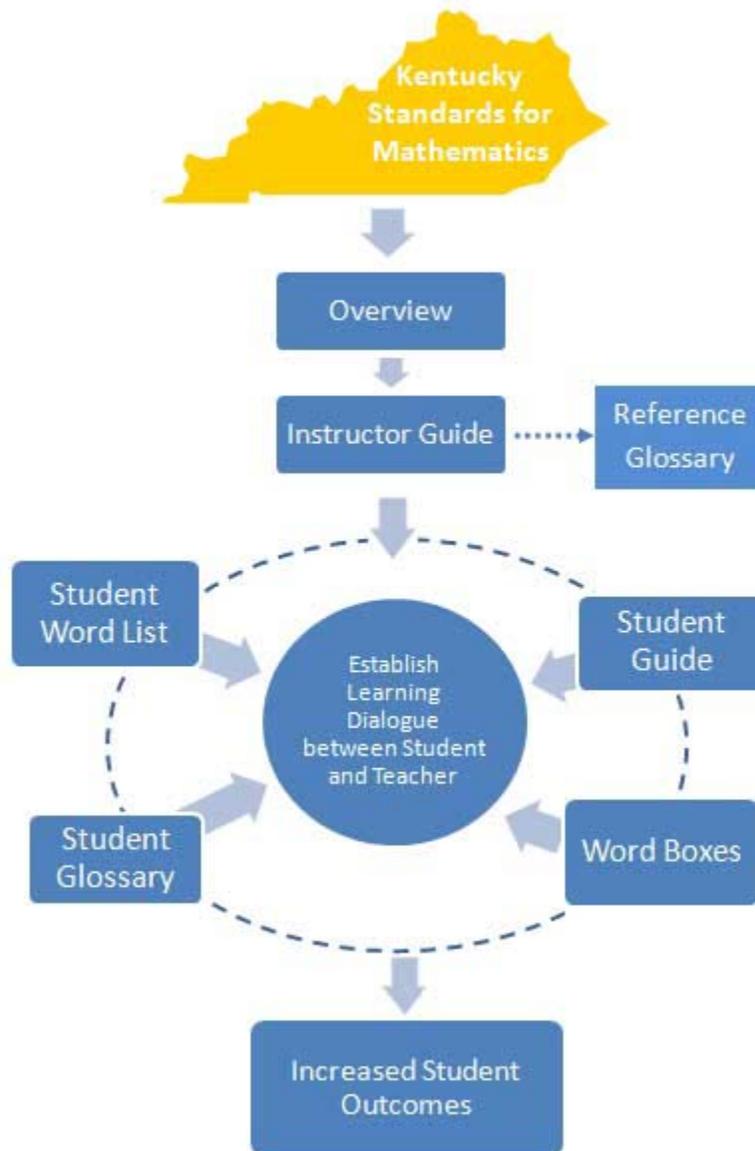


Draft KYAE Standards for Mathematics

Understanding how to use a document with as many components as the current form of KYAE's Standards for Mathematics may seem somewhat overwhelming at an initial reading. Therefore, a suggested approach for maximizing the benefit of these components is offered in the visual representation seen below.



Understanding the Design

The draft form of the *KYAE Standards for Mathematics* includes a Reference Glossary and the following components organized by National Reporting System (NRS) levels:

Instructor Guide
Student Guide
Student Glossary
Student Word List
Word Boxes

Instructor Guide

The Instructor Guide is the core component of the design. As such, it is the starting point for determining what the student should know and be able to do. The other components derive their content from its features.

Heading: Included at the beginning of each level is a general *statement of purpose* for the use of the standards at that particular level. This statement is then followed by the *Guiding Principle* for math instruction at all levels:

Use Math to Solve Problems and Communicate

Starting at Level 3, a legend of *symbol designations* appears and is repeated at the bottom of every page:

 College Readiness  GED Test Preparation  KEC (KY Employability Certificate)

Strands and Standards: The standards and benchmarks are organized by *Strands* with a *focus statement* for each strand stated beneath the title. Though the strands are numbered sequentially, **they are not intended to be taught in sequence**, but rather for concepts from various strands to be integrated as appropriate within a lesson.

The strands are:

- Recognize and Compare Numbers
- Rounding and Estimation
- Number Theory and Mathematical Symbols
- Mathematical Operations
- Measurements
- Geometry
- Using Ratios, Proportions and Percents
- Data Interpretation
- Number line and Grids
- Algebra

The strands contain *Standards* with numeric designations which refer to the level, the strand, and the standard. For example, **Standard 3.9.2** would indicate **Level 3**, (Low Intermediate ABE), **Strand 9** (Number Line and Grids), **Standard 2**.

GED **Standard 3.9.2 The adult student will use direction, distance, coordinates, and keys to read maps and plans.**

Benchmark Table: Specific information about what an adult student should be able to do to meet a standard appears with an alphabetical designation under the column titled *Benchmarks*. Therefore, for the purpose of lesson planning, a benchmark might be cited as **3.9.2.b**. Words which appear in the *Reference Glossary* are indicated in bold print.

b. Demonstrate an understanding of **latitude and **longitude** as horizontal and vertical indexes on a map to find and identify locations**

The middle column, titled *Applications*, includes examples of situations where adults might use a particular benchmark.

Using coordinates to find a city on a map

The third column, *Instructor Notes*, offers background information and teaching tips which instructors might find useful as they instruct students.

Familiarity with map coordinates lays the foundation for identifying point coordinates on a coordinate grid.

Student Guide

A Student Guide is provided for each level. This one-page checklist may be placed in the student's folder and is intended for use by the student to reinforce student progress. The guide is organized by strand boxes in which the content in the Instructor Guide has been summarized. The Student Guide encourages dialog between the adult student and the instructor as together they determine at what point mastery of a concept has been achieved, resulting in a check next to the item.

Number Line and Grids

The adult student is able to:

____ Place positive and negative numbered points on a number line

____ Find places on a map using *latitude* and *longitude* coordinates

Student Glossary, Word Lists and Word Boxes

For reference, each level presents a Student Glossary containing math vocabulary which appears in *italics* in the Student Guide. The wording of a definition has been modified to the reading level appropriate for that particular NRS level. A Word List as well as Word Boxes without definitions are also included.

latitude *imaginary circles running around the Earth*

longitude *imaginary circles around the Earth running through the North and South Poles*

The glossaries, word lists and boxes are offered as tools to emphasize the importance of math terminology in the understanding of mathematical concepts; they may be used as the instructor thinks best for each student. Possibilities include use as an informal assessment, either initially as a diagnostic tool or following instruction to demonstrate mastery, or as a study tool. The lists encourage students to write their own definitions as well as draw pictures of the concepts.

Reference Glossary

The Reference Glossary is intended as a tool for the instructor. The definitions and examples serve to clarify the bolded words in the Instructor Guides.

latitude – a geographic coordinate measurement used to denote the location of a place on Earth north or south of the equator; lines of latitude are imaginary horizontal lines shown running east-to-west on maps; latitude is measured in degrees

KYAE hopes the design of the *Standards for Mathematics* is helpful in your delivery of math instruction and welcomes your suggestions for use of the components.

Acknowledgements

The *KYAE Standards for Mathematics* represent an effort by KYAE staff and practitioners to develop a working document which contains the elements of rigor necessary for effective math instruction. We would like to acknowledge and thank the several organizations that granted KYAE permission to use their work in the *KYAE Standards for Mathematics*. In the effort to move toward standards-based education, KYAE relied heavily on the fine work of several states as found online in the *Adult Education Content Standards Warehouse*, a project of the American Institutes for Research and the U.S. Department of Education. Examples of varied document designs from these states were presented to Kentucky adult educators to determine preferred components for inclusion in the design of the standards. Consequently, certain elements of adult education standards from Ohio, Texas, West Virginia, Florida, Massachusetts and Arizona appear in this draft form of the *KYAE Standards for Mathematics*. Like Ohio, KYAE's design makes use of the *Equipped for the Future Content Standard: Use Math to Solve Problems and Communicate* and aligns math competencies with the six

National Reporting System (NRS) levels. Within each level, complementary math content is presented throughout ten strands which closely resemble those used by Texas. The *Applications* column in the Instructor Guide is patterned after the *Examples* column in Massachusetts's *Curriculum Frameworks*, and the content included in the column titled *Instructor Notes* is adapted from the *Virginia Mathematic Standards of Learning Curriculum Framework 2002* © 2002 by the *Commonwealth of Virginia Department of Education*. All rights reserved. *Reproduced by permission.*

From West Virginia came the idea of a checklist, resulting in our Student Guide which is modeled after a version of Florida's Performance Standards. Many of the definitions in the *Glossary* are courtesy of either the Contemporary, McGraw-Hill Company or the Steck-Vaughn Company. It should be noted that content from KYAE's work as a member of the Achieve, Inc. American Diploma Project (ADP) has been used sparingly in Levels 4 and 5. Level 6 addresses college readiness and will be aligned to the work of the Senate Bill 1 Postsecondary Mathematics Work Group. And finally, Arizona's *How to Read the Content and Performance Standards* served as a model for the overview section titled *Components of the KYAE Standards for Mathematics*. KYAE greatly appreciates the work offered by these education agencies.