FCPS – KINDERGARTEN STANDARDS FRAMEWORK – TRAJECTORY MAP FOR KAS & INV3

FCPS Priorities for Mathematics Classrooms, K-12

Priority 1: Curriculum – All teachers consistently use the district adopted curriculum and make instructional decisions about how to use it in a way that aligns with the vision for excellent math instruction.

Priority 2: Student Thinking and Discussion – All students are responsible for doing the thinking and participating in academic discussions during each lesson.

Priority 3: Appropriate Balance of Rigor – All math lessons incorporate an appropriate balance of conceptual understanding, procedural skills and fluency, and application (as determined by the target standards).

Fayette County Public Schools – Math Department

Shelley.dickson@fayette.kyschools.us

Update: 3/25/2021

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The *Big Ideas* are statements that are central to learning mathematics and help students link mathematical understandings into a coherent whole idea. In Kindergarten these are the basis and support for all future mathematical understanding; therefore, it is critical that students understand these Big Ideas. "The degree of understanding is determined by the number and strength of the connections." (Heibert & Carpenter, 1992, pg. 67)

In Kindergarten, we focus on **three *Big Ideas*** throughout the year. These ideas permeate through each 9-week period by looping to continually support and build on the child's prior knowledge. In addition, true student understanding implies that mathematics is a coherent set of ideas that can be applied in many areas, rather than isolated skills and facts. In the book, Early Numeracy: Assessment for teaching and intervention, the authors state that teaching should focus on several numeracy aspects simultaneously rather than one single aspect at a time. (Wright, Martland & Stafford, 2012. Pg. 19).

The Learning Framework in Number was the basis for the developmental progression used in the FCPS Kindergarten Common Core Curriculum Map. This can be found in the book listed above (pg. 20)

Big Ideas:

1. NUMBER: STRUCTURE & QUANITITY: Numbers have a specific order (forward & backward), value and can be structured (composed/decomposed) in many ways.
2. COMPARISON: Numbers and measures can be compared by their relative values.
3. SHAPES & SOLIDS: Two- and three-dimensional objects can be described, classified and analyzed by their attributes.

Enduring Standards:

1. Students use numbers to represent quantity
2. Students use numbers to solve problems
3. Students use shapes to describe their physical world (using appropriate geometric vocabulary)
4. Students describe their physical world using spatial reasoning

Kentucky Academic Standards	1st Quarter – Units 1 & 2 August, Sept., mid-Oct.	2nd Quarter – Units 3 & 4 mid-Oct., Nov., Dec.	3rd Quarter – Units 5 & 6 January & February	4th Quarter – Units 7 & 8 March, April, May
Counting and Cardinality				
Cluster: Know number names and the count sequence				
K.CC.1 - Count			**MP.7, MP.8**	
a. Count to 100 by ones and by tens.	• I can verbally count forward to 10. •	• I can verbally count forward to 30. •	• I can verbally count forward to 70. • I can verbally count forward by 10s to 50.	• I can verbally count forward to 100. • I can verbally count forward by 10s to 100.
b. Count backward from 30 by ones.	•	• I can verbally count backward from 10.	• I can verbally count backward from 20.	• I can verbally count backward from 30.
K.CC.2 - Count forward beginning from a given number within the known sequence within 100 (instead of having to begin at 1).			**MP.7**	
	• I can verbally count forward from a given number **within 10**. • I can name the number before and after a given number **within 5**.	• I can verbally count forward from a given number **within 30**. • I can name the number before and after a given number **within 10.** • I can count backward from a given number **within 10**.	• I can verbally count forward from a given number **within 50**. • I can name the number before and after a given number **within 15**.	• I can verbally count forward by 1's from any given number **within 100**. • I can name the number before and after a given number **within 20**. • I can count backward from any given number **within 30**.

Update: 3/25/2021

K.CC.3 – Represent Numbers			**MP.2, MP.7, MP.8**	
a. Write numbers from 0 to 20.	• I can identify numerals 0-5 • I can write numerals to 0 – 5 • I can put numerals in order (sequence 0 – 5)	• I can identify numerals 0 – 10 • I can write numerals to 0 – 10 • I can put numbers in order (sequence 0 – 10)	• I can identify numerals 0 – 20 • I can write numerals to 0 – 15 • I can put numerals in order (any sequence within 0 – 15)	• I can write numerals to 0 – 20 • I can put numerals in order (any sequence within 0 – 20)
b. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).	• I can write a numeral to match a group of objects up to 5. •	• I can write a numeral to match any group of objects up to 10. •	• I can write a numeral to match any group of objects up to 15. •	• I can write a numeral to match any group of objects up to 20. •

Attending to the Standards for Mathematical Practice

Students notice repetition inherent in the counting sequence as they count to one hundred by ones and tens. For example, students notice "seven" follows "six," and "twenty-seven" follows "twenty-six" **(MP.8).** They describe how this pattern exists into new decade families. For example, thirty-seven follows thirty-six and so on. Students use this general pattern about how numbers are structured to count forward from any given number within the range of 0-100 (counting on) without the benefit of starting at "one" **(MP.7).** When counting objects within the range of 0-20, they understand they can communicate this total using words, for example "ten" and the numeral 10. **(MP.2)**

Update: 3/25/2021

Cluster: Count to tell the number of Objects				
K.CC.4 - Understand the relationship between numbers and quantities; connect counting to cardinality.			**MP.2, MP.8**	
a. when counting objects, say the number names in the standard order, paring each object with one and only one number name and each number name with one and only one object.	• I can count up to 10 objects (with correct one-to-one correspondence)	• I can count up to 10 objects (with correct one-to-one correspondence)	• I can count up to 15 objects (with correct one-to-one correspondence)	• I can count up to 20 objects (with correct one-to-one correspondence)
b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. (**Cardinality**)	• I can match a number to a group of items up to 10. • I can identify how many items are in a group (up to 10) even when my teacher moves them around. (to show **cardinality**)	• I can match a number to a group of items up to 10. • I can identify how many items are in a group (up to 10) even when my teacher moves them around. (to show **cardinality**)	• I can identify how many items are in a group (up to 15) even when my teacher moves them around. (to show **cardinality**)	• I can identify how many items are in a group (up to 20) even when my teacher moves them around. (to show **cardinality**)
c. Understand that each successive number name refers to a quantity that is one larger.	• I can explain why the next number is one more or one larger within the set of numbers 0 to 5	• I can explain why the next number is one more or one larger within the set of numbers 0 to 10	• I can explain why the next number is one more or one larger within the set of numbers 0 to 15	• I can figure out what is one more or one fewer than a number within 0 to 20

K.CC.5 - Given a number from 1-20, count out that many objects.			**MP.2, MP.3**	
		• I can count out objects to show numbers 0-10.	• I can count out objects to show numbers 0-20.	• I can count out objects to show numbers 0-20.
a. Count to answer "how many?" questions with as many as 20 things arranged in a line, a rectangular array, or a circle.	• I can count objects in a structure to tell "How Many?" (within 10) – (5 frame, 10 frame, domino pattern, straight line, circle)	• I can count objects in a structure to tell "How Many?" (within 10) – (5 frame, 10 frame, domino pattern, straight line, circle)	• I can count objects in a structure to tell "How Many?" (within 20) – (10 frame, domino pattern, straight line, circle)	• I can count objects in a structure to tell "How Many?" (within 20) – (10 frame, domino pattern, straight line, circle)
b. Count to answer "how many?" questions with as many as 10 things in a scattered configuration.	•	• I can count objects to tell "How Many?" items (within 0 – 5 scatter)	• I can count objects to tell "How Many?" items (within 0 – 10 scatter)	• I can count objects to tell "How Many?" items (within 0 – 10 scatter)

Attending to the Standards for Mathematical Practice

Students connect number words to quantities as they count collections of ten by ones and realize the last number stated in the sequence ("ten") refers to the total quantity of objects (cardinality). For example, when students count five blocks, the last word they say is "five" and therefore five is the total number of the collection **(MP.2).** Through repeated experiences of adding one counter to an existing collection, students see that the total is one more and know this is true every time another counter is added **(MP.8).** When encountering a collection of objects in various configurations (see clarification), students organize the objects in order to count each one only once and explain their strategy for counting and for ensuring they have counted each object once **(MP.2, MP.3).**

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Cluster: Compare Numbers				
K.CC.6 - Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group. (Each collection containing ***up to 10*** objects.)			**MP.1, MP.3, MP.6**	
e.g., Student *may use* matching (making pairs) and/or counting strategies. (up to 10 objects) *Students **DO NOT** need to use the symbols <, >, or = to compare groups of ojects.*	• I can use efficient strategies to tell which group is greater than another within 10. •	• I can use efficient strategies to tell which group is greater than, less than, or equal to the number of objects in another group within 10.		• I can use strategies to compare quantities in *a real-world problem* to determine which is greater than, less than, or equal to another group.
• **K.CC.7** – Compare two numbers between 1 and 10 presented as written numerals.			**MP.2**	
Students should use some mathematical reasoning regarding their answer. ***Note**: Students **DO NOT** need to use the relation symbols greater than (>), less than (<) and equal to (=) to compare numbers 0 to 10.*	• I can tell which numeral is greater than another number within 10.	• I can tell which numeral is greater than, less than, or equal to another number within 10.		• I can use strategies to compare numerals in a real-world problem to determine which is greater than, less than, or equal to another number.

Attending to the Standards for Mathematical Practice

Students know different strategies for comparing groups and choose a strategy such as counting, matching and pairing to compare two groups **(MP.1).** For example, when comparing a collection of red counters to a collection of blue counters, students count each group finding which has the greater number, pair off blues and reds to see which group has extras, or make two rows and line them up to see which is longer **(MP.2).** Once a determination has been made, students articulate their ideas using precise mathematical language such as "greater than," "less than," and "equal to" **(MP.6, MP.3).** When comparing two numerals, students move flexibly between symbols and their corresponding quantities, using objects or situations to help them reason about the relative size of each quantity **(MP.2).**

Operations and Algebraic Thinking				
Cluster: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.				
K.OA.1 - Represent addition and subtraction with objects, fingers, mental images, drawings[1], sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.			**MP.2, MP.4**	
		• I can figure out what is one more or one fewer than a number (within 10).	• I can solve **put together** problems (within 10) using fingers, objects, drawings, sounds or acting out situations.	• I can solve **put together** and **removed item** problems with **results unknown** (within 10) using fingers, objects, drawings, sounds, acting out situations, verbal explanations, expressions or equations.
K.OA.A.2 - Solve addition and subtraction word problems, and add and subtract within 10 by using objects or drawings to represent the problem. *(See Table in Appendix for Problem Types)*			**MP.5**	
		• I can solve **"add-to"** word problems up to 5 with objects or drawings. • I can solve one more or one fewer than problems within 10.	• I can solve **"add-to"** word problems up to 10 with objects or drawings.	• I can solve **"add-to"** word problems up to 10 with objects or drawings. • I can solve **"take-from"** word problems within 10 with objects or drawings.

K.OA.3 - Decompose numbers less than or equal to 10.			**MP.2, MP.4**	
a. Decompose numbers into two groups in more than one way by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).		• I can break apart numbers *up to 5* into two addends in different ways **using objects.** • I can break apart numbers to 5 into two addends in different ways and **record using drawings.**	• I can break apart numbers *up to 10* into two addends in different ways **using objects.** • I can break apart numbers to 10 into two addends in different ways and **record using drawings.**	• I can break apart numbers *up to 10* into two addends in different ways **using objects** and **record using drawings and equations.**
b. Use objects or drawings to demonstrate equality as the balancing of quantities.		•	• I can model and show (prove) how an equation (within 10) is equal using objects and drawings.	• I can model and show (prove) how an equation (within 10) is equal using objects and drawings.
K.OA.4 – For any number from 1 to 9, find the number that makes 10 when added to the given number by using objects or drawings, and record the answer with a drawing or equation.			**MP.7, MP.8**	
(Tools: Ten-frame, finger patterns, Rekenrek, Link-cubes/UnifixCubes)		• I can add to a given number to make 5 with objects. • I can add to a given number to make 5 with drawings. • I can add to a given number to make 5 and record my answer with objects and drawings.	• Using a structured math tool, I can add some more to a given number between 1-9 to make 10.	• I can add to a given number to make 10 with objects. • I can add to a given number to make 10 and record my answer with drawings and/or number sentences.

K.OA.5 - Fluently add and subtract within 5.			**MP.2, MP.7**	
On-going throughout the year – daily routines: • *frame flash* • *finger patterns* • *I have, I want* • *How many more?* • *What do you see?*	• I can flash finger patterns 1-5 without counting my fingers every time. • I can recognize the dot patterns on a standard 1-6 die.	• I can read the number of dots on a 5-frame card when flashed for ½ second. • I can make 5 on my fingers using both hands (ex. 1 finger on left hand, 4 fingers on right hand)	• I can tell the number of dots and the number of empty squares on a 5-frame card when flashed for ½ second. • I can tell "how many more to 5?" when shown a finger pattern or a dot pattern.	• I can determine all number combinations within 5 using mental math and without counting.

Attending to the Standards for Mathematical Practice

Students use tools and models to interpret, represent and solve word problems. They make sense of addition and subtraction situations by selecting objects to represent the situation **(MP.1)** and represent the situations using an expression or equations (see clarifications) **(MP.4).** For example, students act out a story problem involving the eating of apples using cubes to represent each apple **(MP.5).** Students decomposed numbers into two subgroups in different ways and understand the subgroups do not need to be the same size, but combined they equal to original value (7) **(MP.2).** Students decompose a group of 7 objects into 3 and 4, 6 and 1, and 5 and 2. They write the related expressions **(MP.4**) and explain or show (using a balance or moving objects) these different arrangements are equal to each other and equal to 7 **(MP.2).** Students connect breaking apart 5 into 2 and 3, means 2 + 3 = 5. Beyond counting, students use visuals (dot patterns, five and ten frames) and tools such as counters and Rekenreks to determine sums within 5 and combinations of 10 **(MP.5, MP.7).** For example, students view a ten frame displaying 7 counters and see 3 more counters are needed to equal 10, or in seeing the sum 3 + 2 may visualize a dot pattern or notice 3 + 2 is 1 more than 2 + 2, a sum they know **(MP.2).**

Number and Operations in Base Ten				
Cluster: Work with Numbers 11 to 19 to gain foundations for place value.				
K.NBT.1 - *Compose and decompose* numbers from 11 to 19 using quantities (numbers with Units) of ten ones and some further ones. *Understand* that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.			**MP.3, MP.4, MP.7**	
			Note: ***DO NOT* use Base Ten blocks for this. Appropriate manipulatives are: link-cubes, UnifixCubes, craft sticks, ten frames (one full frame and another with some more)	• I can build numbers 11-19 using ten ones and some more ones. (using objects or drawings) • I can break numbers 11-19 into ten ones and some more ones. (using objects and drawings) • I can explain how to compose or decompose a number between 11 and 19.
Attending to the Standards for Mathematical Practice Students explain a teen number can be broken apart into ten ones and some more ones **(MP.3).** They express this relationship using objects, drawings and corresponding equations **(MP.4).** For example, a student working with 16 counters places ten counters in a cup and leaves 6 counters on the table and represents this idea using the equation 16=10+6. Note the language of the standard does not require students to actually create the ten unit (that is in grade 1), but they recognize and break apart a teen number into ten ones and some more ones **(MP.7).**				

<table>
<tr><td colspan="5">Measurement and Data</td></tr>
<tr><td colspan="5">Cluster: Describe and Compare measurable attributes.</td></tr>
<tr><td colspan="3">K.MD.1 – Describe measurable attributes (length, height, weight, width, depth) of an object or set of objects using appropriate vocabulary.
•</td><td colspan="2">MP.3, MP.6</td></tr>
<tr><td></td><td>• I can describe one or more attributes of an object using measurement vocabulary (length, etc…).
•</td><td>• I can identify ways to measure objects.
• I can describe ways to measure an object.</td><td>•</td><td></td></tr>
<tr><td colspan="3">K.MD.2 - Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of " the attribute, and describe the difference.</td><td colspan="2">MP.2, MP.6</td></tr>
<tr><td></td><td>• I can compare the length or height of two objects. (taller, shorter, longer)
• I can compare the weight of two objects. (heavier, lighter)
•</td><td>• I can describe and compare 2 or more objects using measurement vocabulary.
• I can describe length and decide which of two objects is longer.</td><td></td><td></td></tr>
<tr><td colspan="5">Attending to the Standards for Mathematical Practice
Students notice objects in the world around them have attributes and some of those attributes are measurable attributes. They describe measurable attributes using measuring language such as "heavy" and/or "long/short" (MP.3, MP.6). As students compare objects, they focus on a selected attribute, for example, length and then determine which object has more or less of that attribute, saying, this footprint is longer (MP.2).</td></tr>
</table>

Cluster: Classify objects and count the number of objects in categories				
K.MD.3 - Classify and sort objects or people by attributes. Limit objects or people in each category to be less than or equal to 10. *Note: Quantity and attributes of objects will change in complexity throughout the year.* • .			**MP.3, MP.6**	
	• I can sort objects and classify into categories. (size, shape, color) •	• I can sort objects and classify into categories. (size, shape, color) • I can count the number of objects in each category	• I can sort objects and classify into categories. (size, shape, color) • I can count the number of objects in each category.	• I can sort a set of objects by a given attribute and order the groups based on the number in each.
Attending to the Standards for Mathematical Practice Students use their understanding of attributes to sort objects in different ways. They justify their rules for sorting, listen to the ideas of others and when they are unsure or disagree, they question or challenge the observations **(MP.3).** As they describe attributes, students use precise shape or measurement language such as "has all straight sides" or "is shorter than a new pencil" **(MP.6).**				
Cluster: Identify coins by name.				
K.MD.4 – Recognize and identify coins by name (penny, nickel, dime, quarter).			**MP.6**	
	• I can recognize and identify a penny.	• I can recognize and identify a penny and dime.	• I can recognize and identify a penny, dime, and nickel.	• I can recognize and identify a penny, dime, nickel and quarter.
Attending to the Standards for Mathematical Practice Students recognize the need for consistent, common language to identify coins **(MP.6).** For example, students understand that "nickel" is the name of a specific coin with a specific appearance and cannot be used to describe other coins of different appearances. Note the standard does not require students to identify values, only names.				

Geometry				
Cluster: Identify and Describe Shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders and spheres.)				
K.G.1 – Name and describe shapes in the environment.			**MP.6**	
a. Describe objects in the environment using names of shapes.		• I can describe objects in the environment using names of **2D shapes**.	• I can describe objects in the environment using names of **3D shapes**.	
b. Describe the relative positions of these objects using terms: ***above, below, in front of, behind,*** and ***next to.***		•	• I can describe the positions of different objects using **positional words**. ***(above, below, in front of, behind,*** and ***next to.)***	
K.G.2 – Correctly name shapes regardless of their orientations or overall size.			**MP.7**	
	• I can name 2D shapes. (square, circle, rectangle, triangle, hexagon).	• I can name familiar 2D shapes of different sizes and in all positions. (square, circle, rectangle, triangle, hexagon).	• I can name familiar 3D shapes of different sizes and in all positions. (cubes, cones, cylinders, and spheres).	

K.G.3 – Identify shapes as two-dimensional or three-dimensional.			**MP.3, MP.6**	
		• I can identify shapes as 2D ("flat").	• I can identify shapes as 3D ("solid"). • I can sort and classify different kinds of shapes.	
Attending to the Standards for Mathematical Practice Students use precise language to describe objects they encounter in their world and describe the locations of objects such as "up," "down," "above" and "below", as well as use language to describe characteristics of two- and three-dimensional shapes **(MP.6).** Students explain the location or position of an object does not change its attributes **(MP.7).**				
Cluster: Analyze, compare, create, and compose shapes				
K.G.4 – Describe the similarities, differences and attributes of two and three dimensional shapes using different sizes and orientations.			**MP.3, MP.7**	
		•	• I can compare two shapes by describing the same attributes on each. (number of sides, corners, faces, sides of equal length). • I can compare 2D and 3D shapes. (different sizes and orientations)	• I can compare 2D and 3D shapes. (different sizes and orientations)
K.G.5 - Model shapes in the world by building figures from components and drawing shapes.			**MP.1, MP.5**	
		• I can build 2D shapes. (sticks and balls) • I can draw 2D shapes.	• I can build 3D shapes. (sticks and balls).	

K.G.6 - Compose simple shapes to form larger shapes.			**MP.3, MP.5**	
		• I can use simple shapes to form larger shapes. • I can combine shapes to make other 2D shapes.	• I can combine shapes to make other 3D shapes.	

Attending to the Standards for Mathematical Practice

Students use informal language as they compare objects; for example, sorting polygons by their relative size, or by a rule, such as "have three corners" **(MP.6).** Students analyze attributes of three-dimensional shapes; for example, noticing some have sides that all look like squares or rectangles, while others have sides that look like triangles **(MP.3).** Using a variety of tools, students construct objects that resemble items in their world **(MP.5).** As they construct and draw shapes, they recognize they are putting together shapes to form new larger shapes, just as they combine objects to have more objects **(MP.5).** Students analyze and describe shapes they form by combining shapes; for example, using pattern blocks or tangrams to build a design **(MP.3).**

Appendix A: Tables

Table 1

Common Addition and Subtraction Situations[1]

	Result Unknown	Change Unknown	Start Unknown
Add To	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2 + 3 = **?**	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + **?** = 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? **?** + 3 = 5
Take From	Five apples were on the table. I ate two apples. How many apples are on the table now? 5 – 2 = **?**	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 - **?** = 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? **?** – 2 = 3
	Total Unknown	**Addend Unknown**	**Both Addends Unknown[3]**
Put Together/ Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? 3 + 2 = **?**	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + **?** = 5, 5 – 3 = **?**	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2
	Difference Unknown	**Bigger Unknown**	**Smaller Unknown**
Compare[4]	**("How many more?" version):** Lucy has two apples. Julie has five apples. How many more apples does Lucy have than Julie? **("How many fewer?" version):** Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + **?** = 5, 5 – 2 = **?**	**(Version with "more"):** Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? **(Version with "fewer"):** Lucy has three fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = **?**, 3 + 2 = **?**	**(Version with "more"):** Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? **(Version with "fewer"):** Lucy has three fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = **?**, **?** + 3 = 5

Blue shading indicates the four Kindergarten problem subtypes. Students in grades 1 and 2 work with all subtypes and variants (blue and green). Yellow indicates problems that are the difficult four problem subtypes students in grade 1 work with but do not need to master until grade 2.

[1] Adapted from Box 2-4 of National Research Council (2009, op. cit., pp. 32, 33).

[2] These *take apart* situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean *makes* or *results in* but always does mean *is the same number as*.

[3] Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation especially for small numbers less than or equal to 10.

[4] For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using *more* for the bigger unknown and using *less* for the smaller unknown). The other versions are more difficult.

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