

KENTUCKY ADULT EDUCATION – STUDENT GUIDE

Standards for Mathematics Level 4

Use Math to Solve Problems and Communicate

Student Name _____

Entry Date _____ Site _____

Recognize and Compare Numbers

The adult student is able to:

Read aloud and order any:

___ *fractions* ___ *decimals* ___ *integers*

Use symbols to compare any:

___ *fractions* ___ *decimals* ___ *integers*

___ Name examples of *percents* in the real world

___ Change *mixed numbers* to *decimals* and *decimals* to *mixed numbers*

___ Give the *decimal* or *percent* name for common fractions

___ Explain how *decimals*, *percents* and *fractions* can stand for the same amounts

Rounding and Estimation

The adult student is able to:

___ Solve problems of measurement that call for estimation

___ Round amounts in word problems to check whether an answer is reasonable

Number Theory and Mathematical Symbols

The adult student is able to:

___ Explain the difference between the *commutative* and the *associative properties* for addition and multiplication

___ Demonstrate the *distributive property* of multiplication

___ Describe the *squaring* a number and finding a *square root* of a number

Name and use math symbols:

___ $^{\circ}$, \angle , \perp , \parallel , \llcorner , π ___ $<$, $>$, \leq and \geq

___ \approx ___ $-$, \div ,

___ $\sqrt{\quad}$, and the exponents 2 and 3

Mathematical Operations

The adult student is able to:

___ Add, subtract, multiply and divide whole numbers of any size

___ Add and subtract *fractions* and *mixed numbers* of any size, expressing answers in *simplest form*

___ Write whole numbers and *mixed numbers* as *improper fractions* for the purpose of multiplication and division

___ Multiply and divide *fractions* and *mixed numbers* of any size, expressing answers in *simplest form*

___ Add and subtract *decimals* of any size

___ Multiply and divide *decimals* of any size

___ Use algebra signs to show multiplication and division

___ Compute *squares* and *cubes* of numbers 1 - 10

___ Solve word problems that use whole numbers *fractions*, *decimals* and *percents*

___ Solve problems using a calculator as well as pencil and paper

Measurements

The adult student is able to:

- ___ Use tools to measure *length, weight, volume* and time in fractional or decimal units to solve problems
- ___ Explain the difference between *customary* and *metric measures*
- ___ Convert measurements within the *customary* system to solve problems
- ___ Identify prefixes used in the *metric* system as their *decimal* equivalents (kilo-, deci-, centi-, mili -)
- ___ Use a *protractor* to measure *angles* and label them as *right, obtuse, acute* or *straight*
- ___ Solve real-world problems involving measurement

Geometry

The adult student is able to:

Draw and describe types of *lines*:

- ___ *parallel* ___ *perpendicular* ___ *intersecting*
- ___ Identify and use appropriate geometric terms to discuss and label *lines, angles, triangles, quadrilaterals, polygons* and *circles*
- ___ Use *formulas* to solve problems involving 2- and 3-*dimensional* shapes
- ___ Solve problems of *perimeter* and *area* for all 2-*dimensional* shapes, including *circles*
- ___ Find the *volume* of *rectangular solids* and *cylinders*
- ___ Identify types of *transformations*

Ratios, Proportions and Percents

The adult student is able to:

- ___ Write *ratios* in three forms
- ___ Demonstrate that two equal *ratios* form a *proportion*
- ___ Find the missing term in a *proportion*
- ___ Use *ratio* and *proportions* to solve word problems
- ___ Decide which is needed to solve percent problems: the *amount (part), base (whole), or rate (percent)*
- ___ Solve problems by finding the *amount, base* or *rate*
- ___ Use *proportions* to solve *percent* problems

Data Interpretation and Probability

The adult student is able to:

- ___ Find *graphs, charts, and tables* in real-world materials
 - ___ Explain why titles and labels are necessary to understand the *graph* or *table*
 - ___ Create various types of lists, *graphs* and *tables*
 - ___ Compare *data* from various graphs
 - ___ Use a scale to measure distance on a map
 - ___ Discuss how times zones affect situations
- Solve problems by finding the:
- ___ *mean* ___ *median* ___ *mode* ___ *range*
 - ___ Solve problems by finding the *probability* that an event will occur

Number Line and Grids

The adult student is able to:

- ___ Add and subtract *positive* and *negative integers* on a number line
 - ___ Find and name *points* on a *coordinate grid*
- Describe and use:
- ___ *x- and y-axes* ___ *x- and y-coordinates*
 - ___ *point of origin* ___ *ordered pairs*
 - ___ Plot *points* in all four *quadrants* of a *coordinate grid*

Algebra

The adult student is able to:

- ___ Use an *in-out table* to discover and continue repeating and growing *patterns*
- ___ Use the *order of operations* ($\times, \div, +, -$) to solve *equations* with one *variable*
- ___ Use *inverse operations* to solve *equations* with one *variable*
- ___ Use *substitution* in *formulas* and to check solutions of *equations*
- ___ Identify the *square roots* of *perfect squares* 1 – 144
- ___ Explain the *pattern* for *powers* of 10