ABE Mathematics Curriculum Matrix

Concept and Applications



Guide for Administrators and Educators Institute for the Professional Development of Adult Educators GUIDE FOR ADMINISTRATORS AND EDUCATORS

ABE Math Curriculum Matrix

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Challenges Facing Adult Educators When It Comes to Mathematics Teaching

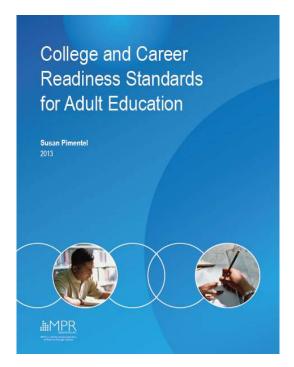
Adult Educators across the state are facing very similar challenges in the teaching of ABE Mathematics:

- Inconsistent background in math
- Unfamiliarity to certain math skills and concepts
- Limited understanding of the standards (CCRS)
- Lack of planning time
- Limited access to professional development
- Limited knowledge of math teaching strategies
- Limited resources for properly teaching math skills
- Massive and often multiple math content/curricula
- Catering to a very diverse group of students in terms of ability, background and goals

Important Questions to Teach Mathematics Effectively

- Where do I start?
- Which skills and concepts do my students need more mastery? How do I know now? How will I know in the future?
- How much time do I have to teach this topic?
- What topics should I teach next? What is the end goal?
- Is this skill assessed on standardized tests? How?
- How much of this content is assessed on standardized tests?
- What is the best textbook out there? Or websites to use?

The College and Career Readiness Standards



Questions:

List down the Key Shifts in the Standards based on the College and Career Readiness Standards?

What are the 3 components of rigor as explained by the College and Career Readiness Standards?

Under Shift 1: Focus, what do teachers need to do?

Under Shift 2: Coherence, what do teachers need to do?

Under Shift 3: Rigor, what do teachers need to do?

Shift 1 - Focus

Instructions:

Using only the section of the ABE Mathematics Curriculum Matrix below, number the cells in logical order if you were to teach these topics in a sequence.

Domain	NRS L	evel 1	NRS Level 2							
			Place Value of 3- Digit Numbers	Add and Subtract 3- Digit Numbers	Round Whole Numbers to the Nearest Tens or Hundreds	Use Properties of Operations to Perform Multi-Digit Arithmetic				
	Numbers	Model Addition and Subtraction of 2- Digit Numbers	Compare 3-Digit Numbers	Model Addition and Subtraction of 3- Digit Numbers	Multiply 1-Digit Numbers By 2-Digit Multiples of 10	Mentally Add and Subtract 10 or 100 to 3- Digit Numbers				
	Solve Addition and Subtraction Problems within 20		Solve Addition and Subtraction Problems within 100	Solve Multiplication and Division Problems within 100	Multiplication Facts within 100	Solve 2-Step Problems or Equations				
and Algebraic Thinking	Associative Property	and Subtraction	Commutative and Associative Property of Multiplication	Solve Multiplication and Division Equations	Distributive Property of Multiplication	Model Multiplication and Division within 100				

Explain why you sequenced these topics in this way?

Shift 2 - Coherence

Instructions:

Using a section of the ABE Mathematics Curriculum Matrix below, draw an arrow between topics that are directly related to each other.

Domain	NRS L	evel 1	NRS Level 2							
			Place Value of 3- Digit Numbers	Add and Subtract 3- Digit Numbers	Round Whole Numbers to the Nearest Tens or Hundreds	Use Properties of Operations to Perform Multi-Digit Arithmetic				
and Operations: Base Ten	Numbers	Model Addition and Subtraction of 2- Digit Numbers	Compare 3-Digit Numbers	Model Addition and Subtraction of 3- Digit Numbers	Multiply 1-Digit Numbers By 2-Digit Multiples of 10	Mentally Add and Subtract 10 or 100 to 3- Digit Numbers				
	Solve Addition and Subtraction Problems within 20		Solve Addition and Subtraction Problems within 100	Solve Multiplication and Division Problems within 100	Multiplication Facts within 100	Solve 2-Step Problems or Equations				
and Algebraic	Associative Property	and Subtraction	Commutative and Associative Property of Multiplication		Distributive Property of Multiplication	Model Multiplication and Division within 100				

Shift 3 - Rigor

Color, highlight or place a check mark on the domains below that emphasize conceptual understanding.

Domain
1. Number and Operations: Base Ten
2. Operations and Algebraic Thinking
3. Measurement and Data
4. Geometry
5. Number and Operations: Fractions
6. Expressions and Equations
7. The Number System
8. Ratios and Proportional
Relationships
9. Statistics and Probability
10. Functions

Color, highlight or place a check mark on the domains below that emphasize procedural fluency.

Domain
1. Number and Operations: Base Ten
2. Operations and Algebraic Thinking
3. Measurement and Data
4. Geometry
5. Number and Operations: Fractions
6. Expressions and Equations
7. The Number System
8. Ratios and Proportional
Relationships
9. Statistics and Probability
10. Functions

Color, highlight or place a check mark on the domains below that emphasize mathematical applications.

Domain
1. Number and Operations: Base Ten
2. Operations and Algebraic Thinking
3. Measurement and Data
4. Geometry
5. Number and Operations: Fractions
6. Expressions and Equations
7. The Number System
8. Ratios and Proportional
Relationships
9. Statistics and Probability
10. Functions

The ABE Mathematics Curriculum Frameworks

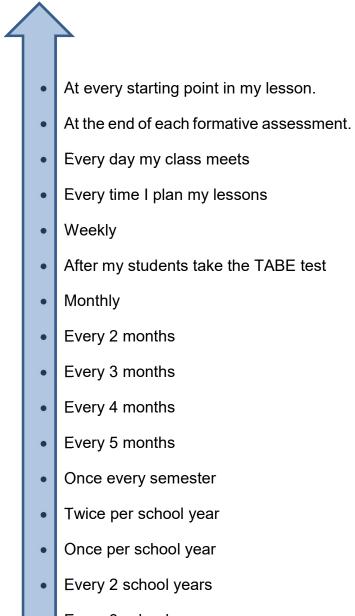
Reflection:

How much time have you spent reviewing the ABE Mathematics Curriculum Frameworks?

How much time do you think you should spend reviewing the ABE Mathematics Curriculum Frameworks to ensure that you are teaching the required skills to your students?

Activity:

Place an X on the continuum below to mark how often you review your ABE Mathematics Curriculum Frameworks. Place a star on how often do you think you should be reviewing your ABE Mathematics Curriculum Frameworks.



- Every 3 school years
- Never

Gauge how much effort should you exert in order to implement best practice in reviewing the Curriculum Frameworks.

Review your copy of the ABE Mathematics Curriculum Frameworks and answer the questions below.

How many standards are contained in the ABE Mathematics Curriculum Frameworks?

How many benchmarks are contained in the ABE Mathematics Curriculum Frameworks?

Review your copy of the ABE Mathematics Curriculum Matrix and answer the question below.

How many topics/cells are contained in the ABE Mathematics Curriculum Matrix?

Does this mean by using the ABE Mathematics Curriculum Matrix, we have to teach less topics? Explain why or why not.

The Purpose of the ABE Mathematics Curriculum Frameworks

The Adult Basic Education (ABE) Program includes content standards that describe what students should know and be able to do in Mathematics. The content standards serve several purposes:

- Provide a common language for ABE levels among programs
- Assist programs with ABE curriculum development
- Provide guidance for new ABE instructors
- Ensure quality instruction through professional development
- Provide basic skills instruction (0.0 8.9) and critical thinking skills to prepare students for GED preparation (9.0 12.9), postsecondary education, and employment.

The content standards should be used as a basis for curriculum design and also to assist programs and teachers with selecting or designing:

- appropriate instructional materials
- instructional techniques, and
- ongoing assessment strategies.

Standards DO NOT tell teachers how to teach, but they do help teachers figure out the knowledge and skills their students should have so that teachers can build the best lessons and environments for their classrooms.

Features of ABE Mathematics Curriculum Frameworks

- 31 Pages
- 10 Mathematics Domains
- 79 Content Standards
- 294 Content Benchmarks
- 4 Career and Education Planning Standards
- 4 Digital Literacy (Technology) Standards
- 7 Workforce Preparation Activities

ABE Mathematics Domains

	ADULT BASIC	EDUCATION N	IATHEMATIC D	OMAINS	
Domain	NRS Reporting	NRS Level 1	NRS Level 2	NRS Level 3	NRS Level 4
Number	Grade Equivalent (GE)	0.0 – 1.9	2.0 – 3.9	4.0 – 5.9	6.0 - 8.9
1	Number and Operations: Base Ten	0.0 – 1.9	2.0 - 3.9	4.0 – 5.9	
2	Operations and Algebraic Thinking	0.0 – 1.9	2.0 - 3.9	4.0 - 5.9	
3	Measurement and Data	0.0 – 1.9	2.0 - 3.9	4.0 - 5.9	
4	Geometry	0.0 – 1.9	2.0 – 3.9	4.0 – 5.9	6.0 – 8.9
5	Number and Operations: Fractions		*3.0 – 3.9	4.0 - 5.9	
6	Expressions and Equations			4.0 - 5.9	6.0 - 8.9
7	The Number System			4.0 – 5.9	6.0 – 8.9
8	Ratios and Proportional Relationships			4.0 - 5.9	6.0 - 8.9
9	Statistics and Probability			4.0 – 5.9	6.0 - 8.9
10	Functions				*7.0 – 8.9

Questions:

Which domain(s) span all 4 levels of ABE?

Which domain(s) span only a single level of ABE?

At what grade level are the standards for Ratio and Proportional Relationships taught?

The ABE Mathematics Standards

Instructions:

Label the diagram below by drawing an arrow from each component of the standards to the table to the right.

MATHEMATICS (MA) Basic Literacy GE: 0.0-3.9 Anchor Standards and Benchmark Skills											
NRS LEVEL 1 GE: 0.0 - 1.9	NRS LEVEL 2 GE: 2.0 – 3.9										
CCR.MA.ABE.1. Number and Operations: Base Ten											
 1.1 Understand place value of two-digit numbers. a) Understand that the two digits of a two-digit number represent amounts of tens and ones. b) Compare two two-digit numbers recording the results of comparisons with the symbols greater than (>), equal to (=), and less than (<). 	 2.1 Understand place value of three-digit numbers. a) Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones. b) Count within 1000 by 5s, 10s, and 100s. c) Read and write numbers to 1000 using numerals, number names, and expanded form. d) Compare two three-digit numbers using greater than (>), equal to (=), and less than (<) symbols to record the results of comparisons. 										

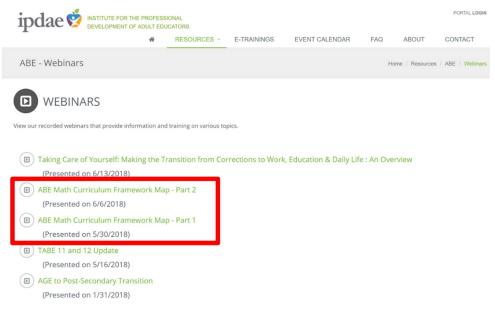
- ABE Level
- Domain
- Anchor Standards
- Benchmarks

How to Download the ABE Mathematics Curriculum Matrix

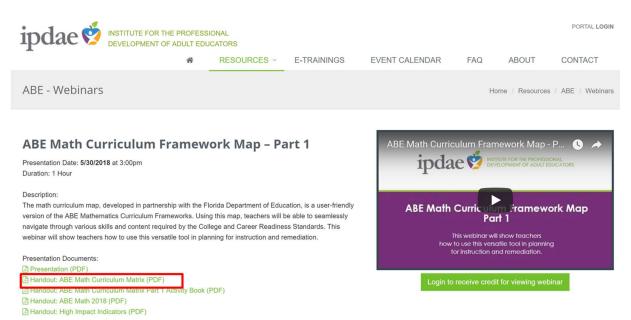
- 1. Type www.floridaipdae.org on the address bar of any browser.
- 2. Click on the ABE Tab.
- 3. Click on the Webinar Channel.

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	3	By EDUCA	TORS for EI	DUCATORS			
		Select an area t	below to view ava	ilable resources.		-	
	Make a selecti	on to view the availal	ole resources or Viev	v All			
Adult Basic Adult Basic Education	Lessons	Links Toolki	ts Videos	Webinars			√PS areer & ion System

4. Click on the link for the ABE Math Curriculum Framework Map Webinar Part 1 or Part 2.



5. On the Presentation Documents Section of the page, click on Handout: ABE Math Curriculum Matrix (PDF).



Instructions:

List the steps on how to download the electronic copy of the ABE Mathematics Curriculum Matrix from the IPDAE Website.

Versions of the Matrix

Original Version

Domain	NRS L	evel 1		NRS L	evel 2			NRS L	evel 3			NRS L	evel 4	
. Number and perations: Base Ten	Mace Value of 2 Digit Number Compare 2 Digit Numbers	Add and Subtract 2 Digit Numberi Model Addition and Subtraction of 2 Digit Numbers	Place Value of 3 Digit Number Compare 3 Digit Number	Add and Subtract 3 Digit Numbers Model Addition and Subtraction of 3 Digit Number	Round Whole Numbers to the Nearest Tensor Hundreds Multiply 1 Digit Numbers By 2 6 Digit Multiples of 10	Use Propertite Lof Operations to Perform Multi Digit Arithmetic Mentally Add and Subtract 10 or 100 to 3 Digit Numbers	Conneralize Understanding of Place Value Compare Any Multi Digit Number Basic Operations with Multi Digit Numbers in Standard Namethics	Any Place Value	Multiply 4 Digit Numbers by 1 to 2 Digit Numbers Divide 4 Digit Numbers by 1 Digit Numbers Round Decimals to Any Place	Use Place Value to Understand Decimals R cad, Write, and Compare Decimals to Thousandths Divide 4 Digit Numb ets by 2 Digit Numbers Using Multiple Mathopies				
. Operations and Igebraic Thinking	Solve Addition and Subtraction Problems within 20 Commutative and Asso castive Property of Addition	The Equal Sign Solving Addition and Subtraction Equations	Solve Addition and Subtraction Problems within 100 Commutative and Asso cluttve Property of Multiplication	Solve Multiplication and Division Problems with in 100 Solve Multiplication and Division Equations	Multiplication Facts within 100 Distributive Property of Multiplication	Solve 2 Step Problemson Equations Model Multiplication and Division with in 100	Ago entries Solve Multi Stop Problems Using Basic Operations Check Answers Using Montal Computation and Estimation Write and Interpret Namencal Exercisions	Interpret Multiplication as Comparison Statements Solve Problems Involving Multiplicative Comparisons Interpret Repressions without Disaluting Them	Interpret the Remainder In Problems Find All Factor Plans of Any 2 Digit Whole Number Generate and Analyze Numeri and Geometric Patterns	Introduction Multiples of 2 Digit Numbers Up to 300 Prime and Composite Numbers within 300 identify in epilotit Features of a Pattern from a Rule				
. Measurement and lata	Grganize, Repress nt, and senergivet 3 Categories of Data	Indirectly Measure Lengths through Recation	Analyse and Generate Picture Graphs and Bar Graphs Repiresent Whole Namber Lengths on a Number Line	Analyze and Generate Line Plots Measuring and Estimating Areas of Plane Figures	Measure and Extensite Lengths in Standard Units Solve Problems Involving Perimeter of Polygons	Solve Problems involving Time Volume and Mass Use Areas to Model Addition and Multiplication	Solve Problems in Length, Time, Volume, Mass and Money Including Fractions Apply Area and Perimeter formulas for Rectangles Measure and Worth Angles in Whole Number Degres	Solve Problems in Length, Time, Volume, Mass and Monov including Docimals Convert Measurements within a System Solve Addition and Subtraction Problems for Unknown Angles	Solve Problems Involving Information Presented in Line Piots Organize Unit Raction Data (1/2, 1/4, 1/2) in a Lin c Piet	Recognize Angles Understand Concepts of Angle Measurement				
. Geometry	Analyzo , Comparo, and Compose & Dimensional Shippes	2 and 3 Dimensional Composite Shape's	Analyzo , Drow and Compare Shapes Having Specified Affiributes	lderefy Common Polygons an 8 Dimensional Aguros	d Categorias Diapos with Common Attributes	Partition Skapos into Parts with Equal Areas		Solivo Problems by Graphing Points on the Coordinate Plane Classify 2 Dimensional Figures into Categories Based on Proportion Use Nets to Find the Surface Area of Figures	Surface Area, and Volume	Draw Polygona in a Coordinate Plane Find the Length of a Side with the Same Rivst or Second Coordinate	Solus Problems Involving Scale Drawings of Geometric Figure s Solus Problems Involving Angle Meas "Areas, SA and Volume	Similarity Using Models	Angle Sum and Extentor Angles of Triangles and Transversals Replain and Apply the Pythagorean Theorem	
. Number and operations: Fractions			Repensent Fractions with Denominates 2, 3, 4, 6, or 8 or a Number Line	Rocognica Equivalent Praction on a Number Line	 Use Visual Models to Represent Equivalent Practices 	Compani Fractions with the Sante Ny merizion or Deno minator	Generate Equivalent Practions Use Models to Illustrate Equivalent Practicens Multiply and Divide Rections	Compare Fractione Using Common Numeratorson Denominators Compare Fractione Using Benchmark Fractione Such as 1/2 Solive Problems Involving	Decompose Fractions as Sum o Fractions with the care e Denominator Add and Subtract Mixed Numbers Using Equivalent Fractions Convert Fractions with Denominators 0.0 or 100 to fractions	Decompose Reschore as Multiples of Unit Fractions Multiply Fractions by a Whole Number Solve Problems Involving Addition and Subtraction of Fractions				
. Expressions and quations							Write and Evaluate Algebraic Expressions with Exponents Perform the Oxfor of Operations on Algebraic Expressions	Identify and Generate Equivalent Algebraic Augestions Reason and Solve One Variable Equations and I negualities	Use Substitution to Determine If an Equation or Inequality is True Use Variables to Represent Two Related Quantities in a Problem	Express One Quantity as the Dependent Variable of the Another Quantity Use Graphs, Tables and Equations to Show Variable Michaeles has	Add, Subtract, Rectar, and Expand Linear Expressions Rewrite Expressions to Show Rolationships Between Quantities Solve Simultaneous Linear Foundation in close Vacuation	Construct By astrons and Inequalities to Solve Problems Solve Problems Using Algeb take Equations with Rational Coefficients	Equivalent Expressions	Solve Problems Involvin Quantities in Scientific Notation Graph Proportion al Relationships: Unit Rati Slope
. The Number System							Ruceby Divide Multi Digit Numbers Rind the Least Common Multiple of Two Numbers 5-12	Fluently Add, Subtract, Multipl and Divide Multi Digit Decimal Use Models to Illustrate, Interpret and Compute Quotients of Fiscibons	y Rind the Greatest Common Is Factor of Two Numbers 5 300 Solve Problems Involving Division of Factions by Readiens	Apply Distributive Property to Generate Equivalent Expressions	Use Integers to Represent Quantities in Real World Contexts Piot/Find Rational Mambers on a Number Une	Not/Find Ordened Pains of Rational Numbers on a Coordinate Plane Understand and Exclusion Absolute Value of Rational Numbers	Biglain Statements of Order and Inequality U sing a Number Line Solve Problems by Graphing	Add and Subtract Ratio Numbers Using a Numb Multiply and Divide Rat Numbers
. Ratios and roportional elationships							Describe a Relationolly Between Two Quantifies Using a Ratio				Convert a Rational Number to Decimal Eigliain the Unit Rate 3/6 Associated with the Ratio 3.5, with 5 ≠ 0	Solve Problems I ruo king Basis Operations on Ratio ruo Navnders Use Various Techniques to Solve Problems) ruo king Ratios	Find Ratio nal Approximations of traition al Numbers Represent Propertion al Relationships by Equations and Graphs	Estimate the Location of Irrational Numbers on a Number Line Solve Problems Irvo Mm Proportional Relations h
. Statistics and robability							Discus Statistical Questions Involving Variability in Data	Discus Statistical Questions Involving Conter, Spread and Overall Shape	Discuss the Measure of Center and Variation for a Numerical Data Set	Display Numerical Data in Plots on a Number Line: Det Plots Histograms, Box Plots	Relate Measures of Center and Variability to Data Distribution and Context Summarize and Describe	Drawinformal Comparative Inferences About Two Populations Use Interguatile Range and	Mind or Approximate the Probability of Simple & Compound Events with Variour Techniques Use Random Sampling to Draw	Construct and interpret Piets from Two Way Ta Vior Versa

Plain (Grayscale) Version

		dult I	Basic	Eauc	atior		then	Tatics	5) Cur	ricul	um iv	Tatrix			
Domain	NRS L	Level 1 NRS Level 2						NRS Level 3				NRS Level 4			
1. Number and Operations: Base Ten	Place Value of 2 Digit Number Compare 2 Digit Numbers	rs Add and Subtract 2 Digit Numbers Model Addition and Subtraction of 2-Digit Numbers	Place Value of 3 Digit Number Compare 3 Digit Numbers	Add and Subtract 3 Digit Numbers Model Addition and Subtraction of 3 Digit Number	Round Whole Numbers to the Nearest Tensor Hundreds Multiply J. Digit Numbers By 2 5. Digit Multiples of 30	Use Properties of Operations to Perform Multi Digit Arithmetik Mentally Add and Subtract 10 or 100 to 3 Digit Numbers	a Generalize Understanding of Mace Value Compare Any Multi Digit Number	Any Place Value	Multiply 4 Digit Numbers by 1 to 2 Digit Numbers Divide 4 Digit Numbers by 1 Digit Numbers	Use Place Value to Understand Decimals Read, Write, and Compare Decimals to Thousandths					
	Solve Addition and Subtractio	n The Equal Sign	Solve Addition and Subtraction		Multiplication Facts within 100	Solve 2 Step Problemsor	Basic Operations with Multi Digit Numbers in Standard Algorithm Solve Multi Storp Problems	Perform Basic Operations on Decimal Numbers Using Multiple Strategies Interpret Multiplication as	Round Decimals to Any Place Interpret the Remainder in	Divide 4 Digit Numbers by 2 Digit Numbers Using Multiple Strategies Multiples of 1-Digit Numbers					
2. Operations and Algebraic Thinking	Problems within 20 Commutative and Associative Property of Addition	Solving Addition and Subtraction Equations	Problems within 300 Commutative and Associative Property of Multiplication	Division Problems within 300 Solve Multiplication and Division Equations	Distributive Property of Multiplication	Equilions Model Multiplication and Division within 300	Using Basic Operations Chock Answers Using Montal Computation and Estimation Write and Interpret Numerical Expressions	Comparison Statements Solve Problems Involving Multiplicative Comparisons Interpret Buressions without Evaluating Them	Problems Rind All Factor Pairs of Any 2 Digit Whole Number Generate and Analyze Numeri and Geometric Patterns	Up to 100 Prime and Composite Numbers within 100 I dentify inexplicit Features of a Pattern from a Rule					
3. Measurement and Data	Organize, Represent, and Interpret 3 Categories of Data	Indirectly Measure Lengths through Iteration	Analyse and Generate Picture Graphs and Bar Graphs Represent Whole Number Lengths on a Number Line	Analyze and Generate Line Piots Measuring and Estimating Areas of Plane Figures	Measure and Estimate Lengths In Randard Units Solve Problems Involving Perimeter of Polygons	Solve Problems Involving Time Volume and Mats Use Areas to Model Addition and Multiplication	c) Solve Problems in Length, Time, Volume, Mass and Money including Fractions Apply Area and Perameter formulas for Rectangles Measure and Sketch Angles in	a System Solve Addition and Substraction	Solve Problems Involving Information Presented in Line Plots Organize Unit Raction Data (1/2, 1/4, 1/8) in siline Plot	Recognize Angles Understand Concepts of Angle Measurement					
4. Geometry	Analyze , Compare, and Compose 3: Dimensional Shapes	2 and 3 Dimensional Composite Shapes	Analyze , Draw and Compare Shapes Having Specified Attributes	lidentfy Common Polygons an 3 Dimensional Figures	d Categorize Shapes with Common Attributes	Partition Shapes into Parts with Equal Areas	Whole Number Degrees b Dow and Identify Points, Line Une segments, and Rays Dow and Identify Angles, Persendicular and Paollel	Problems for Unknown Angles Solve Problems by Graphing Points on the Coordinate Plane Classify 2 Dimensional Figures into Categories Based on		Draw Polygons in a Coordinate Plane Find the Length of a Side with the Same Pirst or Second	Solve Problems Involving Scale Drawings of Geometric Figures Solve Problems Involving Angle Mess., Areas, SA and Yolume	Produce Congruence and Similarity Using Models Recognize Congruence and Similarity from	Angle Sum and Extentor Angles of Triangles and Triansversals Replain and Apply the Pythagorean Theorem	-	
			Represent Fractions with Doment Julies 2, 3, 4, 6, or 8 or	Recognize Equivalent Fraction	 Use Visual Models to Research Restarches & eachers 	Compare Fractions with the	Unes Represent 3-Dimensional Represent S-Dimensional Represe Equivalent Practions	Properties Use Nets to Find the Surface Area of Figures Compare Fractions Using Comman Namenakovan	Decompose Fractions as Sum of	Coordinate		Transformations		J	
5. Number and Operations: Fractions			Denaminatures 2, 3, 4, 6, or 8 or a Number Line	hanna fillanniken Gine	Reprosent Epstralent Plasinas	Barner Marmenation on Denominator	Use Models to Illustrate Equivalent Fractions	Common Numerators Denominators Compare Fractions Using Benchmark Fractions Such as 1/2	Pactors with the same Denominator Add and Subtract Moed Numbers Using Equivalent Practions	Multiply Fractions by a Whole Number					
							Multiply and Divide Fractions Write and Evaluate Algebraic	Solve Problems I wolking Multiplication and Division of Fractions Identify and Generate	Decimals Use Substitution to Determine	Solve Problems Involving Addition and Subtraction of Fractions Express One Quantity as the	Add, Subtract, Rector, and	Construct Equations and	Apply the Properties of	Solve Problems in volving	
6. Expressions and Equations							Expressions with Exponents Perform the Oxfor of Operations on Algebraic Expressions	Equitations Algobraic Expressions Reason and Solve One Variable Equitions and Inequalities	Han Equation or Inequality is Take or Use Variables to Represent Two Related Quantities in a Social	Dependent Variable of the Another Quantity Use Graphs, Tables and Equations to Show Variable	Expand Linear Expressions Rewrite Expressions to Show Relate notips Between Quantities	ine qualities to Solve Problems Solve Problems Using Algebraic Equations with Rational	Beponentsto Gone isto Boulvalent Expire ssions c Bushaste Square and Cube Roots of Perfect Squares and	Quantities in Scientific Notation Graph Proportional Relationships - Unit Rate a	
							Ruently Divide Multi Digit	Fluently Add, Subtract, Multipl	y Red the Greatest Common	Apply Distributive Property to Second Equivalent	Solve SimultaneousLinear Equations in One Variable Use Integers to Represent Quantities in Real World	Plot/Find Ordered Pairs of Rational Numbers on a	Explain Statements of Order and Incougility U sing a Number	Add and Subtract Rational	
7. The Number System							Numbers Rind the Least Common Multiple of Two Numberss 12	Use Models to Illustrate, Interpret and Compute Quotients of Fractions	Solve Problems Involving Division of Practions by Practions	Expressions	Contexts Contexts Plot/Find Rational Numbers on a Number Une Convert a Rational Number to	Coordinate Plane Un derstan d and Evaluate Absolute Value of Rational Numbers	and inequality U sing a Number Une Solve Problems by Graphing Red Rational Approximations	Numbers Using a Number Multiply and Divide Ration Numbers	
8. Ratios and Proportional							Describe a Relationship Between Two Quantities Using a Ratio				Decimal Deplain the Unit Rate a/b Associated with the Ratio a.b, with b 4 0	Operations on Rational Numbers Use Various Techniques to Solve Problems Line Ming Ratios	of Imational Numbers Represent Proportional Relationships by Equations and Graphs	Irrational Numbers on a Mumber Line Solve Problems Involving Proportional Relationships	
Relationships 9. Statistics and Probability							Discuss Statistical Questions Involving Variability in Data	Discuss Statistical Questions Involving Center, Spread and Overall Shape	Discuss the Measure of Center and Variation for a Numerical Data Set	Display Namerical Data in Piot on a Number Line: Dat Piots, Histograms, Box Piots	Relate Measures of Center and Variability to Data Distribution and Centext Summarite and Describe Numerical Data Sets	Draw Informal Comparative Inforences About Two Populations Use Interquartile Range and MAD to Draw Comparative	Red or Approximate the Probability of Simple & Compound Events with Variou Techniques Use Random Sampling to Dow Informeda About a Population	Construct and Interpret So Picts from Two Way Table Vice Versa Use the Equation of a Line: Model to Solve Problem	
0. Functions											Numerical Data Sets Define, Evaluate and Compare Runctions	Inferences	Construct a Runction to Model	Model to Solve Problems Describe Qualitatively or Sketch the Functional Relationship Between Two Quantities	

Presentation Version

Domain	NRSI	level 1		NRS	level 2			NRS	Level 3			NRS	evel 4	
	Mace Value of 2 Digit Numbers	Add and Submatt 2 Digit Numbers	Make Value of 3 Digit Numbers	Add and Subtract 3 Digit Numbers	Round Whole Numbers to the Nearest Tensor Hundreds	Use Properties of Operations to Perform Multi Digit Arithmetic		Road and Write Multi Digit Numbers in Names and Expanded Form	Multiply 4 Digit Numbers by 1 to 2 Digit Numbers	Use Place Value to Understand Docimals				
1. Number and Operations: Base Ten	Compare 2 Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers	Compare 3 Digit Numbers	Model Addition and Subtraction of 3 Digit Numbers		Mentally Add and Subtract 10 or 100 to 3 Digit Numbers	Compare Any Multi Digit Number Basic Operations with Multi- Digit Numbers in Standard Agenthm	Any Place Value	Divide 4 Digit Numbers by 1 Digit Numbers Round Decimals to Any Place	Read, Write, and Compare Decimals to Thousandths Divide 4 Digit Numbers by 2 Digit Numbers U sing Multiple Strategies				
2. Operations and Algebraic Thinking	Solie Addition and Subtraction Problems within 20 Commutative and Associative Property of Addition	The Equal Sign Solving Addition and Subtraction Equations	Solve Addition and Subtraction Problems within 100 Commutative and Associative Property of Multiplication	Solve Multiplication and Division Problems within 200 Solve Multiplication and Division Equations	Multiplication Facts within 100 Distributive Property of Multiplication	Solve 2 Step Problemsor Equations Model Multiplication and Division within 200	Solve Multi Step Problems Using Basic Operations Check Answers Using Mental Computation and Estimation Write and Interpret Numerical Expressions	Interpret Multiplication as Comparison Statements Solve Problems Involving Multiplicative Comparisons Interpret Expressions without Evaluating Them	Interpret the Remainder In Problems Kind All Factor Pars of Any 2 Digit Whole Number Generate and Analyze Nameri and Geoenstric Patterns	Multiples of 1 Digit Numbers Up to 200 Frime and Composite Numbers within 200 Ide refly inexplicit Features of a Pattern from a Bale				
3. Measurement and Data	Organize, Represent, and Interpret 3 Categories of Data	indrectly Measure Lengths through Iteration	Analyse and Generate Picture Graphs and Bar Graphs Represent Whole Number Lengths on a Number Line	Analyse and Generate Line Plots Measuring and Estimating Areas of Plane Figures	Measure and Estimate Lengths in Standard Units Solve Problems Involving Perimeter of Polygons	Solve Problems Involving Time, Volume and Mass Use Areas to Medel Addition and Multiplication	Solve Problems in Length, Time, Volume, Mass and Money Including Fractions Apply Area and Perimeter Formulas for Rectangles Measure and Skotch Angles in Whele Number Degrees	Solve Problems in Length, Time, Volume, Mass and Money including Decimals Convert Measurements within a System Solve Additionand Subtraction Problems for Unknown Angle	Solve Problems Involving Information Presented in Line Plots Organise Unit Practice Data (1/2, 1/4, 1/8) in a Line Plot	Recognize Angles Understand Concepts of Angle Measurement				
4. Geometry	Analyse, Compare, and Compose 3: Dimensional Shapes	2 and 3 Dimensional Composite Shape s	Analyse , Draw and Compare Shapes Having Specified Amributes	identify Common Polygons and 3: Cimensional Reures	8 Categoriae Stapes with Common Attributes	Patition Stopes into Pats with Equal Areas		Solve Problems by Graphing Points on the Coordinate Plan Classify 2 Dimensional Figures		Graw Polygons in a Coordinate Plane Find the Length of a Side with the Same Rest or Second Coordinate	Solve Problems Involving Scale Dowings of Geometric Figure s Solve Problems Involving Angle Meas "Areas, SA and Yolume	Similarity Using Models Recognize Congruence and	Angle Sum and Extentor Angles of Triangles and Transversals Explain and Apply the Pythagerean Theorem	
5. Number and Operations: Fractions			Represent Fractions with Denominators 2, 3, 4, 6, or 8 or a Number Line	Recognize Equivalent Fractions on a Number Line	Use Visual Medeix to Represent Equivalent Praction	Complane Fractions with the Same Numerator or Denominator	Generate Equivalent Practions Use Models to Illustrate Equivalent Practions Multiply and Divide Practions	Compare Fractions Using Common Numeratorian Denominatoria Compare Fractions Using Bendmark Fractions Such as 3/2 Solve Problems Involving Multiplication and Division of Evolutions	Decompose Fractions as Sum o Reactions with the same Decominator Add and Subtract Mixed Numbers Using Equivalent Reactions Convert Reactions with Decominators 3D or 100 to Decompli	Decompose Practions as Multiples of Unit Fractions Multiply Fractions by a Whole Namber Solive Problems I nio Ming Addition and Subtraction of Eventorie				
5. Expressions and Equations							Write and Evaluate Algebraic Expressions with Exponents Perform the Oxfor of Operations on Algebraic Expressions	Identify and Generate Equivalent Algebraic Expressions Reason and Solve One Variabil Equilitions and Inequalities	Use Substitution to Determine If an Equation or Inequality is Tise Use Variables to Represent Two Related Quantities in a Problem	Express One Quantity as the Dependent Variable of the Another Quantity Use G rights, Tables and Equations to Show Variable Relations higs	Add, Subtract, Roctor, and Expand Linear Expressions Rewrite Expressions to Show Relationships Between Quantities Solve Simultaneous Linear Equations in One Variable	Contruct Boustons and Inequalities to Solve Problems Solve Problems Using Algebrai Equations with Rational Coefficients	Apply the Properties of Broon entrato Generate Brouvalent Expansions Busiliante Signam and Cube Roots of Perfect Signames and Cubes	Solve Problems Involving Quantities in Scientific Notation Graph Proportional Relationships Unit Rate ast Slope
7. The Number System							Puently Divide Multi Digit Numbers Red the Least Common Multiple of Two Numbers 512		y Rind the Greatest Common Is Ractor of Two Numbers 5 100 Solve Problems Involving Dustion of Factions by Practions	Apply Distributive Property to Generate Equivalent Expressions	Use Integers to Represent Quantities in Real World Contracts Plot/Pind Rational Numbers on 5 Number Line.	Port/Find Ordened Pars of Rational Numbers on a <u>Coordinate Plane</u> Understand and Evaluate Absolute Value of Rational Numbers Solve Problems (nucling Bala Operations on Rational	Explain Statements of Order and Inequality Using a Number Line Solve Problems by Gisphing Find Rational Approximations of Instance Numbers	Add and Subtract Rational Numbers Using a Number Lin Multiply and Divide Rational Numbers Estimate the Location of Irrational Numbers on a
8. Ratios and Proportional Relationships							Describe a Relationship Between Two Quantities Using a Kato				Explain the Unit Rate a/b Associated with the Ratio a.b, with b = 0	Numbers Use Various Techniques to Solve Problems Linue Ming Ratios	Represent Proportional Relation ships by Equations and Graphs	Number Site Solve Pieblems Involving
9. Statistics and Probability							Disput Statistical Questions Involving Variability in Data	Discus Statistical Questions involving Center, Saread and Overall Shape	Discuss the Measure of Center and Variation for a Numerical Data Set	Disploy Numerical Data in Piot on a Number Line: Dot Mots, Histograms, Box Piots	Relate Measures of Center and Variability to Data Distribution and Context Summarize and Describe Numerical Data Sets		End or Approximate the Probability of Simple & Compound Brents with Various Techniques Use Rand on Sampling to Deaw Interences About a Population	
10. Functions											Define, Svaluate and Compare Runctions	Interpret the Equation y - the b as Defining a Line at Function	Construct a Function to Model Linear Relationships	Describe Qualitatively or Sie to'h the Functional Re bitions hip Between Two Duawifier

Layout of the Matrix

Doma	ains					Ν	RS I	_eve	ls					
								<u></u>						
Domain	NRS	Level 1			Level 2				Level 3			NRS	Level 4	
1. Number and Operations:	mpare 2 Digit Numbers	Numbes ModelAddition and	Compare 3 Digit Numbers	Numbers ModelAddition and	Nearest Tensor Hundreds	Perform Multi Digit Arithmetic Montally Add and Subtract 10	Compare Any Multi Digit	Expanded Form	to 2 Digit Numbers Divide 4 Digit Numbers by 1	Reat, Witte, and Compare				
Base Ten	ingore 2 Uge Number	Subtraction of 2 Digit Numbers	compare a coge numbers	Subtraction of 3 Digit Number		or 300 to 3 Digit Numbers	Number Number Stasic Operations with Multi	Any Macc Volum	Digt Numbers Round Decimals to Any Pilice	Decimals to Thousandths Divide 4 Digit Numbers by 2				
							Digt Numbers in Standard Algorithm	Occimal Numbers Using Multiple Brangies		Digit Numbers Using Multiple Strategies				
2. Operations and Algebraic	Me Addition and Subtracti oblights within 20 minutative and Associative		Solve Addition and Subtraction Problems within 100 Commutative and Associative	Solve Multiplication and Division Problems within 200 Unive Multiplication and	Multiplication Facts with in 100 Distributive Property of	Solve 2 Step Problemson Equations Model Multiplication and	Solve Multi Step Problems Using Basic Operations Check Answers Using Mental	Interpret Multiplication as Comparison Ratemonts Solve Problems Involving	Interpret the Remainder in Problems Rend All Factor Pairs of Any 2	Multiples of 1 Digit Numbers Up to 300 Prime and Composite Number				
Thinking	sporty of Addition	e Doving Addition and Subtraction Equations	Property of Multiplication	Division Equations	Multiplication	Division within 200	Concernation and Estimation Computation and Estimation	Multiplicative Comparisons Interpret Expressions without	Digt Whole Number	within 300 Identify in realicit Features of a				
<u> </u>	gampe, Represent, and	Indrectly Measure Lengths	Analyze and Generate Picture	Analyze and Generate Line	Measure and Estimate Lengths	Solve Problems Involving Time	Expressions Solve Problems in Longit,	Evaluating Them Solve Problems in Length.	and Geometric Patterns Solve Problems Involving	Pattern from a Rule Recognize Angles				
3. Measurement and Data	erpret 3 Categories of Dat	a through iteration	Graphs and Bar Graphs	Pes	in Standard Units	Volume and Macs	Time, Volume, Mass and Money including Fractions	Time, Volume, Mass and Money including Decimals	Information Presented in Line Plots					
5. Measurement and Data			Represent Whole Number Lengths on a Number Line	Measuring and Estimating Areas of Plane Figures	Solve Problems Involving Perimeter of Polygons	Use Areas to Model Addition and Multiplication	Apply Area and Perimeter Romulas for Rectangles Measure and Betch Angles In	Convert Measurements within a System Solve Address and Subtration	Organize Unit Fraction Data (1/2, 1/4, 1/8) in a Line Pilot	Understand Concepts of Angle Measurement				
<u> </u>	alute. Compare, and	2- and 3 Dimensional	Analyze, Draw and Compare	identity Common Polygons an	d Categoriae Shapes with	Patition Super into Pats wit	Whole Number Degrees	Problems for Unknown Angle	Solve Problems involving Area.	Draw Polygons in a Coordinant	Solve Problems Involving Scale	Produce Congruence and	Angle Sum and Extensor Angles	
	mpose 3 Dimonsional Iges	Composite Shape s	Shapes Having Specified Attributes	3 Dimensional Reures	Common Attributes	Equil Areas	Une segments, and Rays		Surface Area, and Volume	Rase	Drawings of Geometric Figures	Similarity Using Models	of Triangles and Transversals	1 .
4. Geometry			5				Dow and identity Angles, Perpendicular and Parcell Unes Represent 3 Denons	Classify 2 Dimensional Figures into Categories Based on Properties Use Nett to First the Surface	Rind Areas of Polygons by Composing or Decomposing	Find the Length of a Side with the Same Rest or Second Coordinate	Solar Problems Involving Augus	Recognize Congruence and similarity from Transformations	Brytein and Apply the Pythe can Theorem	
5. Number and Operations: Fractions			regenerate Practices and interview in 2, 3 interview	Recognize Equivalent from	Use Visual Models to Represent Equivalent Inte	Anne Martin Desenventer	Genedia unasient mons Ose Mos o situato Equivate sactoria Multiple Divide P	Conferences Confer	Tipole P. ord at Sur Minister d and Subtraction of the Subtraction of	Decompose Risidioni a Multiples of Unit Practs Multiply Practioni by a Number Problems I nuclising Problems and Subtraction of		el	IS	
							Write and Evaluate Algebraic Expressions with Exponents	Fractions Identify and Generate Equivalent Algebraic	Decimals Use Substitution to Determine If an Equation or inequality is	Express One Quantity as the Dependent Variable of the	Add, Subtract, Rector, and Expand Linear Expressions	Construct Boustons and inequalities to Solve Problems	Apply the Properties of	Solve Problems involving Quantities in Scientific
6. Expressions and Equations							Perform the Order of	Expressions Reason and Solve One Variable	True Use Variables to Represent	Another Quantity Use Graphis, Tables and	Rewrite Expressions to Show	Solve Problems Using Algebia	Reurvalent Expletisions ic Braluate Square and Cube	Notation Graph Proportional
0. Dr.p. escris and Equators							Operations on Algebraic Expressions	Equitions and inequalities	Two Related Quantities in a Problem	Equations to Show Variable Relations hips	Relationships Between Quantities Solve SimultaneousLinear	Equations with Rational Coefficients	Roots of Perfect Squares and Cubes	Relationships - Unit Rate as Slope
							Ruently Divide Multi Digit	Fluently Add, Subtract, Multipland Divide Multi Digit Decima	y Rind the Greatest Common Is Ractor of Two Numbers 6 200	Apply Distributive Property to Generate Equivalent	Equations in One Variable Use Integers to Represent Quantities in Real World	Plat/Find Ordered Pairs of Rational Numbers on a	Biglain Statements of Order and Inequality Using a Number	Add and Subtract Rational r Numbers Using a Number D
							Find the Least Common	Use Models to Illustrate,	Solve Problems Involving	Expressions	Contexts Plot/Field Rational Numbers on	Coordinate Plane Understand and Evoluate	Solve Problems by Graphing	Multiply and Divide Rationa
7. The Number System							Multiple of Two Numbers 5 12	Interpret and Compute Quotients of Floctions	Division of Pischons by Practions	J	a Number Line Convert a Rational Number to	Absolute Value of Rational Numbers	Red Rational Approximitions	Numbers Estimate the Location of
											Convert a Kational Number to Decimal	Operations on Rational	of irrational Numbers	Estimate the Location of Isrational Numbers on a
8. Ratios and Proportional Relationships	Th	e int	erse	ctio	n bei	wee	n a	dom	ain a	and	Explain the Unit Rate 3/5 Associated with the Ratio 3-3	Use Various TedWigues to Solve Problem Line Mor	Represent Proportion 3 Relationships by Touristions and	Solve Problems Involving Proceedies of Ecistrone New
							Ciscus Statistical Queitions	Giacuss Statistical Questions	Distain the Measure of Center	Display Numerical Data in Plot	ability to Data Dutribution	Draw Informal Comparative Inferences About Two	Red or Approximate the Probability of Simple &	Construct and InterpretScar Plots from Two Way Tables
9. Statistics and Probability	le	/el is	refe	rred	lasa	a rec	ion	in th	e ma	atrix	Contrat marite and Describe verical Data Sets		Compound Bients with Variou To divigues Use Random Sampling to Deal Inferences About a Population	s Vice Versa v Use the Equation of a Linear Model to Solve Problems
<u> </u>		0110	1010									Test accessor		
10. Functions											ALCONE.	b as Defining a Line or Function	Chest Relationships	Sketch the Functional Relationship Between Two
<u> </u>														

What are NRS Levels?

NRS stands for National Reporting System. The NRS divides Adult Basic Education into 4 levels:

Level 1 – Literacy (Grade Equivalent 0 to 1)

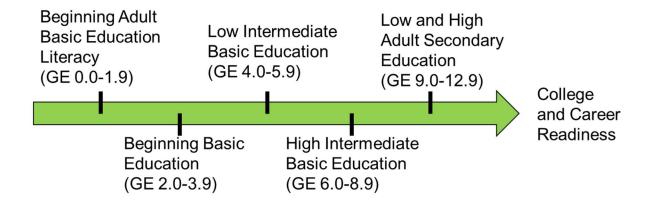
- Level 2 Beginning Basic (Grade Equivalent 2 to 3)
- Level 3 Low Intermediate (Grade Equivalent 4 to 5)
- Level 4 High Intermediate (Grade Equivalent 6 to 8)

Levels 5 and 6 are levels that belong to Adult Secondary Education (GED Prep):

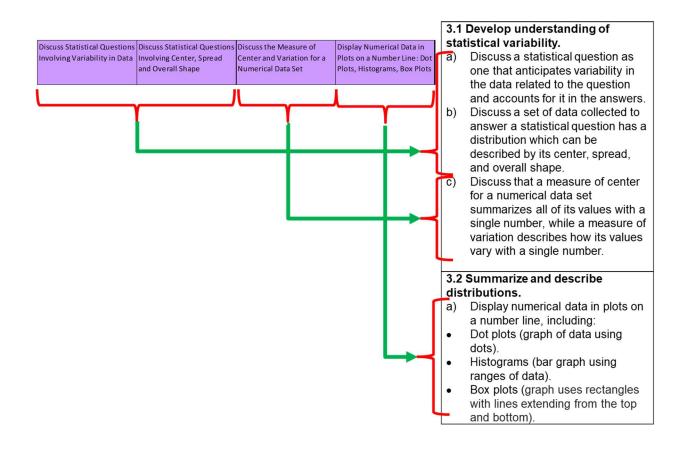
- Level 5 Low Adult Secondary Education (Grade 9 10)
- Level 6 High Adult Secondary Education (Grade 11 12)

It's a Continuum

Mathematics



How the Matrix was Derived from the Curriculum Frameworks



The Three Components of Rigor in the Matrix

Conceptual Understanding

Domain	NRS	Level 1		NRS	Level 2			NRS	Level 3			NRS	Level 4	
					New of Handwale	Perture Multi Cigit Antoniatio	inter .	in Norma and Expanded Form	Ogt Natilars	Decimals				
Number and Operations: Base Ten	Conguer 2.Cigit Huntlers	Model Addition - and Submettee of D-Ogil Humbers	Conjure 3.0gt Rankey		Multiply 1 Cigit Remines by 3 Cigit Multiples of 12	Gentaly Abl and Sattract 10ar 55 In 3-Ogli Bathlers	Compare Any Multi-Cipit Burtler			Read, Write, and Company Decimals In Discounting				
perotection base ren							Net Operation with Mah Oph Nations is Standard Agention	Derform Sale: Operations on Derinal Numbers Using Multiple Strategies	Assent Concernit to Any Place	Dyske #-Digk Runders by 2-Digk Runders Liang Auligie Strategies				
2. Operations and	Constatution and Association Property of Addisor	Savig Ablair and Sateschart	Committees and Association Traperty of Multiple attern	Low Multipleater and Distant	Sandarika Property at Mathalikatar	AtoMit Multiple areas - and Database	Deck Ansam Sizig Mettal Decadation and Extension	Colum Problems Involving Multiple when Companiess	Fiel N. Factor Fails of Any 2-Cigit.	Pone and Complete Numbers when 530				
AlgebraicThinking							Arts and Interpret National	Integral Explosion: without Evaluating Them	Conversion and Analysis Teamway and Constrainty Teamway	Mettly (medic) features of a				
	Categories of Corta	hwadan	Craphs and Bar Graphs	Meaning and Editorian Areas of	Standard Units Solve Problems Uncolving Perimeter	Useres and Max Deckess to Madel Addition and	Maters, Main and Manny Including Fractions Aboy Jona and Parimeter Tormulas	Internet, Mass and Money Lockeding Decimals	Organiae Unit Frantish Data (1/0,	Distantiant Concepts of Angle	· ·			
3. Measurement and Data			ot a Number Line	Pare ligane	e Polygan	Waltpleation	for factorgies	Eyeteen.	U.C. 1,40 in a Line Plat	Measurement				
							Measure and Statch Argins in Missie-Number Degrees	Solve AMBION and Subtraction Problems for Unknown Angles						
	Analyse, Company, and Company 3 Dimensional Shaped	 D-and 3-Cenenianal Conjunte Shapei 	walyse, Dreas and Compare Shapes Taxing Specified Attributes	Identify Common Polygons and 3- Dimensional Figures	Calegorite: Shapes with Controlos Attractes	Partition Shajawi inte Parte with Equil Areas	Draw and Identify Paints, Line, Line segments, and Reys	Colum Problems by Craylong Pases an the Coordinate (Pane	Solue Problems Involving Area, Surface Area, and Volume	Draw folgow in a Coordinate Place	Solue Problems Involving Scale Drawings of Geometric Figures	Produce Congruence and SanderRy Using Models	Argie Sum and Exterior Argins of Energies and Transversals	
4. Geometry	-						Drive and Identify Argies, Perpendicular and Parallel Lines	Casely 3-Convestored, Figures and Collegaries Based on Properties	Food Annual of Polygons, by Composing, or Decomposing	Find the Largeh of a Side with the Same First or Second Coordinate	Solve Problems Involving Argie Mean , Arean, SA and Volume	Becagition Congruence and Similarity from Transformations	Copies and Apply the Pythagemen Decawli	
							Represent 3-Denomicsul Figures Using Nots	Use Netists First the Surface Area of Figures	1					1
			Augmennet Fractions with Demonstrations 2, 3, 6, 6, or 8 on a Number Line	Heraption Equivalent Fractions on a Number Line	a Usa Vasad Middels its Represent Equivalent, Fractions	Company Fractions with the Same Namerator or Denominator	Geoende Equivalent: Fractions	Canyace Fractions Using Common Numeration or Decomination	Decompose Fractions adjum of Fractions with the same Devoninuitor	Decompose Fractions acMultiples in Unit Fractions				
5. Number and Operations: Fractions							Use Madeix to Buttone Equivalent Fractions	Compare Fractions: Using Benchmark Fractions Such as 1/2	Add and Submart Mand Nambers Using Egologiest Tractory	Multiply: Fractions by a bivele Number	1			
Operations, Fractions							Multiply and Divide Fractions	Colum Problems Involving Multiplication and Databas of Fractions	Convert Fractions with Decominations 10 or 100 to Decimal	Solve Problems Involving Addition and Subtraction of Fractions				
							Ignation with Exponents	Papiros: Dermann	Equator or inequality is True	Expendent Variable of the Another	Amor Copensies	to Salar Problems	Several Epicatery Expression	n Scientific Maturian
6. Expressions and							Autom the Onler of Operations on Andres Convestors	Deleter and Salar One-Metalde Equations and Inequalities	Die Webbie to Represent Two Related Counties in admitten	Description, Tables and Equations. In Done Menalthy Residences	Dearthe Expressions 10 Dates	Colum Problems Using Agelerate Columness with Stational Confirment	Costume Square and Cate States of PerfectSquares and Cates	Craph Propertiesal Indemontlys - Lint Rate as the Store
Equations							_				Color Strictgroomi Linear Esporten In One Statulie	-		
							Find the Least Common Multiple of	Danke Multi-Ogel Decisions	Two Rambers 5 100	Earwrate Egylwalert: Expression	n Real-World Contexts	Numbers on a Coordinate Plane.	Inequality Using a Number Line	Liding a Number Line
7. The Number System							Two Numbers 512	and Compute Quatients of Fraction	Enclose including challen of		Nation Live	Understand and Duskale Aballute Salar of Batterial Numbers		Numbers
											Convert a Referral Number to Decimal	Solve Problems Involving Beak Operations on Rational Rumbers	Find Rational Approximations of Institutal Numbers	Estimate the Location of Instignal Nambers on a Number Line
8. Ratios and Proportional							See Courter Ling a faile				where the field is to with the D	Personal Includes of Aller	history in Course and	nan manan manang Mananahas
Relationships														
9. Statistics and							involving Variability in Data	Involving Center, Spread and Overal Dispe	Nortenben für a Nortweit und Stata Set	Number Line: Cut Rots, Histograms, Diar Rots	Carbolity to Cata Distribution and Carbon	Information About Two Populations	of Densile & Compound Currents with Durbus Techniques	from Two-Way Tables and Vew Versa
Probability											Summariae and Describe Numerical Data Sets	Use Interguartile Barge and MIC to Draw Comparative Interescent	Use Bandon Sampley to Draw Inferences About a Population	Live the Equation of a Livear Model to Solar Problems
											ethe, Ecolume and Company,	Desired the Desired Science & St	Deserver allowers to Model Insur Selectionitys	Des die Quitaniery is Salah für Unterstanderung Seland
10. Functions														And Case of the

Procedural Fluency

Domain	NRS Level 1		NRS	Level 2			NRSI	evel 3			NRS	Level 4	
				Report First or Handrids	Nettern Mah-Digt. Attionung	-	in Names and Espanded Form	Sign Numbers	Dermak				
Number and Operations: Base Ten	ngare 3 Opt Numbers Model Addition and Subtri 3 Opt Numbers	en af Sangen 3 Ogt Burley	Model Addition and Satisfaction of 3-Digit Marclans	 Matter 1-Digit Humbers By 3-Digit Matteries of 53 	 Memory AM and Submert 20 at 50 pt Numbers 	D Canayee Any Multi-Digit Rootber		Date + Opt Bunkers by 3-Opt Numbers	Real, Write, and Compare Decimal In Transmitte				
						Date Operations with Multi-Opt Numbers in Standard Agentitive	Perturn Selic Operations on Decimal Nambers Ling Multiple Strategies	Dourd Decembris to Any Place	Dunler & Digit Rumbers by 2 Opti- fumbers Using Multiple Strategies				
][
. Operations and Algebraic Thinking	wordwalker and Association Edition Sold Salter Searchy of Addition Equalities	ten Denomination and Association Property of Adulpication	Selan Multiplication - and Christer Equatives	Defaulter Priperty of Multiplication	Model Multipleurises and Division unline 100	Deck Answers Living Meetar Computation and Determinen		Teel AL Factor Fals of Any 3-Digit Minis Number	htms and Compatite Munitiers, addres 100				
						Artis and Literaport Namencal Cognisions	Interpret Expressions without Evaluating Them	Generate and Analyse Numero and Generative Partners	dentify transplate Contained of a Failteen from a flate				
	Categories of Cate	Craphs and Bar Craphs		Standard Links	vitante and Mass	Diame, Mass and Money Including Fractions	Marra, Mass and Meray Toriating Decimals	Information Presented in Low Plans					
). Measurement and Data		Sepreset: While Number Long th a Number Line	N Meaning and Estimating Awai of Plane Figures	Solue Problems Unrobing Personete of Polygons	r Dar Anas to Model Addition and Multiplication	Apply Area and Pertmeter Formulae for Rectangles	Convert Measurements within a System	Organise Unit Fraction Data(1/2, 1/4, 1/8) in a Line Plat	Jodentand Concepts of Angle Measurement	1			
						Measure and Statch Argies in Multi-Number Cegnes	Solve Addition and Subtraction Problems for Unicount Angles			1			
	Nolym, Cangain, and Cangain 3- D-and 3-Denimizand. Cang Dimensional Shapes	te Nolym, Oras and Conyare Sha Saving Specified Attributes	pes I dentify Common Polygons and 3- Detwolarial Figures	Calegoriae Shapes with Common Attributes	Partition Shapen Into Parts with Equal Areas	Draw and Identify Paints, Lines, Lin segments, and Bays	Lolue Problems by Graphing Points on the Coordinate Plane	Solve Problems Involving Awa, Surface Awa, and Volume	Draw Rolygons in a Coordinater Plane	Solue Problems Lincoluting Scale Drawings of Geometric Figures	Produce Congruence and Sendarity Dong Madeis	Nigle Sum and Exterior Angles of Energies and Transversit	
4. Geometry						Draw and Identify Argins. Perpendicular and Paralel Lines	Casely 2-Convestigated Figures into Categories Based on Properties	First Areas of Polygons By Composing or Decomposing	Drift the Length of a Side with the Same First or Second Coordinate	Solve Problems Involving Angle Meat., Amail, 5A and Volume	Becagniae Congruence and Similarity from Transformations	Explain and Apply the Pythagorean Decretit	
		_				Sepreset 3-Dimensional Figures Dang Nets	Use Network Find the Surface Area of Figures		-				-
		Decombisitions, 2, 3, 4, 5, or 8 on . Number Cove	a Sumber Lee	Codvaled, Traction	Numerator of Decompositor	The Marker In Charlow Concerns	Numerican at Department	Fractions with the same Descentionary	Life Englishere Multiply Englishere by a White				
5. Number and Operations: Fractions						Die Mitchel 15 Batyste DipAssen Fracties Matury and Doole Fractions	Company Environme Using Securities Environme Sach as 1/2 Notes Politices (contains	MI and Subtract Mean Ramplers Ling Equivalent Fractions	Namber Solan Problems Inciding Addition				
						Notes and Costante Agelonic	Lighus Problems Locobing Nulliphramer and Division of Fourtiers	Descentration 10 or 100 to Decimal	e and Subbraction of Fractions	No. Subtract, Fairbry, and Depart	Product Facebook and Lans office	had the formular of formula it	The below location Court
						Expressions with Exponents Partners the Onlar of Operations, or	Agebrait Expressions	Equation or inequality is True	Dependent Variable of the Assther Disetting Des Graphs, Tables and Equations. An	Linear Copressions Describe Copressions to Show	Construct Equations and Inequalities to Solice Problems Solice Problems Using Agelonic	Apply the Properties of Exponents to Generate Equivalent Expression Evaluate Square and Calm Roots of	Colve Problems Involving Quantiti in Scientific Nutration Scientific Nutration
5. Expressions and Equations						Agelant in Unit a speakers of	Equations and Inequalities	Selated Quantities in altration	Dan Ungen, talai altropartie n Dina Variable Belationings	Belarizzahipa Behavion Quantities	Equations with Batterial Coefficients	Pantect Spaces and Cales Pantect Spaces and Cales	Unit flate as the Sirge
										Edue Senuitsveckus Cenear Equation In One Variable			
						Paerty Cytle Mali-Ogs Rander	Davide Addi-Digit Decisiak	Test the Greatest Contemp Factors Test Numbers 4.350	Paper Contributive Progenity to Services Equivalent Expression	La Integro Magneter Coartille In Bear-Roll Contexts	Part/End Colored Part of Anterio Renders on a Costilinate Place	English Distances of Coder and Desputy Using a Norther Line	NAL and Subtract Reserve Hurtin Dang a Number Line
7. The Number System						Find the Laser Common Multiple of Pair Nertbern 412	Une Madels to Hustonie, Interpret and Compute Quarterite of Practices	union Problems Involving Davager in Tractions by Practions		Cartler Lite	Indentset and Extense Abeliate Date: of Baltismic Northers	Lides Problems by Coupling	Catlers .
										Concert a flatonial Number to Del Hiad	Low Polities Involving Sec. Operators in Rational Numbers	Peet Batteriel: Approvimations, of Instituted Navetawis	Librate the Librator at instance Nambers and a Namber Liber (
8. Ratios and Proportional Relationships						nene over a relation of a second of the seco				with the Ballo a.b, with 5 r 0	Problems Involving Ratios	Approximation Programmers Relationships: by Equations and Engine	Propertienal Relationships
9. Statistics and						Darses Sceterical Questions Incoding Versibility in Data	Decus Statistical Question Involving Center, Spread and Overal Diage	Discuss the followare of Center and Nortelion: Asra Numerical Costa Set	Diglay Numerical Satu In Pate on a Number Low: Dat Plate, Hatogram, Nav Plate	Relative Measures of Center and Antibility to Data Distribution and Context	Drive Informal/Comparative Informative Apout: Two Populations	First or Approximate the Probability of Groups & Compound Cowers with Outside Techniques	
Probability										Summariae and Dear-Ban Numerical Data Sets	De Interpartie Barge and MAD to Dree Comparative Inferences	Dar Rendson Sempling its Draw Information Robelt a Fepalation	Jan the Equation of a Linear Mod to Solve Problems
10. Functions										Define, Doelane and Gampere Castlere	Interpret the Equation is not Service a Linear Function	Contract allowners to Madel Leave Relationings	Desiribe Qualitatively or Dansiti Functional Relativisity: Denueses Fait Qualities

Mathematics Application

Domain		Level 1			Level 2				evel 3			NRS	.evel 4	
	Pace Value of 3-Oigt Numbers	Add and Subtract2-Digit Numbers	Pace Value of 3-Oigh Numbers	Add and Solenet 3-Oigh Aunthen	Round Shok Numbers to the Neurod Term or Hundreds	Jar Properties of Operations to Reform Multi-Digit Atthewals:	Generalise Understanding of Place	Head and Witter Math-Digit Rambers in Names and Departed Form	Milliply 4-Digit Numbers by 5-312- Digit Numbers	Lise Place Value its Understand Decimals				
. Number and Operations: Base Ten	Company 3-Oight Mambers	Model Addition and Subtraction of 2-Oigt Numbers	Company 3-Oigh Numbers	Madel Addition and Subtraction of 3-Sigh Numbers	Multury 1-Ogit Numbers By 2-Ogit Multures of TO	Memoly AM and Submurt DD or 500 to 3-Digit Numbers	Compare Any Multi-Ogli Mander	Roard Multi-Ogt: Numbers to Any Place Value	Numbers	Read, 1989a, and Company Decimals to Theorem Whe				
							laur Operations with Multi-Digit Numbers in Standard Agorithm	Nertorn Ball: Operations on Decimal Nambers Using Multiple Drategies	Roard Geomail to Any Place	Duite 6-Ogit Numbers by 3-Ogit Numbers Dang Multiple Strategies				
	Colve Address and Subraction Problems wither 20 Commutative and Associative	The Equal Sign Debug Addition and Subtraction	latve Addition and Subtraction Installers within 100 Continuative and Associative	Salar Multiplication and Datase Problems within 100 Solar Multiplication and Datase	Multiplication Factoralities 200	Solve 2-Step Problems or Equations	Solue Multi-Solg, Postilema Using Belli: Operatione Deeck Anteiens Using Meetal	Interpret Multiplication an Comparison Distancements Solum Problems Involving	Entergrant the Reimander in Problems Find All Factor/Pales of Any 3-Digit	Multiples of 3-Oigh Numbers Up to 500 Prime and Composite Numbers				
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perations: Fractions							Multiply and Divide Fractions	Solve Problems Involving Nulligitation and Division of Fourthere	Convert Fractions with Decompositors 10 or 500 to Decimal	Solve Problems Involving Addition and Subtraction of Fractions				
								rocana						
								Report and Solve One-Mariade		Duetty			Evaluate Square and Cube Items of	
. Expressions and quations							Fertam the Onder of Operators an Agetosic Capreators	Person and Solve Crevitariale Equations, and Inequalities	Las tecnicies to impresent that Televist Quantities to a Problem	che Grapho, fabiles and Equatorio ito Nova Vartable: Relationshipe	Indefendings Between Quartities	Solve Problems Using Agebras Equations with Balancel Coefficients	Protein Spore and Cube Italis of Refect Spores and Cube	Crapt Proportional Realization
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							First the Least Converse Multiple of	Chiefe Made Day Decimals	Peet Numbers 100	Generate Equivalent Digression	n Teal World Contexts	Numbers on a Coordinate Plane	reequality Using a Number Line	Dang a Number Line
. The Number System							Two Numbers s.12	and Comparte Quatients of Fractions	Tractions by Fractions		Namber Line	Information and Control Advances	Test factorial Approximations of	Nambers
Potronad											Decimal	Operations on Rational Numbers	Instand Numbers	Numbers on a Number Line
8. Ratios and Proportional Relationships							our Quantities Liang a Ratio				when the Rates with when \$ + 0	holders including flates	Anteriorettan III, Equation and Draphs	Ingenteral Solatoratio
9. Statistics and							waving building in Data	louoking Center, Spread and Central Dispe	Varlation For a November of Data Ser.	Namber Low, Dol Rota, Hangesens Des Piete	Genelety on Data Detribution and Context	Februaries Appart Two Populations	ef Sangle & Compound: Fuents with Santau Techniques	Inen Two-Hilly Tablec and dow
Probability											Contraction and Describer Numerical Delta Setti	Das Intergulantile Range and MOD to Drow Complexible Inferences	Jae Bandon Sampling to Draw of eventse About a Population	Use the Equation of all least Miles for Solar Problems
0. Functions											Define, Turalusta and Company Functions	Interpret the Equation (1-Inter-B as Serving allower Function	Contract a Function to Model Linear Relationships	Describe Casificatively or Statistic functional Relationship Remain Fact Quartities

Applications of the Matrix

Instructional Planning

The matrix can be used in planning (daily, weekly, or by unit). Start with the upper leftmost content cell within each region of the matrix then teaching outwards to cover the entire region.

Domain	NRS L	evel 1
	Place Value of 2-Digit Numbers	Add and Subtract 2-Digit Numbers
1. Number and Operations: Base Ten	Compare 2-Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers
	Solve Addition and Subtraction Problems within 20	The Equal Sign
2. Operations and Algebraic Thinking	Commutative and Associative Property of Addition	Solving Addition and Subtraction Equations
,		

As teachers use the matrix in planning, point out that the starting point for every content region in the matrix is the upper leftmost content cell. In this example, after teaching "Place Value of 2-Digit Numbers," teachers may proceed to either "Adding and Subtracting 2-Digit Numbers" or "Comparing 2-Digit Numbers." The same process is suggested for other domains and regions such as Operations and Algebraic Thinking Level 1.

Pacing Guide and Progress Monitoring

The matrix can be used to track class progress or individual student's progress, which is important in adjusting the pace of the lesson and design/selection or learning materials/activities.

One use of the matrix is to track individual or group progress. Teachers can highlight or cross-out cells which students have demonstrated mastery through formative assessments. Students with similar progress can be grouped together for more effective instruction. Teachers can even use this tool to determine which material, book or online resource to use for small group activities.

In the sample matrix below, the cells in color are the objectives that students have mastered while the ones with no color are the ones that are yet to be mastered.

Domain	NRSI	evel 1		NRSI	Level 2			NRS I	Level 3	
	Place Value of 2 Digit Numbers	Add and Subtract 2 Digit Numbers	Place Value of 3 Digit Numbers	Add and Subtract 3 Digit Numbers	Round Whole Numbers to the Nearest Tensor Hundreds	Use Properties of Operations to Porform Multi Digit Arithmetic		Read and Write Multi Digit Numbers in Names and Expanded Form	Multiply 4 Digit Numbers by 1 to 2 Digit Numbers	Use Place Value to Understand Decimals
1. Number and Operations: BaseTen	Compare 2 Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers	Compare 3 Digit Numbers	Model Addition and Subtraction of 3-Digit Numbers	Multiply 1-Dgit Numbers By 2 Digt Multiples of 10	Mentally Add and Subtract 10 or 100 to 3 Digit Numbers	Compare Any Multi-Digit Number Basic Operations with Multi-	Any Place Value	Divide 4 Digt Numbers by 1 Digt Numbers Round Deamais to Any Place	Read, Write, and Compare Decimals to Thousandths Divide 4 Digit Numbers by 2
							Digt Numbers in Standard Algorithm	Decimal Numbers Using Multiple Strategies		Digit Numbers Using Multiple Strategies
	Solve Addition and Subtraction Problems within 20	The Equal Sign	Solve Addition and Subtraction Problems within 100	Solve Multiplication and Division Problems with in 100	Multiplication Facts with in 100	Solve 2 Step Problemsor Equations	Solve Multi Step Problems Using Basic Operations	Interpret Multiplication as Comparison Statements	Interpret the Remainder in Problems	Multiples of 1 Digit Numbers
2. Operations and Algebraic Thinking	Commutative and Associative Property of Addition	Solving Addition and Subtraction Equations	Commutative and Associative Property of Multiplication	Solve Multiplication and Division Equations	Distributive Property of Multiplication	Model Multiplication and Division with in 100	Check Answers Using Mental Computation and Estimation	Solve Problems Involving Multiplicative Comparisons	Find All Factor Pairs of Any 2- Digt Whole Number	Prime and Composite Numbers within 100
							Write and interpret Numerical Expressions	Interpret Expressions without Evaluating Them	Generate and Analyse Numeric and Geometric Patterns	identify in explicit Features of a Pattern from a Rule
	Organize, Represent, and Interpret 3 Categories of Data	Indirectly Measure Lengths through Iteration	Analyze and Generate Picture Graphs and Bar Graphs	Analyze and Generate Line Plots	Measure and Estimate Lengths In Standard Units	Solve Problems Involving Time, Volume and Mass	Solve Problems in Length, Time, Volume, Mass and Money Including Fractions	Solve Problems in Length, Time, Volume, Mass and Money including Decimals	Solive Problems Involving Information Presented in Line Plats	Recognize Angles
3. Measurement and Data			Represent Whole Number Lengths on a Number Line	Measuring and Estimating Areas of Plane Figures	Solve Problems Involving Perimeter of Polygons	Use Areas to Model Addition and Multiplication	Apply Area and Perimeter Romulas for Rectangles	Convert Measurements within a System		Understand Concepts of Angle Measurement
							Whole Number Degrees	Solve Addition and Subtraction Problems for Unknown Angles		
	Analyse, Compare, and Compose 3-Dimensional Shapes	2 and 3 Dimensional Composite Shape s	Analyse, Draw and Compare Shapes Having Specified Attributes	Identify Common Polygons and 3 Dimensional Figures	Common Attributes	Partition Shapes into Parts with Equal Areas	Draw and identify Points, Lines, Line segments, and Rays	Solve Problems by Graphing Points on the Coordinate Plane	Solve Problems Involving Area. Surface Area, and Volume	Draw Polygons in a Coordinate Plane
4. Geometry							Disw and identify Angles, Perpendicular and Paraillel Lines	Classify 2 Dimensional Figures into Categories Based on Properties	Rind Areas of Polygons by Composing or Decomposing	Find the Length of a Side with the Same Rist or Second Coordinate
							Represent 3-Dimensional Figures Using Nets	UseNets to Find the Surface Area of Figures		
			Represent Fractions with Denominators 2, 3, 4, 6, or 8 on a Number Line	Recognize Equivalent Practions on a Number Line	Use Visual Models to Represent Equivalent Practions	Compare Fractions with the Same Numerator or Denominator	Generate Equivalent Practions	Compare Fractions Using Common Numerators or Denominators	Decompose Fractions as Sum of Practions with the same Denominator	Decompose Practions as Multiples of Unit Practions
5. Number and Operations: Fractions							Use Models to Illustrate Equivalent Practions	Complare Fractions Using Benchmark Fractions Such as	Add and Subtract Mixed Numbers Using Equivalent Bractions	Multiply Fractions by a Whole Number
							Multiply and Divide Practions	are Solve ProblemsTrivolving Multiplication and Division of Bractions	Convert Ractions with Denominators 10 or 100 to Decimals	Solve Problems I no lving Addition and Subtraction of Fractions
							Write and Evaluate Algebraic Expressions with Exponents	Identify and Generate Equivalent Algebraic Expressions		Express One Quantity as the Dependent Variable of the Another Quantity
6. Expressions and Equations							Perform the Oxfor of Operations on Algebraic Expressions	Reason and Solve One Variable Equations and Inequalities	Use Variables to Represent Two Related Quantities in a Problem	Use-Graphs, Tables and Equations to Show Variable Relationships
								-		
							Ruently Drude Multi Digit Numbers	Fluently Add, Subtract, Multiply and Divide Multi Digit Decimal	y Rind the Greatest Common is Ractor of Two Numbers 5 200	Apply Distributive Property to Generate Equivalent Expressions
7. The Number System							Find the Least Common Multiple of Two Numberss 12	Use Models to Illustrate, Interpret and Compute Quotients of Fractions	Solive Problems Involving Division of Eractions by Practions	

Learning Profiles

The matrix can be used together with standardized or formative test results to map students strong and weak areas which could lead to developing class, small group or individual student learning profiles.

This sample matrix below show's a student's learning profile. This is a sample profile of a student that is struggling with area models and fractions. Seeing this map will help the teacher develop lessons, provide remediation, select appropriate materials/activities and implement alternative instructional strategies that would address students' weaker skills.

Class learning profiles may also be generated for objectives that meet a certain percentage of class mastery. If the image above is a class profile, this shows areas where majority of the students show strength and where majority of the students show weakness. Teachers can then decide which areas in red to remediate or spend more time on.

Domain	NRS L	evel 1		NRS L	evel 2			NRS L	evel 3	
	Place Value of 2-Digit Numbers	Add and Subtract 2-Digit Numbers	Place Value of 3-Digit Numbers				Generalize Understanding of Place Value		Multiply 4 Digit Numbers by 1- to 2-Digit Numbers	Use Place Value to Understand Decimals
1. Number and Operations: Base Ten	Compare 2-Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers	Compare 3-Digit Numbers	Model Addition and Subtraction of 3-Digit Numbers		Mentally Add and Subtract 10 or 100 to 3-Digit Numbers	Compare Any Multi-Digit Number	Round Multi-Digit Numbers to Any Place Value	Divide 4-Digit Numbers by 1- Digit Numbers	Read, Write, and Compare Decimals to Thousandths
							Basic Operations with Multi- Digit Numbers in Standard Algorithm	Perform Basic Operations on Decimal Numbers Using Multiple Strategies	Round Decimals to Any Place	Divide 4-Digit Numbers by 2- Digit Numbers Using Multiple Strategies
Contract Contractor	Solve Addition and Subtraction Problems within 20	The Equal Sign	Solve Addition and Subtraction Problems within 100	Solve Multiplication and Division Problems within 100	Multiplication Facts within 100		Solve Multi-Step Problems Using Basic Operations	Interpret Multiplication as Comparison Statements	Interpret the Remainder in Problems	Multiples of 1-Digit Numbers Up to 100
2. Operations and Algebraic Thinking	Commutative and Associative Property of Addition	Solving Addition and Subtraction Equations	Commutative and Associative Property of Multiplication	Solve Multiplication and Division Equations			Check Answers Using Mental Computation and Estimation	Solve Problems Involving Multiplicative Comparisons	Find All Factor Pairs of Any 2- Digit Whole Number	Prime and Composite Numbers within 100
							Write and Interpret Numerical Expressions	Interpret Expressions without Evaluating Them	Generate and Analyze Numeric and Geometric Patterns	Identify Inexplicit Features of a Pattern from a Rule
	Organize, Represent, and Interpret 3 Categories of Data	Indirectly Measure Lengths through Iteration	Analyze and Generate Picture Graphs and Bar Graphs	Analyze and Generate Line Plots	Measure and Estimate Lengths in Standard Units	Solve Problems Involving Time, Volume and Mass	Solve Problems in Length, Time, Volume, Mass and Money Including Fractions	Solve Problems in Length, Time, Volume, Mass and Money Including Decimals	Solve Problems Involving Information Presented in Line Plots	Recognize Angles
3. Measurement and Data			Represent Whole Number Lengths on a Number Line		Solve Problems Involving Perimeter of Polygons	Use Areas to Model Addition and Multiplication	Apply Area and Perimeter Formulas for Rectangles	Convert Measurements within a System	Organize Unit Fraction Data (1/2, 1/4, 1/8) in a Line Plot	Understand Concepts of Angle Measurement
							Whole-Number Degrees	Solve Addition and Subtraction Problems for Unknown Angles		
			Analyze, Draw and Compare Shapes Having Specified Attributes	Identify Common Polygons and 3-Dimensional Figures		Partition Shapes into Parts with Equal Areas		Solve Problems by Graphing Points on the Coordinate Plane		Draw Polygons in a Coordinate Plane
4. Geometry							Perpendicular and Parallel Lines	into Categories Based on Properties	Find Areas of Polygons by Composing or Decomposing	Find the Length of a Side with the Same First or Second Coordinate
							Represent 3-Dimensional Figures Using Nets	Use Nets to Find the Surface Area of Figures		
				Recognize Equivalent Fractions on a Number Line	Use Visual Models to Represent Equivalent Fractions			Compare Fractions Using Common Numerators or Denominators	Decompose Fractions as Sum of Fractions with the same Denominator	Decompose Fractions as Multiples of Unit Fractions
5. Number and Operations: Fractions							Use Models to Illustrate Equivalent Fractions	Compare Fractions Using Benchmark Fractions Such as 1/2	Add and Subtract Mixed Numbers Using Equivalent Fractions	Multiply Fractions by a Whole Number
							Multiply and Divide Fractions	Solve Problems Involving Multiplication and Division of Fractions	Convert Fractions with Denominators 10 or 100 to Decimals	Solve Problems Involving Addition and Subtraction of Fractions

Student Checklists

As individual students or groups of students start demonstrating mastery of skills in red, teachers/students can start marking through the red cells where students have successfully demonstrated mastery. Teachers/students can also use the Plain (Grayscale) Version of the matrix which is more readable. See sample matrix on the next page.

Domain	NRS L	evel 1		NRS L	evel 2			NRS L	evel 3	
	Place Value of 2-Digit Numbers	Add and Subtract 2-Digit Numbers	Place Value of 3-Digit Numbers		Round Whole Numbers to the Nearest Tens or Hundreds	Use Properties of Operations to Perform Multi-Digit Arithmetic	Generalize Inderstanding of Pla Vr		Multiply 4-Digit Numbers by 1- to 2-Digit Numbers	Use Place Value to Understan Decimals
1. Number and Operations: Base Ten	Compare 2-Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers		Model Addition and Subtraction of 3-Digit Numbers	Multiply 1-Digit Numbers By 2- Digit Multiples of 10	Mentally Add and Subtract 10 or 100 to 3-Digit Numbers	Compare Any Multi-Digit Number	Round Multi-Digit Numbers to Any Place Value	Divide 4-Digit Numbers by 1- Digit Numbers	Read, Write, and Compare Decimals to Thousandths
				/			Basic Operations with Multi- Digit Numbers in Standard Algorithm	Perform Basic Operations on Decimal Numbers Using Multiple Strategies	Round Decimalisto Any Place	Divide 4-Digit Numbers by 2- Digit Numbers Using Multiple Strategies
	Solve Addition and Subtraction Problems within 20			Divit Problems within 100	Multiplication Facts within 100	Equations	Solve Multi-Step Problems Using Basir Operations	Interpret Multiplication as Comparison Statements	Interpret the Remainder in Problems	Multiples of 1-Digit Numbers Up to 100
2. Operations and Algebraic Thinking		Solving Addition and Subtraction Equations	Commutative and Associative Property of Multiplication	Sec. Multiplication and vision Equations	Distributive Property of Multiplication	Model Multiplication and Division within 100	Check Plawers Using Mental Complication and Estimation	Solve Problems Involving Multiplicative Comparisons	Find All Factor Pairs of Any 2- Digit Whole Number	Prime and Composite Number within 100
Ŭ							and Interpret Numerical Expressions	Interpret Expressions without Evaluating Them	Generate and Analyze Numeric and Geometric Patterns	Identify Inexplicit Features of Pattern from a Rule
				Analyze and Ganerate Line Plots	Measure and Estimate Lengths in Standard Units	Solve Problems Involving Time, Volume and Mass	Solve Problems in Length, Time, Volume, Mass and Money Including Fractions	Solve Problems in Length, Time, Volume, Mass and Money Including Decimals	Solve Problems Involving Information Presented in Line Plots	Recognize Angles
3. Measurement and Data			Represent Whole Number Lengths on a Number Line	Mean Ing and Estimating of Plane Figures	Solve Problems Involving Perimeter of Polygons	Use Areas to Model Addition and Multiplication	Apply Area and Perimeter Formulas for Rectangles	Convert Measurements within a System	(1/2, 1/4, 1/8) in a Line Plot	Understand Concepts of Angl Measurement
				New York			Whole-Number Degrees	Solve Addition and Subtraction Problems for Unknown Angles		
	Analyze, Compare, and Compose 3-Dimensional Shapes		Analyze, Draw and Compare Shapes Having Specified Attributes	Identify Common Polygons and 3-Dimensional Figures	Categorian hapes with Course Attributes	Partition Shapes into Parts with Equal Areas	Lines, Line segments, and Rays	Solve Problems by Graphing Points on the Coordinate Plane		Draw Polygons in a Coordinat Plane
4. Geometry							Draw and Infantify Angles, Perpendicular and Parallel Lines	Classify 2-Dimensional Figures into Categories Based on Properties	Find Areas of Polygons by Composing or Decomposing	Find the Length of a Side with the Same First or Second Coordinate
							Jent 3-Dimensional Furres Using Nets	Use Nets to Find the Surface Area of Figures		
					Use Visual Models to Represent Equivalent Fractions	Compare Fractions with the Same Numerator or Denominator	1	Common Numerators or Denominators	Decompose Fractions as Sum of Fractions with the same Denominator	Decompose Fractions as Multiples of Unit Fractions
5. Number and Operations: Fractions							Use Models to Illustrate Equivalent fractions	Compare Fractions Using Benchmark Fractions Such as 1/2	Add and Subtract Mixed Numbers Using Equivalent Fractions	Multiply Fractions by a Whol Number
							Mult , y and Divide Fractions	Solve Problems Involving Multiplication and Division of Fractions	Convert Fractions with Denominators 10 or 100 to Decimals	Solve Problems Involving Addition and Subtraction of Fractions

Learning Trajectories

A learning trajectory is generally defined as a content-specific learning path, a developmental progression, and/or a building of conceptual components.

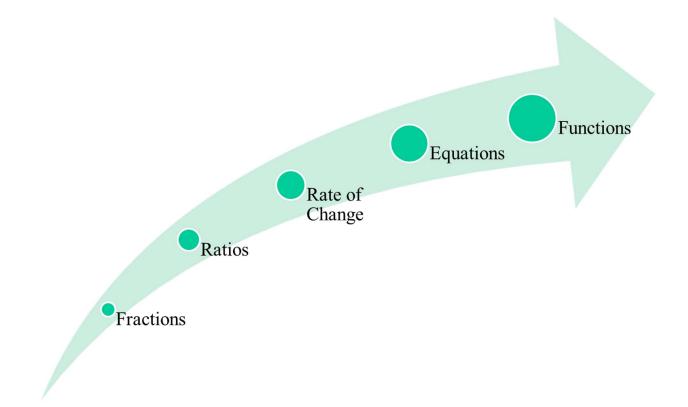
G. Mojica (2011). A trajectory toward understanding. University of North Carolina
 Chapel Hill, School of Education, NC.

http://thewell.web.unc.edu/2011/10/31/trajectory-toward-understanding/

Example:

It would be most helpful for students to understand why students need to spend so much time learning fractions (and operations). It provides the building blocks for constructing equations and functions. As students learn how functions behave, they are also starting to learn the properties of ratios. As students compare quantities using ratios, students are also learning how to write them in terms of rates of change. Although equations may be thought as something completely separate from rates of change; for some equations like linear equations, in the form y = mx + b, the rate of change or more commonly known as slope (m) is the most important part. For linear equations, the rate of change determines how steep the line rises from left to right. As students study linear equations, they are also studying the first and easiest type of function which is the linear function.

The next page shows a graphic image of this learning trajectory.



Learning trajectories help emphasize the big ideas in mathematics such as functions and equations.

Below is a sample matrix showing a learning trajectory for Single Step Equations.

Domain	NRSL	evel 1		NRSL	evel 2			NRS L	evel 3	
	Place Value of 2-Digit Numbers	Add and Subtract 2-Digit Numbers	Place Value of 3-Digit Numbers	Add and Subtract 3-Digit Numbers	Round Whole Numbers to the Nearest Tens or Hundreds	Use Properties of Operations to Perform Multi-Digit Arithmetic	Generalize Understanding of Place Value	Read and Write Multi-Digit Numbers in Names and Expanded Form	Multiply 4 Digit Numbers by 1- to 2-Digit Numbers	Use Place Value to Understan Decimals
1. Number and Operations: Base Ten	Compare 2-Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers	Compare 3-Digit Numbers	Model Addition and Subtraction of 3-Digit Numbers	Multiply 1-Digit Numbers By 2- Digit Multiples of 10	Mentally Add and Subtract 10 or 100 to 3-Digit Numbers	Compare Any Multi-Digit Number	Round Multi-Digit Numbers to Any Place Value	Divide 4-Digit Numbers by 1- Digit Numbers	Read, Write, and Compare Decimals to Thousandths
base ren							Basic Operations with Multi- Digit Numbers in Standard Alsorithm	Perform Basic Operations on Decimal Numbers Using Multiple Strategies	Round Decimals to Any Place	Divide 4-Digit Numbers by 2- Digit Numbers Using Multiple Strategies
	Solve Addition and Subtraction Problems within 20	The Equal Sign	Solve Addition and Subtraction Problems within 100	Solve Multiplication and Division Problems within 100	Multiplication Facts within 100	Solve 2-Step Problems or Equations	Solve Multi-Step Problems Using Basic Operations	Interpret Multiplication as Comparison Statements	Interpret the Remainder in Problems	Multiples of 1-Digit Numbers Up to 100
2. Operations and Algebraic Thinking	Commutative and Associative Property of Addition	Solving Addition and Subtraction Equations	Commutative and Associative Property of Multiplication	Solve Multiplication and Division Equations	Distributive Property of Multiplication	Division within 100	Check Answers Using Mental Computation and Estimation Write and Interpret Numerical	Solve Problems Involving Multiplicative Comparisons Interpret Expressions without	Find All Factor Pairs of Any 2- Digit Whole Number Generate and Analyze Numeric	Prime and Composite Number within 100 Identify Inexplicit Features of I
							Expressions	Evaluating Them	and Geometric Patterns	Pattern from a Rule
	Organize, Represent, and Interpret 3 Categories of Data	Indirectly Measure Lengths through Iteration	Analyze and Generate Picture Graphs and Bar Graphs	Analyze and Generate Line Plots	Measure and Estimate Lengths in Standard Units	Solve Problems Involving Time, Volume and Mass	Solve Problems in Length, Time, Volume, Mass and Money Including Fractions	Solve Problems in Length, Time, Volume, Mass and Money Including Decimals	Solve Problems Involving Information Presented in Line Plots	Recognize Angles
3. Measurement and Data			Represent Whole Number Lengths on a Number Line	Measuring and Estimating Areas of Plane Figures	Solve Problems Involving Perimeter of Polygons	Use Areas to Model Addition and Multiplication	Apply Area and Perimeter Formulas for Rectangles Measure and Sketch Angles in	Convert Measurements within a System Solve Addition and Subtraction	Organize Unit Fraction Data (1/2, 1/4, 1/8) in a Line Plot	Understand Concepts of Angle Measurement
							Whole-Number Degrees	Problems for Unknown Angles		
	Analyze, Compare, and Compose 3-Dimensional Shapes	2- and 3-Dimensional Composite Shapes	Analyze, Draw and Compare Shapes Having Specified Attributes	Identify Common Polygons and 3-Dimensional Figures	Categorize Shapes with Common Attributes	Partition Shapes into Parts with Equal Areas	Lines, Line segments, and Rays	Solve Problems by Graphing Points on the Coordinate Plane	Surface Area, and Volume	Draw Polygons in a Coordinate Plane
4. Geometry							Draw and Identify Angles, Perpendicular and Parallel Lines	Classify 2-Dimensional Figures into Categories Based on Properties	Find Areas of Polygons by Composing or Decomposing	Find the Length of a Side with the Same First or Second Coordinate
							Represent 3-Dimensional Figures Using Nets	Use Nets to Find the Surface Area of Figures		
			Represent Fractions with Denominators 2, 3, 4, 6, or 8 on a Number Line	Recognize Equivalent Fractions on a Number Line	Use Visual Models to Represent Equivalent Fractions	Compare Fractions with the Same Numerator or Denominator	Generate Equivalent Fractions	Compare Fractions Using Common Numerators or Denominators	Decompose Fractions as Sum of Fractions with the same Denominator	Decompose Fractions as Multiples of Unit Fractions
5. Number and Operations: Fractions							Use Models to Illustrate Equivalent Fractions	Compare Fractions Using Benchmark Fractions Such as 1/2	Add and Subtract Mixed Numbers Using Equivalent Fractions	Multiply Fractions by a Whole Number
							Multiply and Divide Fractions	Solve Problems Involving Multiplication and Division of Fractions	Convert Fractions with Denominators 10 or 100 to Decimals	Solve Problems Involving Addition and Subtraction of Fractions
							Write and Evaluate Algebraic Expressions with Exponents	Identify and Generate Equivalent Algebraic Expressions	Use Substitution to Determine If an Equation or Inequality is True	Express One Quantity as the Dependent Variable of the Another Quantity
6. Expressions and Equations							Perform the Order of Operations on Algebraic Expressions	Reason and Solve One-Variable Equations and Inequalities	Use Variables to Represent Two Related Quantities in a Problem	Use Graphs, Tables and Equations to Show Variable Relationships
							Fluently Divide Multi-Digit Numbers	Fluently Add, Subtract, Multiply and Divide Multi-Digit Decimals	Construction of the Construction of the Construction	Apply Distributive Property to Generate Equivalent Expressions
7. The Number System							Find the Least Common Multiple of Two Numbers ≤ 12	Use Models to Illustrate, Interpret and Compute Quotients of Fractions	Solve Problems Involving Division of Fractions by Fractions	

Mapping High Impact Indicators

High Impact Indicators are skills/objectives that are useful for educators to emphasize in the classroom because they are essential for students in order to perform well on the GED Test.

- They represent particular foundational skills that are the basis for the development of other skills covered in the GED® Assessment Targets and have broad usefulness that can be applied in multiple contexts.
- They are a good fit for classroom instruction because they are not complicated but are important for students to know and use.
- GED® testing data suggests that educators may not be currently focusing on these skills in their GED® test preparation.

Teachers can use the matrix to develop a mapping of the foundational skills leading to each GED High Impact Indicator. Below is a sample matrix mapping the content skills needed to achieve Q4 and Q5 High Impact Indicators.

Q.4: Calculate dimensions, perimeter, circumference, and area of two-dimensional figures

Domain	NRS L	evel 1		NRS L	evel 2			NRSI	evel 3	
	Place Value of 2-Digit Numbers	Numbers	Place Value of 3-Digit Numbers	Numbers	Card and the second state of the second	to Perform Multi-Digit Arithmetic	Generalize Understanding of Place Value	Read and Write Multi-Digit Numbers in Names and Expanded Form	Multiply 4-Digit Numbers by 1- to 2-Digit Numbers	Use Place Value to Understand Decimals
1. Number and Operations:	Compare 2-Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers		Model Addition and Subtraction of 3-Digit Numbers	Multiply 1-Digit Numbers By 2-	Mentally Add and Subtract 10 or 100 to 3-Digit Numbers	Compare Any Multi-Digit Number	Round Multi-Digit Numbers to Any Place Value	Divide 4-Digit Numbers by 1- Digit Numbers	Read, Write, and Compare Decimals to Thousandths
Base Ten								Perform Basic Operations on Decimal Numbers Using Multiple Strategies		Divide 4-Digit Numbers by 2- Digit Numbers Using Multiple Strategies
2. Operations and Algebraic	Solve Addition and Subtraction Problems within 20 Commutative and Associative	Solving Addition and	Commutative and Associative	Division Problems within 100 Solve Multiplication and		Equations Model Multiplication and	Check Answers Using Mental	Interpret Multiplication as Comparison Statements Solve Problems Involving	Interpret the Remainder in Problems Find All Factor Pairs of Any 2-	
Thinking	Property of Addition	Subtraction Equations				Division within 100	Write and Interpret Numerical Expressions	Multiplicative Comparisons Interpret Expressions without Evaluating Them	and Geometric Patterns	Pattern from a Rule
	Organize, Represent, and Interpret 3 Categories of Data	Indirectly Measure Lengths through Iteration	Analyze and Generate Picture Graphs and Bar Graphs	Analyze and Generate Line Plots	in Standard Units	Solve Problems Involving Time, Volume and Mass	Solve Problems in Length, Time, Volume, Mass and Money Including Fractions	Solve Problems in Length, Time, Volume, Mass and Money including Decimals	Solve Problems Involving Information Presented in Line Plots	Recognize Angles
3. Measurement and Data				Measuring and Estimating Areas of Plane Figures	Solve Problems involving Perimeter of Polygons	Use Areas to Model Addition and Multiplication		Convert Measurements within a System Solve Addition and Subtraction	(1/2, 1/4, 1/8) in a Line Plot	Understand Concepts of Angle Measurement
							Whole-Number Degrees	Problems for Unknown Angles		
	Analyze, Compare, and Compose 3-Dimensional Shapes	Composite Shapes		Identify Common Polygons and 3-Dimensional Figures	Categorize Shapes with Common Attributes	Partition Shapes into Parts with Equal Areas	Draw and Identify Points, Lines, Line segments, and Rays	Solve Problems by Graphing Points on the Coordinate Plan	Solve Problems Involving Area, a Surface Area, and Volume	Draw Polygons in a Coordinate Plane
4. Geometry							Draw and Identify Angles, Perpendicular and Parallel Lines	Classify 2-Dimensional Figures into Categories Based on Properties	Find Areas of Polygons by Composing or Decomposing	Find the Length of a Side with the Same First or Second Coordinate
							Represent 3-Dimensional Figures Using Nets	Use Nets to Find the Surface Area of Figures		

Q.5: Calculate dimensions, surface area, and volume of three-dimensional figures

Benefits to the Teachers and/or Students

- Summarizes the ABE math standards in a more visual representation
- Shows an overall picture of the ABE math standards
- Shows the logical grouping and possible sequencing of the standards
- Emphasizes out how each standards relate to one another

- Organizes the standards in ABE levels across conceptual categories/domains
- Shows how much content/objectives are covered at each ABE level or domain
- Serves as a quick guide for teachers so that they are able to prioritize and differentiate teaching to the most important skills to adult students based on the student's ability, curriculum and standardized assessment.
- Enumerates every skill/concept/topic that has to be covered in the ABE Math Classroom.
- Highlights every standard that is tested in standardized assessments such as the TABE 11 & 12.

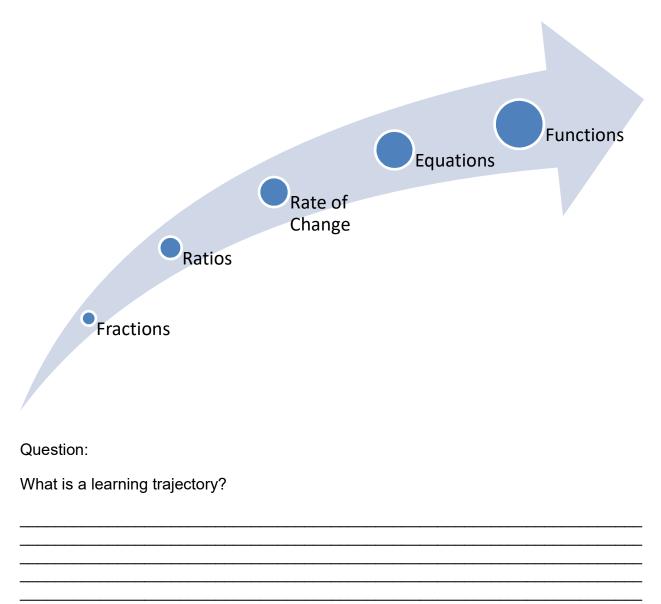
Activity:

Using a section of the ABE Mathematics Curriculum Matrix below, in what sequence would you teach these topics? Explain.

Domain	NRS L	evel 1
	Place Value of 2-Digit Numbers	Add and Subtract 2-Digit Numbers
 Number and Operations: Base Ten 	Compare 2-Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers
2. Operations and Algebraic Thinking	Solve Addition and Subtraction Problems within 20 Commutative and Associative Property of Addition	The Equal Sign Solving Addition and Subtraction Equations

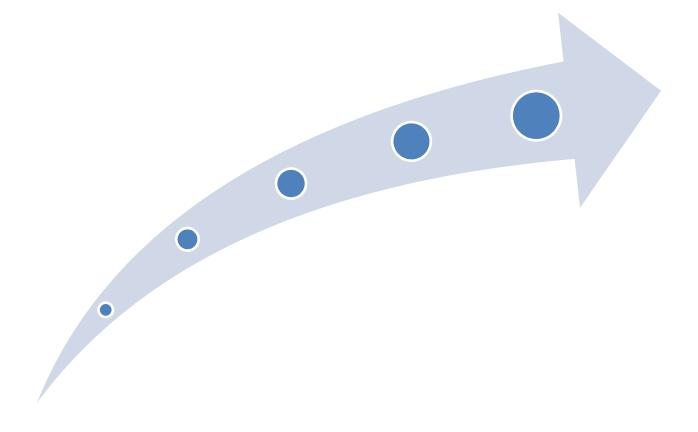
Use the section below to answer the question.





Activity:

Use the ABE Mathematics Curriculum Matrix to identify another learning trajectory. Label the diagram below with the sequential topics. You may add additional bullets if you need more to complete your learning trajectory.



Questions:

What are High Impact Indicators?

Why is it important for teachers to teach these High Impact Indicators?

Aligning with the TABE 11 & 12 Level E Mathematics Blueprint

D	omain	NRS L	evel 1		NRS	Level 2		
		Place Value of 2-Digit Numbers	Add and Subtract 2-Digit Numbers	Place Value of 3-Digit Numbers	Add and Subtract 3-Digit Numbers	Round Whole N the Nearest Ten Hundreds	sor	Use Properties of Opera to Perform Multi-Digit Arithmetic
Number se Ten	and Operations:	Compare 2-Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers	Compare 3-Digit Numbers	Model Addition and Subtraction of 3-Digit Numbers	Multiply 1-Digit 2-Digit Multiple		Mentally Add and Subtra 10 or 100 to 3-Digit Nun
/(%)	STANDARD		STAND	ARD DESCRIPTION			AE-CCR LEVEL	TABE 11/12 EMPHASIS LEVEL
TEN (28%)	2.NBT.1		, 706 equals 7 hun	hree-digit number r dreds, 0 tens, and 6 .1.b)	•		В	Low
	3.NBT.1	Use place value un	derstanding to rour	id whole numbers to	the nearest 10 or	100.	В	Medium
BASE	2.NBT.2	Count within 1000;	skip-count by 5s, 1	0s, and 100s.			В	Medium
Z	3.NBT.2			using strategies and r the relationship bet	•	••••••	В	Low
IONS	2.NBT.3	Read and write nur ed form.	mbers to 1000 using	g base-ten numerals	, number names, ar	nd expand-	В	Low
PERATI	3.NBT.3	., .	,	nultiples of 10 in the ce value and proper	•	g., 9 x 80,	В	Medium
0	2.NBT.4		•	ed on meanings of t cord the results of c		and ones	В	Medium
ER AND	2.NBT.6	Add up to four two of operations.	-digit numbers usin	g strategies based o	on place value and	properties	В	Medium
NUMBER	2.NBT.7	on place value, pro subtraction; relate t tracting three-digit	perties of operatio the strategy to a wi numbers, one adds	oncrete models or du ns, and/or the relati ritten method. Under or subtracts hundred essary to compose o	onship between ad stand that in addin ds and hundreds, te	dition and g or sub- ns and tens,	В	Medium

Examining both the Mathematics TABE Level E Blueprint and the curriculum matrix shows strong alignment. The wording and separations of each standard may be slightly different between the two but they cover the same content. The matrix content cells highlighted in lighter orange represents standards with low emphasis level on the TABE test while the ones in orange are the ones with medium emphasis level. The next few slides will compare the rest of the domains between the Mathematics TABE Level E Blueprint and the ABE Mathematics Curriculum Matrix.

		actior	tion and Problems	The Equal Sign	Solve Addition and Subtraction Problems within 100	Solve Multiplicat Division Problem 100	is within	100		Solve 2-Step Problems or Equations
2. Operations and Algebraic Thinking	Assoc	Commutative and Associative Property o Addition		Solving Addition and Subtraction Equations	Commutative and Associative Property of Multiplication	Solve Multiplication and Division Equations		Distributive Property of Multiplication		Model Multiplication and Division within 100
			STANDARD	STA	NDARD DESCRIPTION		AE-CCR LEVEL	TABE 11/12 EMPHASIS LEVEL		
			2.0A.1	Use addition and subtraction within volving situations of adding to, taki ing, with unknowns in all positions, e for the unknown number to represe	ing from, putting together, taking e.g., by using drawings and equa	apart, and compar-	в	Medium		
		(3.OA.1	Interpret products of whole number in 5 groups of 7 objects each. For of objects can be expressed as 5 >	example, describe a context in w		В	Medium		
		IKING (22%)	3.OA.2	Interpret whole-number quotients of whole numbers, e.g., interpret 56/8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed or 56/8.			В	Low		
		ALGEBRAIC THINKING	3.OA.3	Use multiplication and division with equal groups, arrays, and measure with a symbol for the unknown num	ment quantities, e.g., by using dr		В	Low		
		LGEBRA	3.0A.4	Determine the unknown whole numb three whole numbers. For example, tion true in each of the equations 8	determine the unknown number	that makes the equa-	В	Low		
		OPERATIONS AND A	3.OA.5	Apply properties of operations as s 24 is known, then 4 x 6 = 24 is also 5 x 2 can be found by 3 x 5 = 15, (Associative property of multiplicati find 8 x 7 as 8 x (5 + 2) = (8 x 5)	known. (Commutative property of then $15 \times 2 = 30$, or by $5 \times 2 =$ on.) Knowing that $8 \times 5 = 40$ and	f multiplication.) 3 x 10, then 3 x 10 = 30. $18 \times 2 = 16$, one can	в	Low		
		RATI	3.OA.6	Understand division as an unknown the number that makes 32 when m		nd 32/8 by finding	В	Medium		
3.04.7				Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40/5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.			В	Low		
			3.OA.8	Solve two-step word problems usin equations with a letter standing for answers using mental computation	the unknown quantity. Assess the	reasonableness of	В	Medium		
			3.OA.9	Identify arithmetic patterns (includi table), and explain them using pro- times a number is always even, and into two equal addends.	perties of operations. For examp	le, observe that 4	в	Low		

The matrix content cells highlighted in lighter yellow represents standards with low emphasis level on the TABE test while the ones in yellow are the ones with medium emphasis level. The cell that is not highlighted in the shade of yellow, "Distributive Property of Multiplication," means that it is not included in the TABE Level E Blueprint but does not mean it is not important to teach. This may also mean that this content may be assessed at the higher levels of the TABE Test (Level M). This could also mean that the cell is not directly assessed at this level test but is a necessary foundational skill to arrive at the correct answer.

		e, Represent, and at 3 Categories of		Analyze and Generate Picture Graphs and Bar Graphs	Analyze and Generate		Measure and Estima in Standard Units	olve Problems Involving Time olume and Mass
3. Measurement and Data				Represent Whole Number Lengths on a Number Line	Measuring and Estima Areas of Plane Figures			se Areas to Model Addition Ind Multiplication
		STANDARD	STA	NDARD DESCRIPTION		AE-CCR LEVEL	TABE 11/12 EMPHASIS LEVEL	
		3.MD.1	Tell and write time to the nearest m word problems involving addition or representing the problem on a num	and subtraction of time intervals		В	Medium	
		2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements, describe how the two measurements relate to the size of the unit chosen.						
	(9	3.MD.2	Measure and estimate liquid volum grams (g), kilograms (kg), and liter step word problems involving mass using drawings (such as a beaker v	В	Medium			
	(28%)	2.MD.3	Estimate lengths using units of inche	es, feet, centimeters, and meters.		В	Low	
	AND DATA (2	3.MD.3	Draw a scaled picture graph and a scaled bar graph to represent a data set with sev- eral categories. Solve one- and two-step how many more and how many less problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.			в	Low	
		2.MD.4 Measure to determine how much longer one object is than another, expressing th difference in terms of a standard length unit.				В	Low	
	MEASUREMENT	3.MD.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters.			В	Low	
	EASU	3.MD.5	Recognize area as an attribute of plane figures and understand concepts of area mea- surement. (3.MD.5.b)			В	Low	
	2.MD.6	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2,, and represent whole-number sums and differences within 100 on a number line diagram.			В	Low		
		3.MD.7	Relate area to the operations of m 3.MD.7.c, 3.MD.7.d)	ultiplication and addition. (3.MD	.7.a, 3.MD.7.b,	В	High	
		3.MD.8	Solve real world and mathematica finding the perimeter given the side iting rectangles with the same perind different perimeters.	e lengths, finding an unknown sid	e length, and exhib-	в	Medium	
		2.MD.10	Draw a picture graph and a bar g with up to four categories. Solve sin lems using information presented in	mple put together, take-apart, a		В	Low	

The matrix content cells highlighted in lighter blue represents standards with low emphasis level on the TABE test, the ones in blue are the ones with medium emphasis level and the ones in darker blue are the ones with high emphasis level.

	Analyze, Compare, and Compose 3-Dimensional Shapes	Composite Shapes	Identify Common Polygons and 3-Dimensional Figures	Partition Shapes into Parts with Equal Areas
4. Geometry				

	STANDARD	STANDARD DESCRIPTION	AE-CCR LEVEL	TABE 11/12 EMPHASIS LEVEL
(%	2.G.1	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	В	Medium
GEOMETRY (10%)	3.G.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	В	Medium
GEO	3.G.2	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as $1/4$ of the area of the shape.	в	Low
	2.G.3	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	В	Low

The matrix content cells highlighted in lighter navy blue represents standards with low emphasis level on the TABE test while the ones in navy blue are the ones with medium emphasis level.

	Represent Fractions with Denominators 2, 3, 4, 6, or 8 on a Number Line	Fractions on a Number Line	Compare Fractions with the Same Numerator or Denominator
lumber and Operations: ctions			

ATIONS 2%)	STANDARD	STANDARD DESCRIPTION	AE-CCR LEVEL	TABE 11/12 EMPHASIS LEVEL
OPERATIONS NS (12%)	3.NF.1	Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.	В	Medium
ER AND FRACTIO	3.NF.2	Understand a fraction as a number on the number line; represent fractions on a number line diagram. (3.NF.2.a, 3.NF.2.b)	В	Medium
NUMBER	3.NF.3	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. (3.NF.3.a, 3.NF.3.b, 3.NF.3.c, 3.NF.3.d)	В	High

The matrix content cells highlighted in gray represents standards with medium emphasis level on the TABE test, while the ones in darker gray are the ones with high emphasis level. The cell that is not highlighted, "Compare Fractions with the Same Numerator or Denominator," means that it is not included in the TABE Level E Blueprint but does not mean it is not important to teach. This may also mean that this content may be assessed at the higher levels of the TABE Test (Level M). This could also mean that the cell is not directly assessed at this level test but is a necessary foundational skill to arrive at the correct answer.

Activity:

Examine the TABE 11 & 12 Assessment Blueprint for Level E together with your electronic copy of the ABE Mathematics Curriculum Matrix and answer the questions below.

What are the different domains tested at this level?

How many standards are in each of the domains of the TABE 11 & 12 Blueprint Level E?

Are all the standards in each domain of the TABE 11 & 12 Assessment Blueprint for Level E covered by the cells in each domain of the ABE Mathematics Curriculum Matrix? Use your knowledge on how the matrix was developed to explain why or why not.

Reflection:

How would you use the TABE 11 & 12 Assessment Blueprints and the ABE Mathematics Curriculum Matrix in developing your lessons in the future?

Various Matrix Overlays

Learning Trajectory Overlays

Domain	NRSL	evel 1		NRS L	evel 2			NRS I	Level 3	
	Place Value of 2-Digit Numbers	Numbers	Place Value of 3-Digit Numbers	Numbers		Use Properties of Operations to Perform Multi-Digit Arithmetic	Generalize Understanding of Place Value	Read and Write Multi-Digit Numbers in Names and Expanded Form	to 2-Digit Numbers	Use Place Value to Understan Decimals
1. Number and Operations: Base Ten	Compare 2-Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers		Model Addition and Subtraction of 3-Digit Numbers	Multiply 1-Digit Numbers By 2- Digit Multiples of 10	Mentally Add and Subtract 10 or 100 to 3-Digit Numbers	Compare Any Multi-Digit Number	Round Multi-Digit Numbers to Any Place Value	Divide 4-Digit Numbers by 1- Digit Numbers	Read, Write, and Compare Decimals to Thousandths
							Basic Operations with Multi- Digit Numbers in Standard Algorithm	Perform Basic Operations on Decimal Numbers Using Multiple Strategies	Round Decimals to Any Place	Divide 4-Digit Numbers by 2- Digit Numbers Using Multiple Strategies
NAMES OF ADDRESS	Solve Addition and Subtraction Problems within 20	The Equal Sign	Solve Addition and Subtraction Problems within 100	Solve Multiplication and Division Problems within 100	Multiplication Facts within 100	Solve 2-Step Problems or Equations	Solve Multi-Step Problems Using Basic Operations	Interpret Multiplication as Comparison Statements	Interpret the Remainder in Problems	Multiples of 1-Digit Numbers Up to 100
2. Operations and Algebraic Thinking	Commutative and Associative Property of Addition	Solving Addition and Subtraction Equations		Solve Multiplication and Division Equations		Model Multiplication and Division within 100	Computation and Estimation	Solve Problems Involving Multiplicative Comparisons Interpret Expressions without	Find All Factor Pairs of Any 2- Digit Whole Number Generate and Analyze Numeric	Prime and Composite Numbe within 100 Identify Inexplicit Features of
							Expressions	Evaluating Them	and Geometric Patterns	Pattern from a Rule
	Organize, Represent, and Interpret 3 Categories of Data	Indirectly Measure Lengths through Iteration		Analyze and Generate Line Plots	Measure and Estimate Lengths in Standard Units	Solve Problems Involving Time, Volume and Mass	Solve Problems in Length, Time, Volume, Mass and Money Including Fractions	Solve Problems in Length, Time, Volume, Mass and Money Including Decimals	Solve Problems Involving Information Presented in Line Plots	Recognize Angles
3. Measurement and Data				Measuring and Estimating Areas of Plane Figures	Solve Problems Involving Perimeter of Polygons	Use Areas to Model Addition and Multiplication	Apply Area and Perimeter Formulas for Rectangles	Convert Measurements within a System	(1/2, 1/4, 1/8) in a Line Plot	Understand Concepts of Angle Measurement
							Measure and Sketch Angles in Whole-Number Degrees	Solve Addition and Subtraction Problems for Unknown Angles		
	Analyze, Compare, and Compose 3-Dimensional Shapes	2- and 3-Dimensional Composite Shapes		Identify Common Polygons and 3-Dimensional Figures		Partition Shapes into Parts with Equal Areas		Solve Problems by Graphing Points on the Coordinate Plane	Solve Problems Involving Area, Surface Area, and Volume	Draw Polygons in a Coordinate Plane
4. Geometry							Draw and Identify Angles, Perpendicular and Parallel Lines	Classify 2-Dimensional Figures into Categories Based on Properties	Find Areas of Polygons by Composing or Decomposing	Find the Length of a Side with the Same First or Second Coordinate
							Represent 3-Dimensional Figures Using Nets	Use Nets to Find the Surface Area of Figures		
			Represent Fractions with	Recognize Equivalent Fractions		Compare Fractions with the		Compare Fractions Using	Decompose Fractions as Sum	Decompose Fractions as
			Denominators 2, 3, 4, 6, or 8 on a Number Line	on a Number Line	Represent Equivalent Fractions	Same Numerator or Denominator		Common Numerators or Denominators	of Fractions with the same Denominator	Multiples of Unit Fractions
5. Number and Operations: Fractions							Use Models to Illustrate Equivalent Fractions	Compare Fractions Using Benchmark Fractions Such as 1/2	Add and Subtract Mixed Numbers Using Equivalent Fractions	Multiply Fractions by a Whole Number
							Multiply and Divide Fractions	Solve Problems Involving Multiplication and Division of Fractions	Convert Fractions with Denominators 10 or 100 to Decimals	Solve Problems Involving Addition and Subtraction of Fractions
							Write and Evaluate Algebraic Expressions with Exponents	Identify and Generate Equivalent Algebraic Expressions	Use Substitution to Determine If an Equation or Inequality is True	Express One Quantity as the Dependent Variable of the Another Quantity
6. Expressions and Equations							Perform the Order of Operations on Algebraic Expressions	Reason and Solve One-Variable Equations and Inequalities		Use Graphs, Tables and Equations to Show Variable Relationships
							c.pression o		() denem	(new our ange
							Fluently Divide Multi-Digit Numbers	Fluently Add, Subtract, Multiply and Divide Multi-Digit Decimals	Find the Greatest Common Factor of Two Numbers \$ 100	Apply Distributive Property to Generate Equivalent Expressions
7. The Number System							Find the Least Common Multiple of Two Numbers ≤ 12	Use Models to Illustrate, Interpret and Compute Quotients of Fractions	Solve Problems Involving Division of Fractions by Fractions	
7. The Number System							Multiple of Two Numbers 512			

Thematic and Career Cluster Overlays

		0		amain ()	
Domain Number	Domain Name	Starting with a Point	ng Theme: Geometry (D Lines	omain 6) Planes	Space
1	Number and Operations: Base Ten	Whole Number Operations			
2	Operations and Algebraic Thinking			Properties of Addition and Multiplication (Area Method of Addition and Multiplication)	Relating Volumes to Multiplication and Addition to Solve Real-World Problems
3	Measurement and Data		Representing and Analyzing Data (Line Plots)	Areas, Circle Graphs and Bar Graphs	Volumes and Surface Areas
5	Number and Operations: Fractions			Parts of a Whole and Unit Fractions	
6	Expressions and Equations	Evaluating Expressions and Solutions to Linear Equations	Linear Equations and Equivalent Expressions	Squares, Square Roots and Simultaneous Linear Equations	Cubes and Cube Roots
7	The Number System		The Number Line and Number Operations		
8	Ratios and Proportional Relationships		Double Number Line Diagrams and Graphs of Proportional Relationship	Tape Diagrams	
9	Statistics and Probability		Box Plots and Measures of Central Tendency	Dot Plots (Scatter Plots) and Histograms	
10	Functions		Linear Functions		
		Business, Management and Administration	Communications and Information Systems	Engineering, Manufacturing and Technology	Food and Health Sciences
				Cluster	

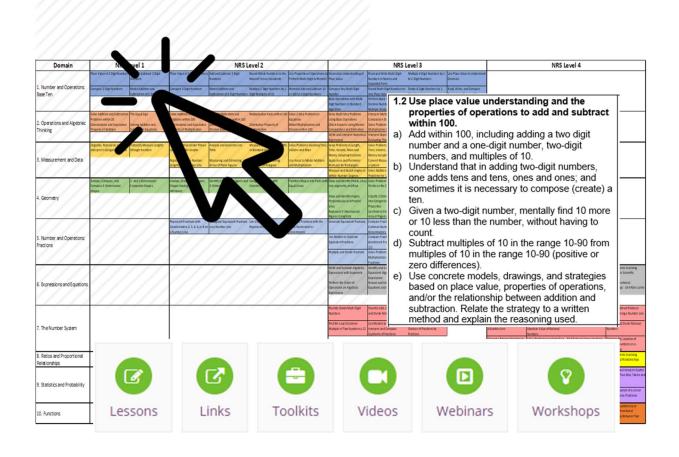
GED High Impact Indicator and Performance Level Descriptors Overlays

Domain	NRS L	evel 1		NRS L	evel 2			NRS L	evel 3	
	Place Value of 2-Digit Numbers	Add and Subtract 2-Digit Numbers	Place Value of 3-Digit Numbers		Round Whole Numbers to the Nearest Tens or Hundreds		Generalize Understanding of Place Value	Read and Write Multi-Digit Numbers in Names and Expanded Form	Multiply 4-Digit Numbers by 1- to 2-Digit Numbers	Use Place Value to Understand Decimals
1. Number and Operations: Base Ten	Compare 2-Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers		Model Addition and Subtraction of 3-Digit Number:	Multiply 1-Digit Numbers By 2- Digit Multiples of 10	or 100 to 3-Digit Numbers	Number	Round Multi-Digit Numbers to Any Place Value	Digit Numbers	Read, Write, and Compare Decimals to Thousandths
								Perform Basic Operations on Decimal Numbers Using Multiple Strategies		Divide 4-Digit Numbers by 2- Digit Numbers Using Multiple Strategies
	Solve Addition and Subtraction Problems within 20			Division Problems within 100	Multiplication Facts within 100	Equations	Solve Multi-Step Problems Using Basic Operations	Interpret Multiplication as Comparison Statements	Interpret the Remainder in Problems	Multiples of 1-Digit Numbers Up to 100
	Commutative and Associative Property of Addition	Solving Addition and Subtraction Equations		Solve Multiplication and Division Equations	Distributive Property of Multiplication	Division within 100	Computation and Estimation		Digit Whole Number	Prime and Composite Numbers within 100
							Expressions	Interpret Expressions without Evaluating Them	Generate and Analyze Numeric and Geometric Patterns	: Identify Inexplicit Features of a Pattern from a Rule
	Organize, Represent, and Interpret 3 Categories of Data	Indirectly Measure Lengths through Iteration		Analyze and Generate Line Plots	Measure and Estimate Lengths in Standard Units		Solve Problems in Length, Time, Volume, Mass and Money Including Fractions	Solve Problems in Length, Time, Volume, Mass and Money Including Decimals	Solve Problems Involving Information Presented in Line Plots	Recognize Angles
3. Measurement and Data				Measuring and Estimating Areas of Plane Figures	Solve Problems Involving Perimeter of Polyzons	Use Areas to Model Addition and Multiplication	Apply Area and Perimeter Formulas for Rectangles Measure and Sketch Angles in	Convert Measurements within a System Solve Addition and Subtraction	(1/2, 1/4, 1/8) in a Line Plot	Understand Concepts of Angle Measurement
								Problems for Unknown Angles		
		2- and 3-Dimensional Composite Shapes		Identify Common Polygons and 3-Dimensional Figures	Categorize Shapes with Common Attributes		Draw and Identify Points, Lines, Line segments, and Rays	Solve Problems by Graphing Points on the Coordinate Plane	Solve Problems Involving Area, a Surface Area, and Volume	Draw Polygons in a Coordinate Plane
4. Geometry							Perpendicular and Parallel Lines	Classify 2-Dimensional Figures into Categories Based on Properties	Composing or Decomposing	Find the Length of a Side with the Same First or Second Coordinate
								Use Nets to Find the Surface Area of figures		

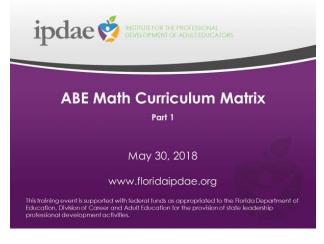
Domain	NRS L	evel 1	NRS Level 2					
	Place Value of 2-Digit Numbers	Add and Subtract 2-Digit Numbers	Place Value of 3-Digit Numbers	Add and Subtract 3-Digit Numbers	Round Whole Numbers to the Nearest Tens or Hundreds	Use Properties of Operations to Perform Multi-Digit Arithmetic		
1. Number and Operations: Base Ten	Compare 2-Digit Numbers	Model Addition and Subtraction of 2-Digit Numbers	Compare 3-Digit Numbers		Multiply 1-Digit Numbers By 2-Digit Multiples of 10	Mentally Add and Subtract 10 or 100 to 3-Digit Numbers		
	Solve Addition and Subtraction Problems within 20	The Equal Sign	Solve Addition and Subtraction Problems within 100	Solve Multiplication and Division Problems within 100		Solve 2-Step Problems of Equations		
2. Operations and Algebraic Thinking	Commutative and Associative Property of Addition	Solving Addition and Subtraction Equations	Commutative and Associative Property of Multiplication	Solve Multiplication and Division Equations	Distributive Property of Multiplication	Model Multiplication and Division within 100		
	Organize, Represent, and Interpret 3 Categories of	Indirectly Measure Lengths through Iteration	Analyze and Generate Picture Graphs and Bar	Analyze and Generate Line Plots	Measure and Estimate Lengths in Standard Units	Solve Problems Involving Time, Volume and Mass		
3. Measurement and Data	Data		Graphs Represent Whole Number Lengths on a Number Line	Measuring and Estimating Areas of Plane Figures	Solve Problems Involving Perimeter of Polygons	Use Areas to Model Addition and Multiplication		
		L						
	Analyze, Compare, and Compose 3-Dimensional Shapes	2- and 3-Dimensional Composite Shapes	Analyze, Draw and Compare Shapes Having Specified Attributes	Identify Common Polygons and 3-Dimensional Figures	Categorize Shapes with Common Attributes	Partition Shapes into Parts with Equal Areas		
4. Geometry								

TABE 11 & 12 Mathematics Blueprint Overlays

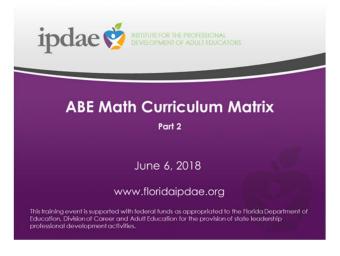
The Interactive Online Curriculum Matrix



Additional Curriculum Matrix Resources



https://www.youtube.com/watch?v=hKs-obd0ufl



https://www.youtube.com/watch?v=gZ1MEKVppZY

Webinar Documents

Additional handouts and activity books relating to the matrix can be downloaded from the Presentation Documents Section of each ABE Mathematics Curriculum Matrix Webinars.

