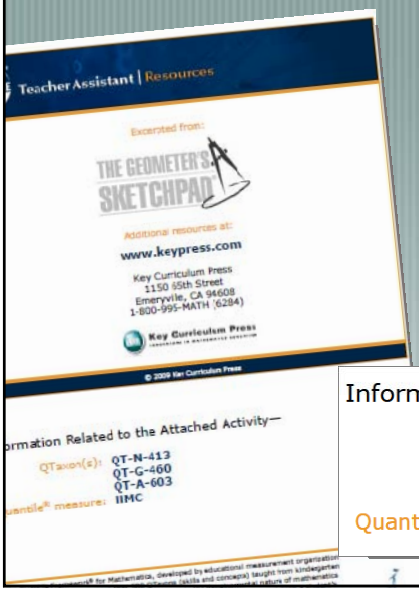
Why Quantiles?

More specific information about individual students

Teachers, parents, & even students



Why Quantiles?



Links assessment to instructions

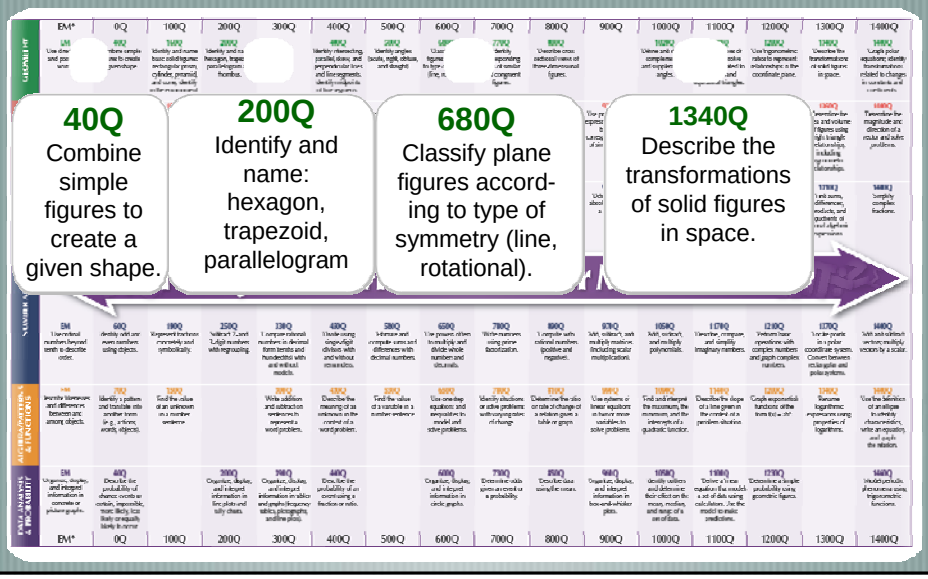
Curriculum, textbooks, & other resources

Information Related to the Attached Activity—

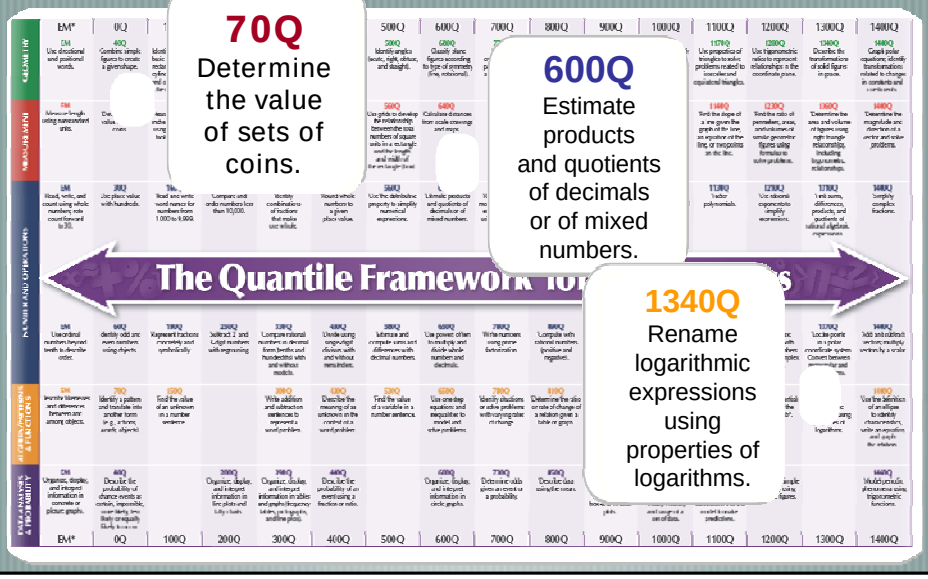
QTaxon(s): **QT-N-413**
QT-G-460
QT-A-603

Quantile® measure: **HMC**

Quantiles: Developmental within a strand



Quantiles: Developmental across the strands



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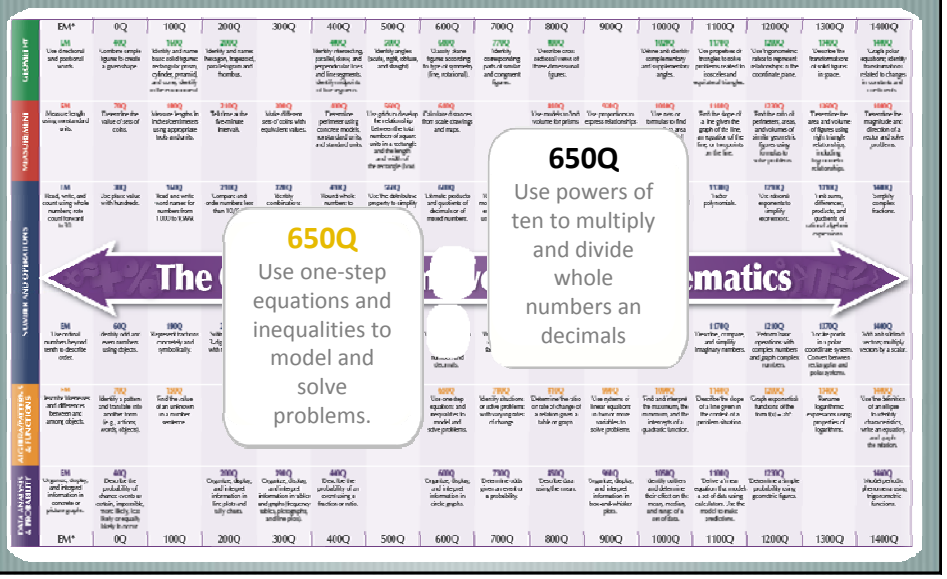
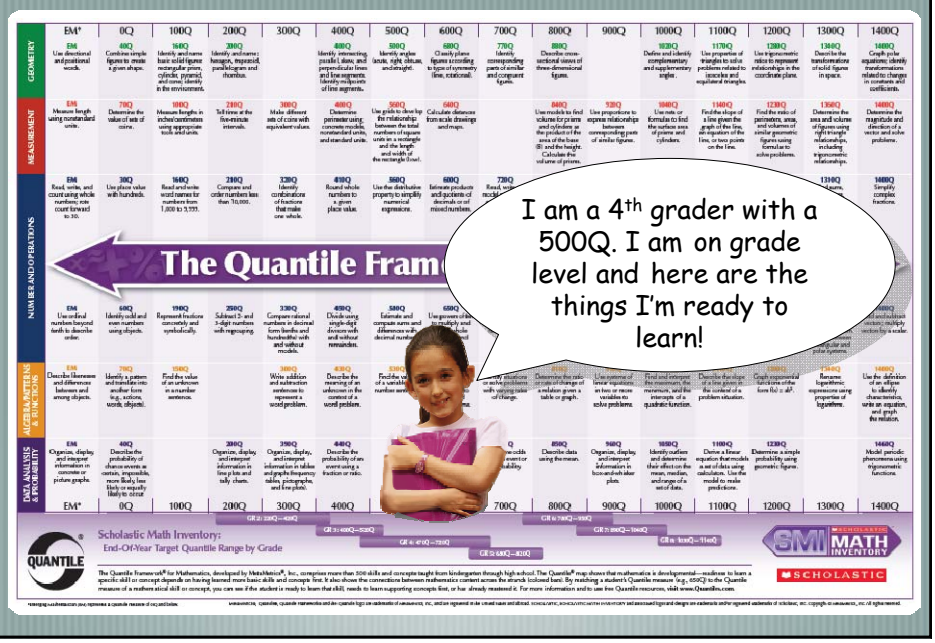


A Research-based Taxonomy



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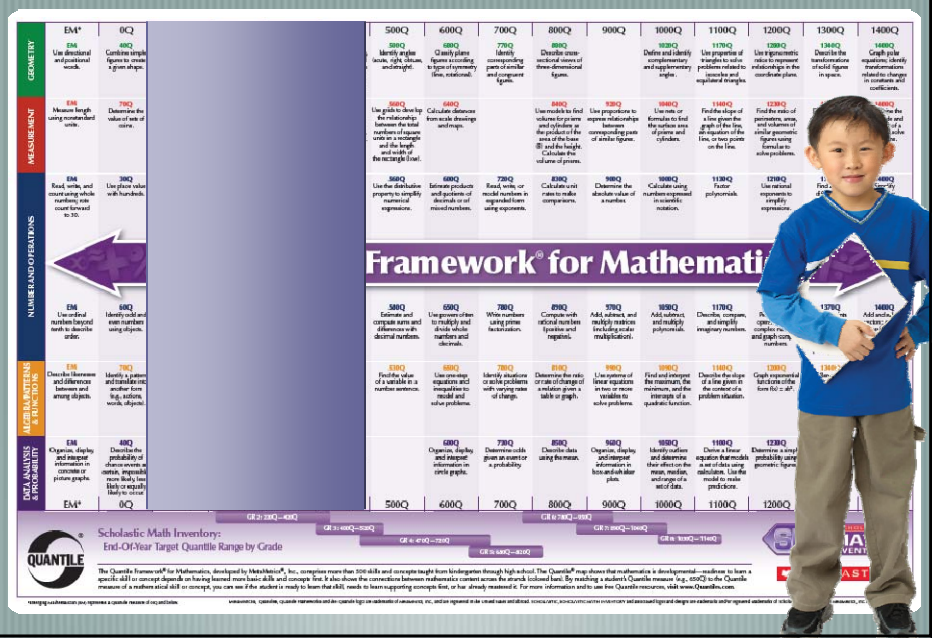


Quantiles.com

Math Skill Database

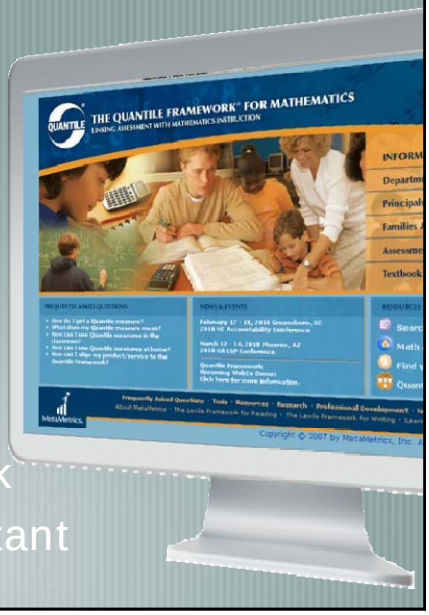
QTaxon Search

- ❖Knowledge Clusters
- ❖Curriculum Alignment
- ❖Textbook Alignment
- ❖Instructional Resources

Math @ Home

Find your Math Textbook

Quantile Teaching Assistant



Quantiles: A New Way to Connect Assessment and Instruction

Quantiles are an "open standard"

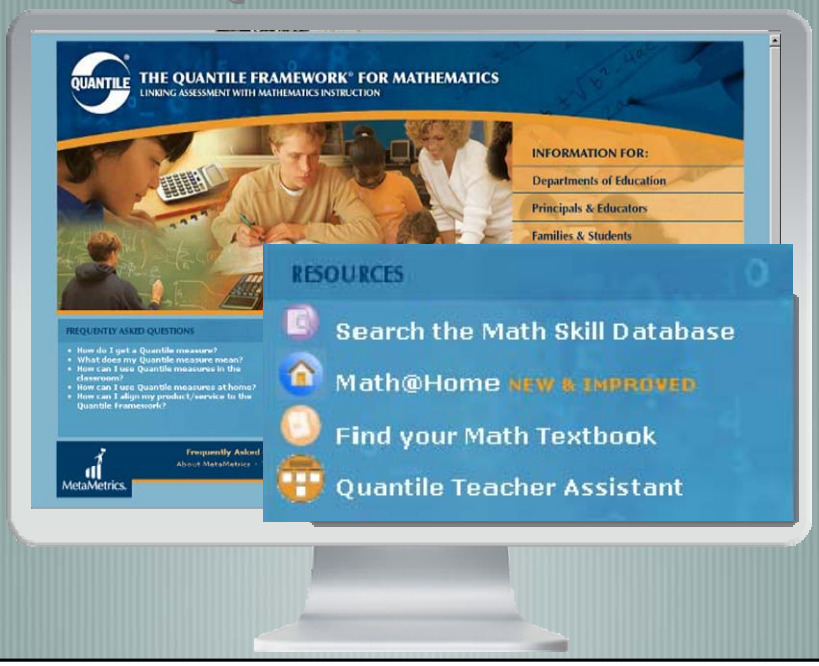
Quantiles.com

Quantiles.com

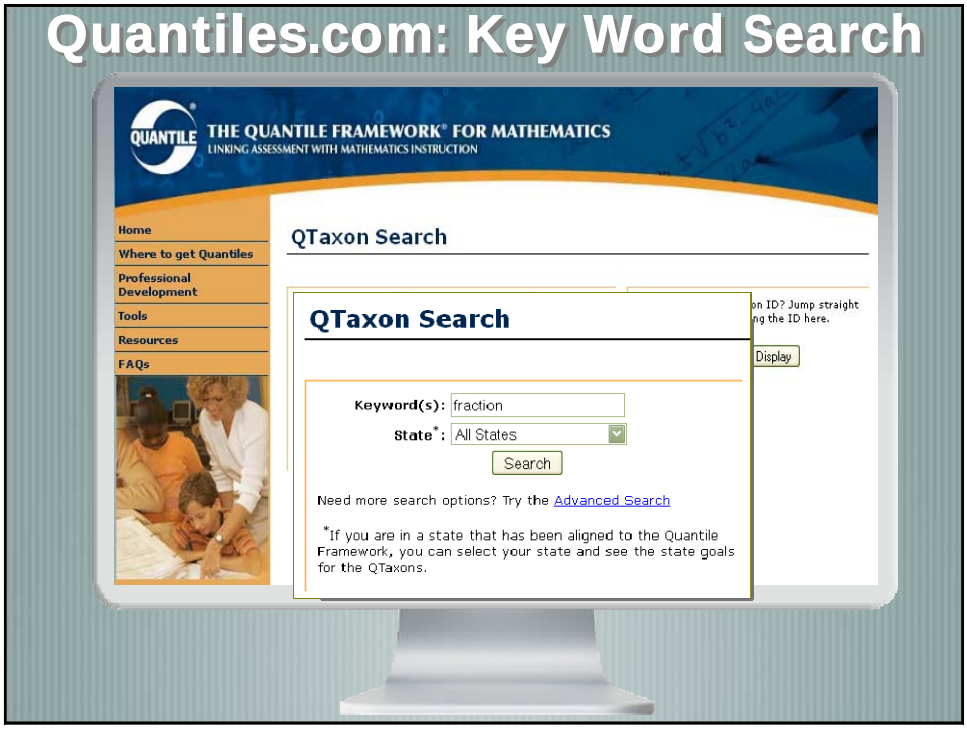
Quantile Terminology

- **Emerging Mathematician (EM)**:
  - has a Quantile measure of zero or below
- **Not Measurable in Quantiles (NMQ)**:
  - is extensively diverse in QTaxons or strands
- **Higher Mathematical Content (HMC)**:
  - is above the precalculus level

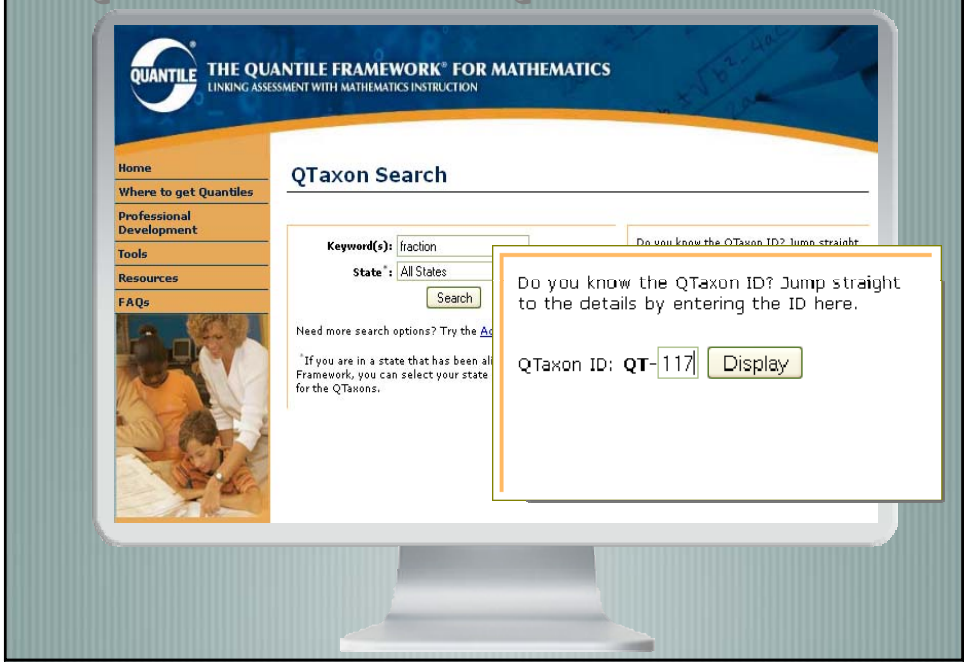
Quantiles.com



Quantiles.com: Key Word Search



Quantiles.com: QTaxon Search



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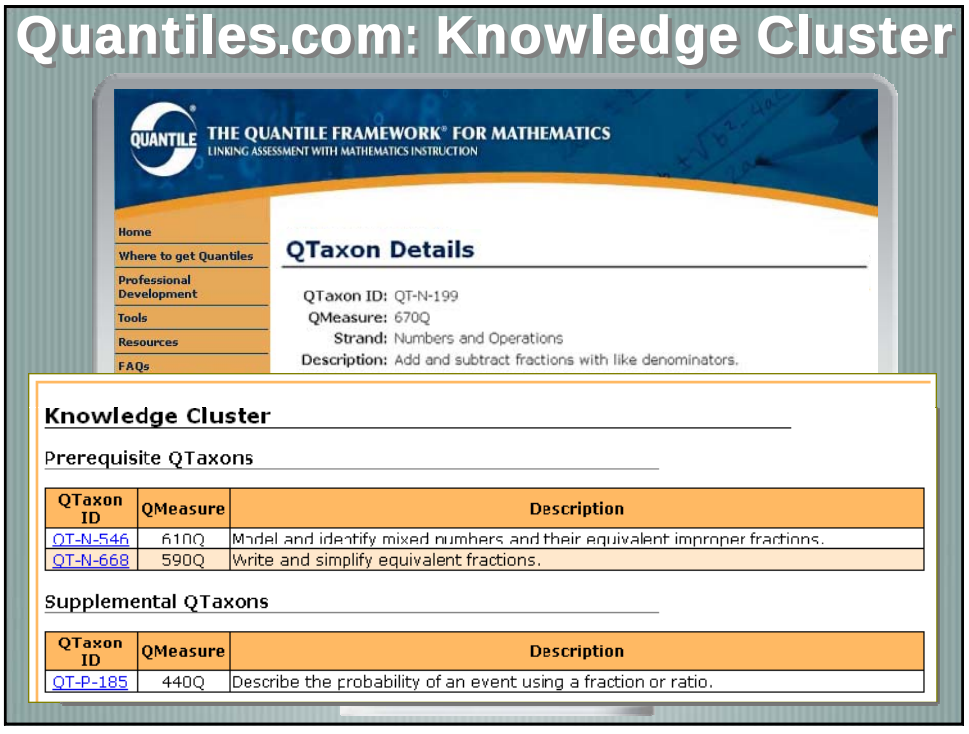
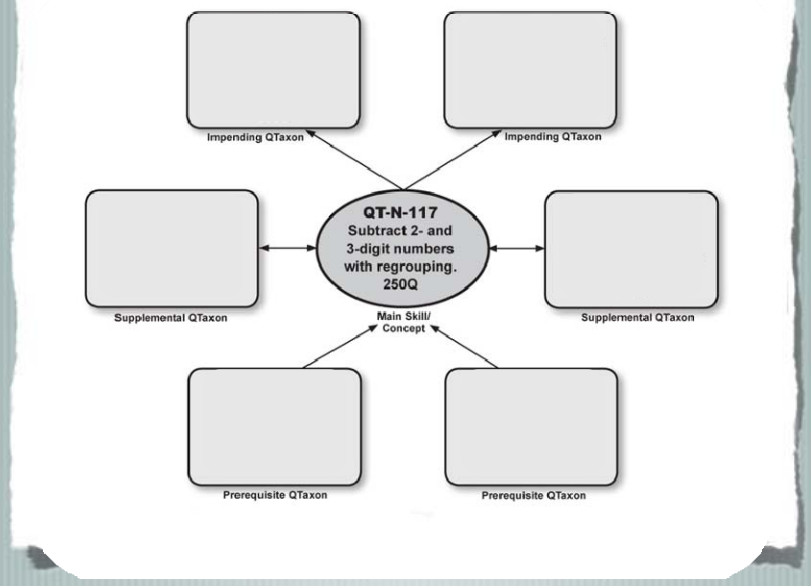
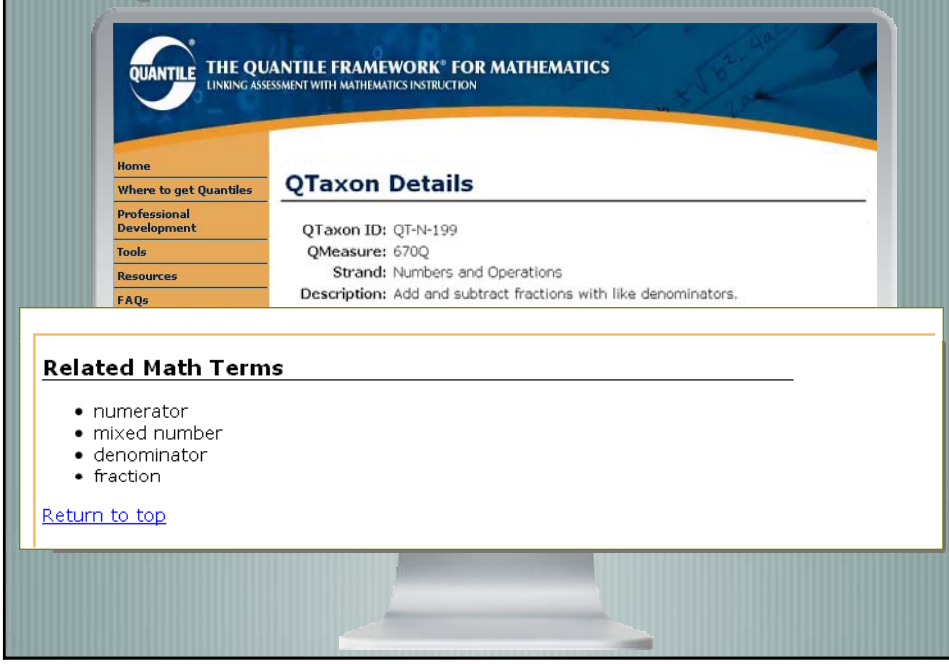
Quantiles.com: Knowledge Cluster



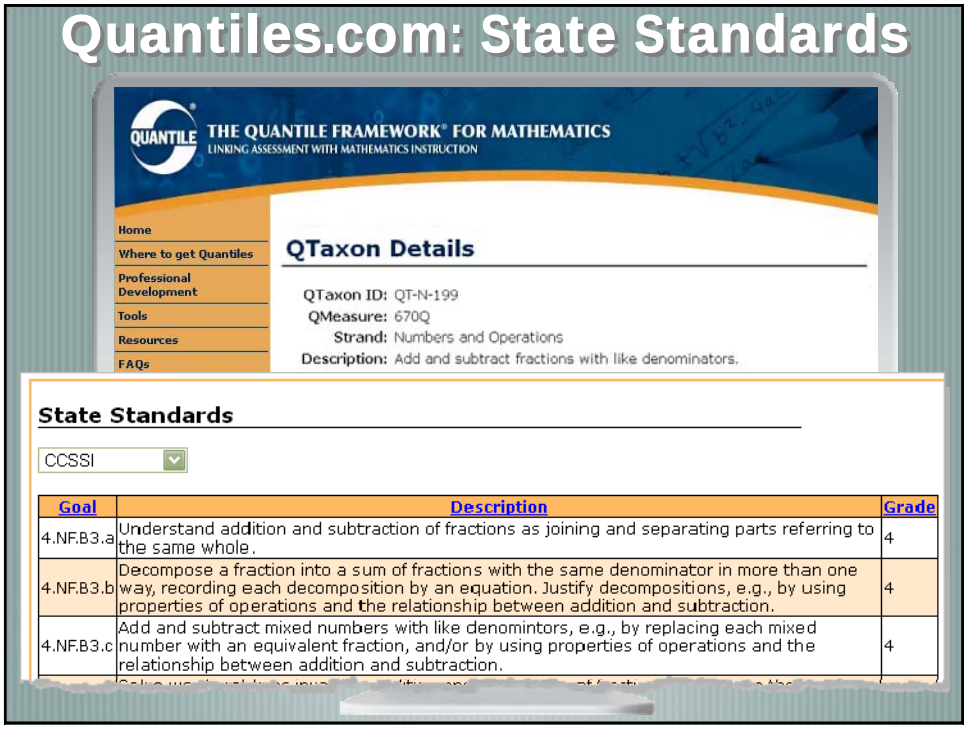
Knowledge Clusters



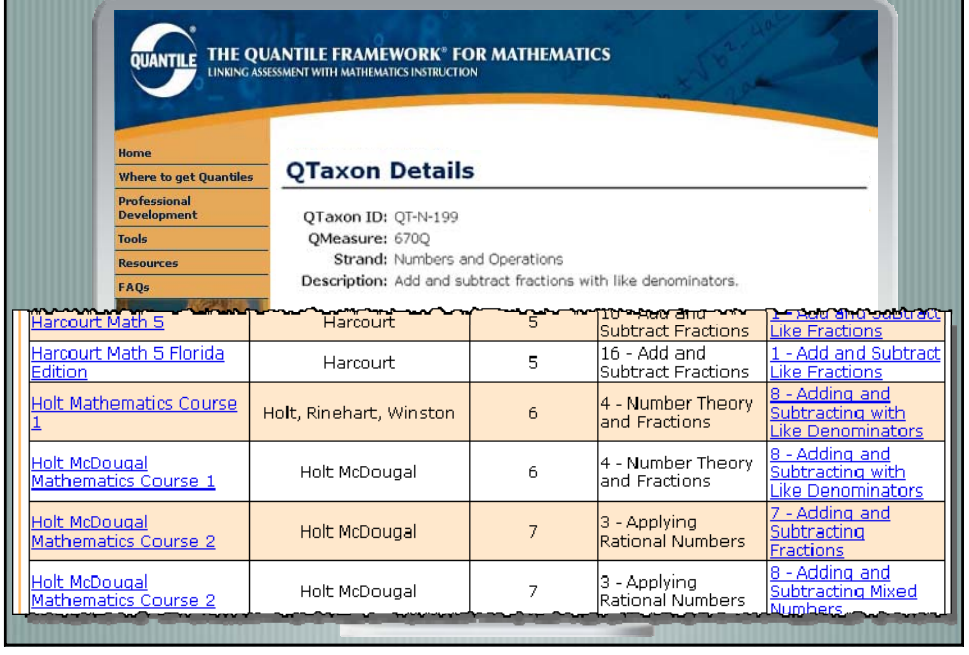
Quantiles.com: Math Terms



Quantiles.com: State Standards



Quantiles.com: Resources



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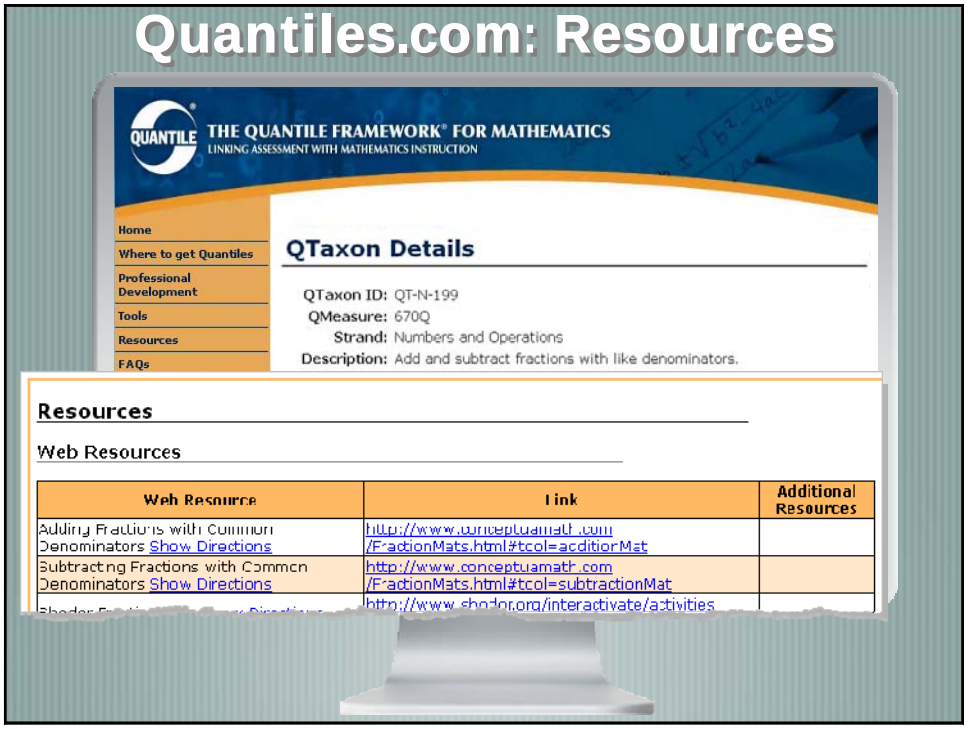
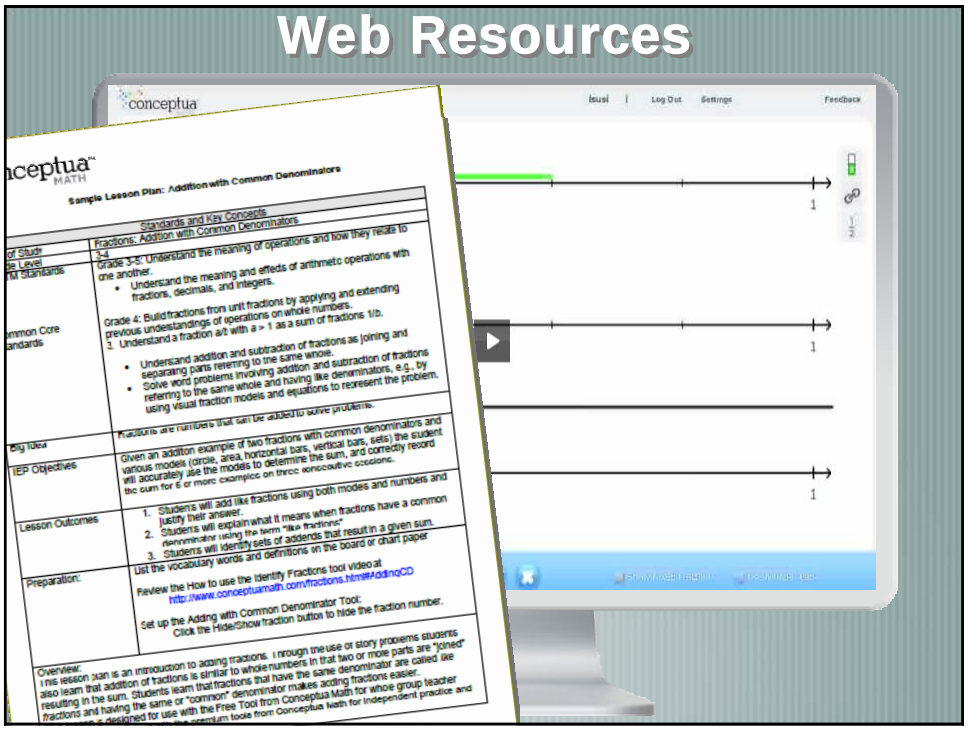
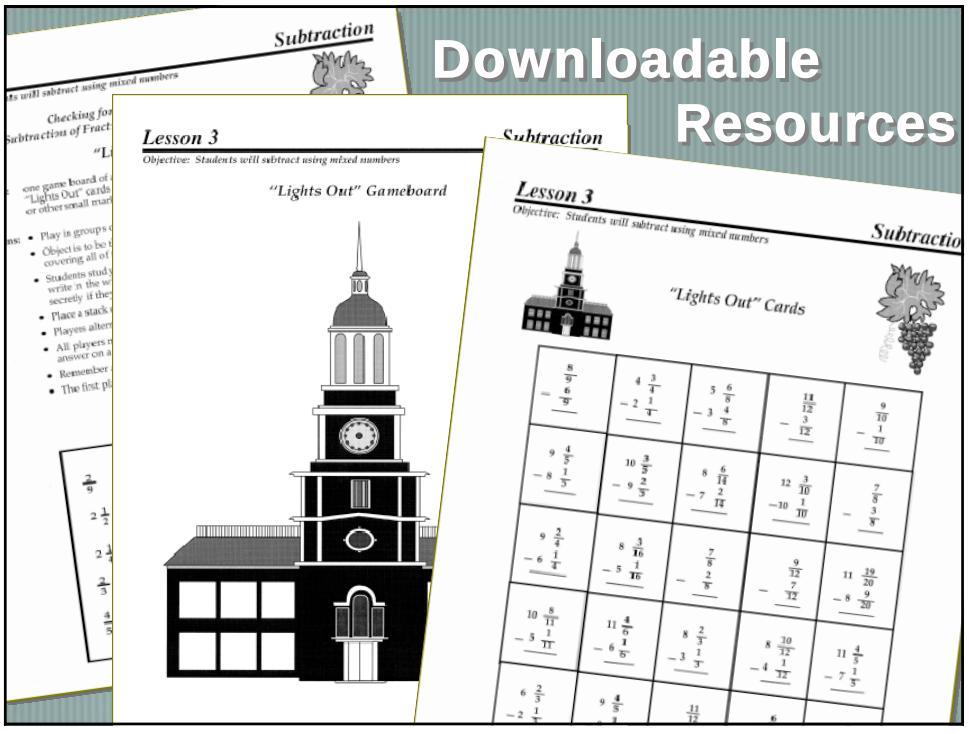


Web Resources

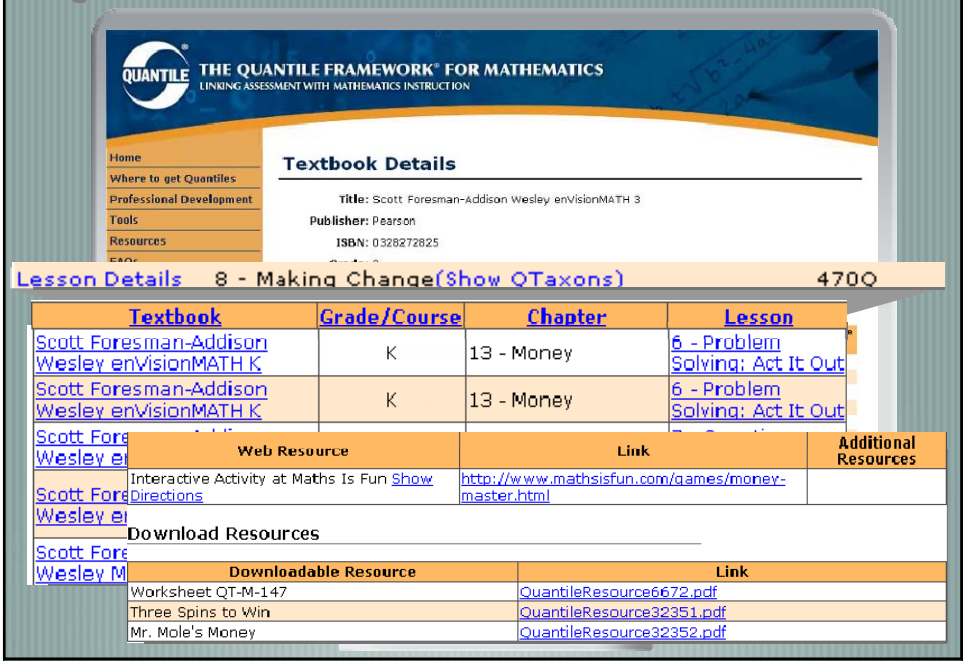


Quantiles.com: Resources

Downloadable Resources



Quantiles.com: Textbook Search



Quantiles.com: Math@Home

Quantiles.com: Teacher Assistant

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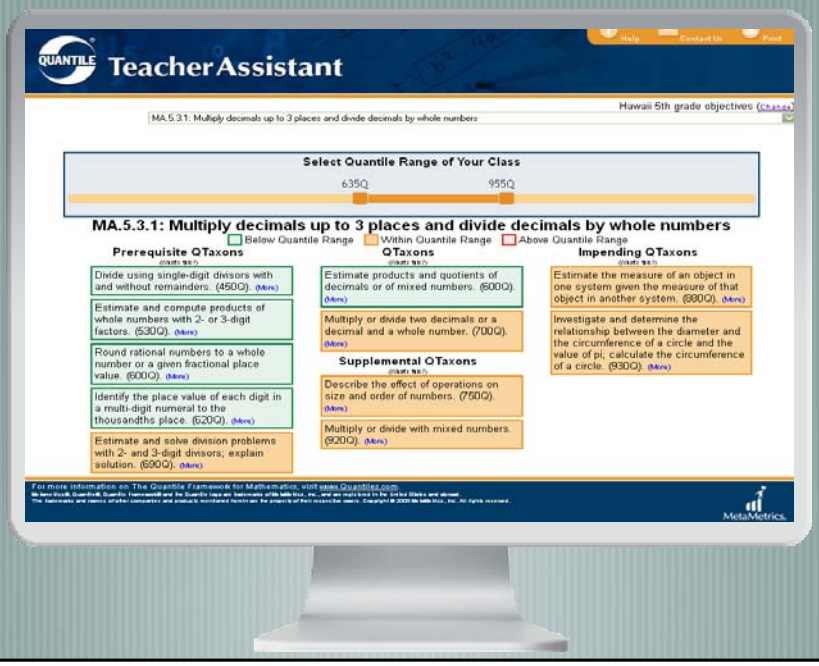

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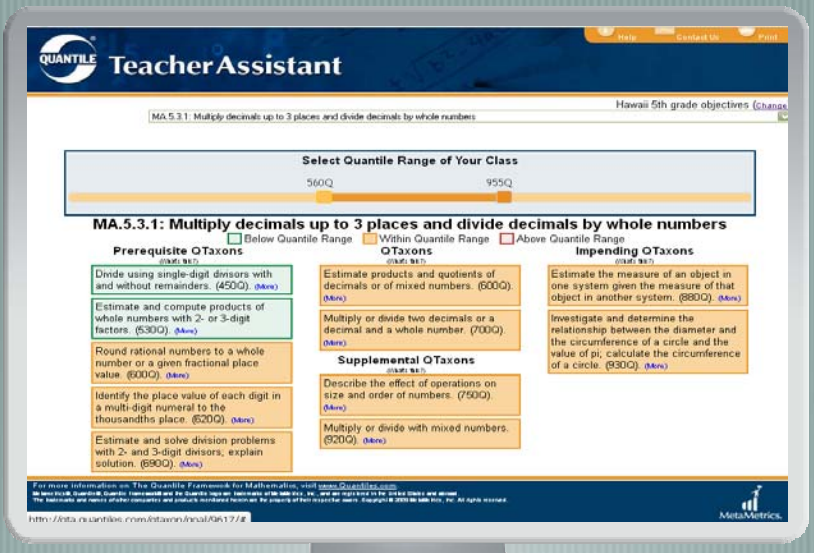

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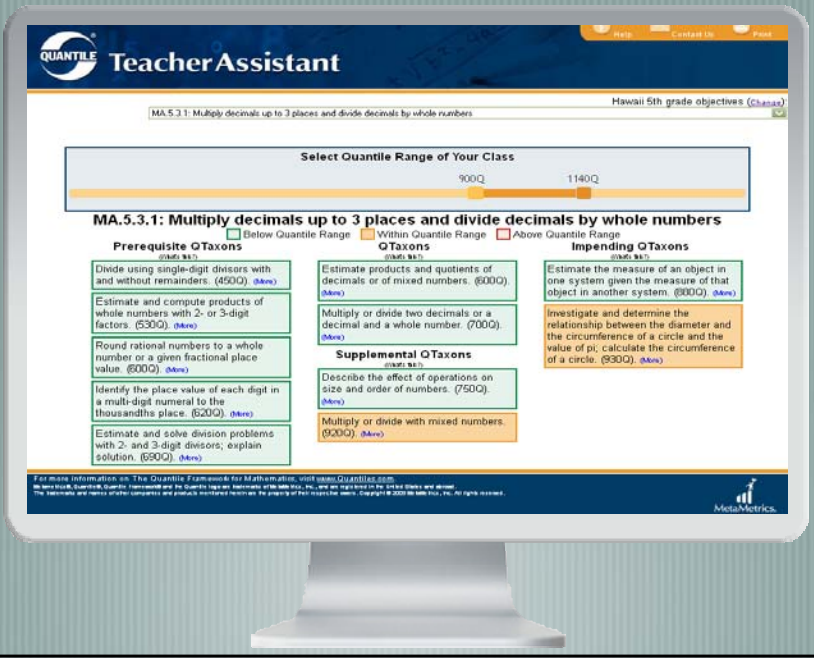
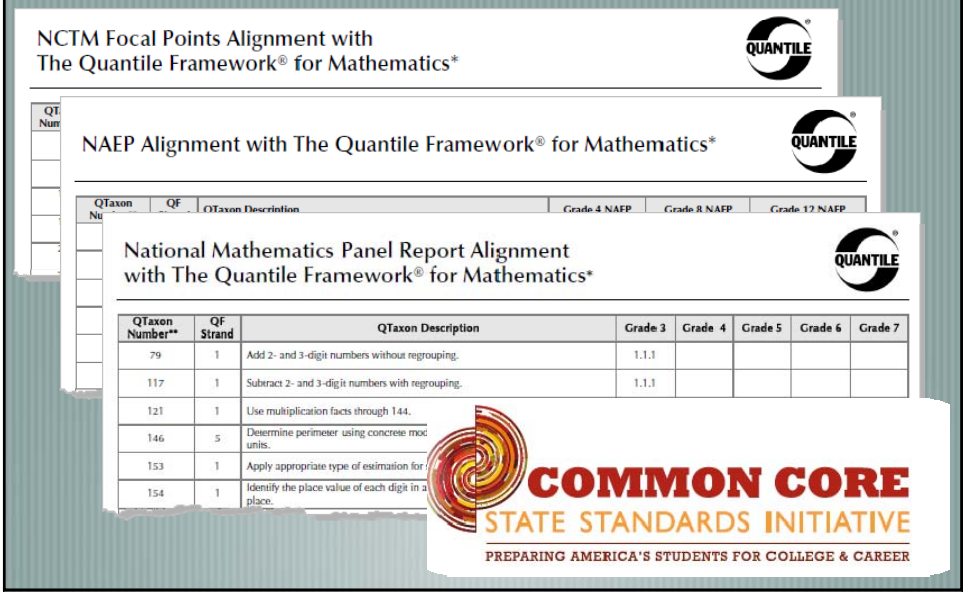
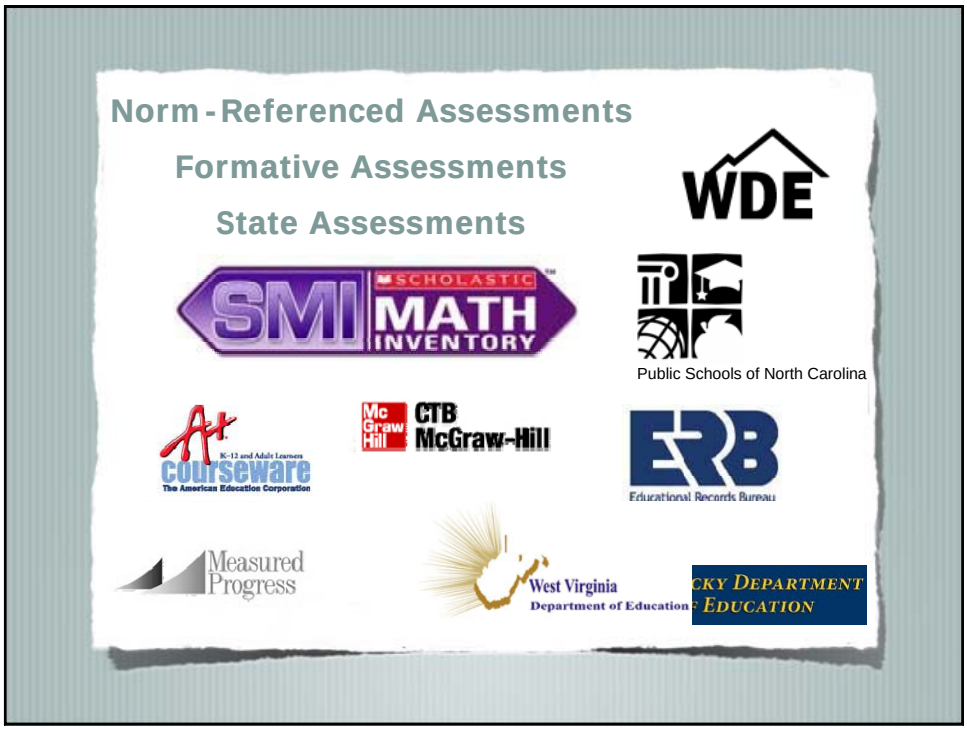


Quantile Alignments





Quantile Vocabulary Terms

Feature	Definition
QTaxon	Mathematical skill/concept included in the Framework
Quantile measure	Measure on the Scale that delineates student achievement level and the difficulty level of skills & concepts.
Knowledge Clusters	Related QTaxons
Impending QTaxons	Skills and Concepts that enrich the learning.
Supplemental QTaxons	Skills and Concepts that extend or build the learning.
Prerequisite QTaxon	Skills and concepts that are foundational to the learning.
Learning Frontier	The learning frontier-50Q above and below the student's Quantile measure.

Things to think about . . .

Meeting Students' Needs

- Instructional needs of students
- Lesson Planning with Knowledge Clusters
- Differentiated Lesson Plans
- Individual Education Plans (IEPs)
- Plan to chart student growth during a certain semester or year

Things to remember . . .

- Quantile Framework places the mathematics curriculum, the materials to teach, and the students ALL on the same scale

Target Instruction

Anticipate Understanding

Inform Instruction

Improve Achievement

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