Kindergarten Mathematics

Maryland College and Career Ready Curriculum Framework

Introduction

The Code of Maryland Regulations (COMAR) 13A.04.12.01, Mathematics Instructional Programs for Grades Prekindergarten – 12 states that, "each local education agency shall provide in public schools an instructional program in mathematics each year for all students in grades prekindergarten – 8; Offer in public schools a mathematics program in grades 9—12. Beginning with students entering grade 9 in the 2014—2015 school year, each student shall enroll in a mathematics course in each year of high school that the student attends, up to a maximum of 4 years of attendance, unless in the 5th or 6th year a mathematics course is needed to meet a graduation requirement."

State Frameworks are developed by the Maryland State Department of Education (MSDE) to support local education agencies in providing high-quality instructional programs in mathematics. State Frameworks are defined as supporting documents and provide guidance for implementing the Maryland College and Career Ready Standards for Mathematics which are reviewed and adopted by the Maryland State Board of Education every eight years. State Frameworks also provide consistency in learning expectations for students in mathematics programs across the twenty-four local education agencies as local curriculum is developed and adopted using these documents as a foundation.

MSDE shall update the State Frameworks in Mathematics in the manner and time the State Superintendent of Schools determines is necessary to ensure alignment with best-in-class, research-based practices. Tenure and stability of State Frameworks affords local education agencies the necessary time to procure supporting instructional materials, provide professional development, and to measure student growth within the program. Educators, practitioners, and experts who participate in writing workgroups for State Frameworks represent the diversity of stakeholders across Maryland. State Frameworks in Elementary mathematics grades Prekindergarten – 5 were developed, reviewed, and revised by teams of Maryland educators and practitioners, including local education agency content curriculum specialists, classroom teachers, accessibility staff, and academic researchers and experts in close collaboration with MSDE.

The Kindergarten Mathematics Framework was released in June 2011.

HOW TO READ THE MARYLAND COLLEGE AND CAREER READY CURRICULUM FRAMEWORK

The Maryland College and Career Ready Standards for Mathematics (MCCRSM) at the kindergarten level specify the mathematics that all students should study as they prepare to be college and career ready by graduation. The kindergarten standards are listed by domains. For further clarification of the standards, reference the appropriate domain in the set of Progression Documents for the Common Core State Standards for Mathematics.

This framework document provides an overview of the Standards that are grouped together to form the domains for grade one. The Standards within each domain are grouped by topic and are in the same order as they appear in the Common Core State Standards for Mathematics. This document is not intended to convey the exact order in which the Standards will be taught, nor the length of time to devote to the study of the different standards.

The framework contains the following:

- Domains are intended to convey coherent groupings of content.
- Clusters are groups of related standards.
- Standards define what students should understand and be able to do.
- Essential Skills and Knowledge statements provide language to help teachers develop common understandings and valuable insights into what a student must know and be able to do to demonstrate proficiency with each standard. Maryland mathematics educators thoroughly reviewed the standards and, as needed, provided statements to help teachers comprehend the full intent of each standard.

Standards for Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

1. MAKE SENSE OF PROBLEMS AND PERSEVERE IN SOLVING THEM.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

2. REASON ABSTRACTLY AND QUANTITATIVELY.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to *decontextualize*—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to *contextualize*, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

3. CONSTRUCT VIABLE ARGUMENTS AND CRITIQUE THE REASONING OF OTHERS.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify to improve the arguments.

4. MODEL WITH MATHEMATICS.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5. USE APPROPRIATE TOOLS STRATEGICALLY.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

6. ATTEND TO PRECISION.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

7. LOOK FOR AND MAKE USE OF STRUCTURE.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals the well-remembered 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.

8. LOOK FOR AND EXPRESS REGULARITY IN REPEATED REASONING.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y - 2)/(x - 1)$ equals 3. Noticing the regularity in the way terms cancel when expanding $(x - 1)(x + 1)$, $(x-1)(x^2 + x + 1)$ and $(x-1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

CONNECTING THE STANDARDS FOR MATHEMATICAL PRACTICE TO THE MARYLAND COLLEGE AND CAREER READY STANDARDS

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle, and high school years. Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction. The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word "understand" are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview, or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging in the mathematical practices. In this respect, those content standards which set an expectation of understanding are potential "points of intersection" between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit the time, resources, innovative energies, and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development, and student achievement in mathematics.

K.CC Counting and Cardinality

K.CC.A KNOW NUMBER NAMES AND THE COUNT SEQUENCE.

K.CC.A.1

Count to 100 by ones and by tens.

Essential Skills and Knowledge

- Ability to use **rote counting** (e.g., simply reciting numbers using the correct number order with no meaning attached) to one hundred. First to 20, then count by tens to 100, then 1–50, then 1–100.
- Ability to make transitions to the next ten.

K.CC.A.2

Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

Essential Skills and Knowledge

- Ability to initially use concrete materials, hundreds chart or number line to model counting from a given number other than 1.
- Knowledge that counting is the process of adding 1 to the previous number.

K.CC.A.3

Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).

Essential Skills and Knowledge

- Ability to match a set with a number card that states its' quantity.
- Ability to build numbers with concrete materials and then write the numerals that represent those numbers.
- Knowledge that zero represents an empty set.

K.CC.B COUNT TO TELL THE NUMBER OF OBJECTS.

K.CC.B.4
Understand the relationship between numbers and quantities; connect counting to cardinality.

Essential Skills and Knowledge

- Knowledge that **cardinality** is the understanding that when counting a set, the last number represents the total number of the objects in the set.
- Understand that **cardinality** gives meaning to the numeral and tells the quantity the number represents.

K.CC.B.4a
When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.

Essential Skills and Knowledge

- Ability to apply **one-to-one correspondence** when counting.
- Ability to keep track of which objects have been counted from those that have not been counted.
- Recounts the objects just counted to see if the count is the same without prompting.
- Notices if a recount of objects are different and self corrects by recounting.

K.CC.B.4b
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.

Essential Skills and Knowledge

- Knowledge of and ability to apply **Cardinality** (e.g., the understanding that when counting a set, the last number counted represents the total number of the objects in the set).
- Knowledge of and ability to apply **conservation of number** (e.g., ability to understand that the quantity of a set does not change, no matter how the objects of the set are displayed).
- Ability to apply **Subitizing** (e.g., the ability to immediately recognize a quantity) when counting objects.

K.CC.B.4c
Understand that each successive number name refers to a quantity that is one larger.

Essential Skills and Knowledge

- Knowledge that when one more is added to a number set, this new number includes all the previous objects in the set, plus the new one. (e.g., 6+1=7)

K.CC.B.5

Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

Essential Skills and Knowledge

- Recognizes that the last number counted tells the amount of the entire group.
- Focuses on the total quantity of the group just counted.
- Does not need to recount the objects in a set when they have given the number name of the last object counted.

K.CC.C COMPARE NUMBERS.

K.CC.C.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, e.g., by using matching and counting strategies (Include groups with up to ten objects).

Essential Skills and Knowledge

- Knowledge of and the ability to apply a solid understanding of **cardinality** and **one-to-one correspondence** before beginning to compare sets
- Ability to use of concrete materials when comparing sets
- Ability to compare visually, to compare by matching, and to compare by counting

K.CC.C.7

Compare two numbers between 1 and 10 presented as written numerals.

Essential Skills and Knowledge

- Ability to apply knowledge of and experience with comparing concrete sets of objects (K.CC.6)

K.OA Operations and Algebraic Thinking

K.OA.A UNDERSTAND ADDITION AS PUTTING TOGETHER AND ADDING TO, AND UNDERSATND SUBTRACTION AS TAKING APART AND TAKING FROM.

K.OA.A.1

Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, or verbal explanations, expressions, or equations.

Essential Skills and Knowledge

- Ability to represent addition and subtraction processes in a variety of ways, using concrete materials, pictures, numbers, words, or acting it out.
- Knowledge that "putting together" and "adding to" are two different processes of addition.
- Knowledge that "taking apart" and "taking from" are two different processes of subtraction.

K.OA.A.2

Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

Essential Skills and Knowledge

- Ability to represent the process of solving various types of addition and subtraction word problems (Table 1) within 10 using objects and drawings to develop number sentences.
- Knowledge of the different types of word problems (e.g., add to, result unknown; take from, result unknown; put together/take apart, total unknown) which lays the foundation for more difficult word problems.
- Ability to use concrete materials or pictures and **a Part-Part-Whole Mat** to organize the manipulatives and make sense of the problem.
- Solves problems using a variety of counting strategies (counting all, counting on, skip counting) progressing to more sophisticated mental math strategies and using known addend combinations.

K.OA.A.3

Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).

Essential Skills and Knowledge

- Knowledge that **decomposition** involves separating a number into two parts and understanding that there is a relationship between the sum of the parts and the whole.
- Knowledge that there are a variety of combinations that represent a given number.
- Ability to begin with the whole when **decomposing** numbers into pairs.
- Knowledge that when writing an equation to represent the **decomposition** of a number, the values on each side of the equal sign are the same (e.g., 7 = 2 + 5).

K.OA.A.4

For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

Essential Skills and Knowledge

- Ability to use experience with K.OA.A.3 to make sense of this standard.
- Use ten frames to find how many more is needed to make 10.
- Knows the combinations to make 10.

K.OA.A.5

Fluently add and subtract within 5.

Essential Skills and Knowledge

- Ability to apply decomposition knowledge and relationship between addition and subtraction to determine the sum or differences of various problems.
- Knows the **composition and decomposition** to make 5 fluently.

K.NBT Number and Operations in Base Ten

K.NBT WORK WITH NUMBERS 11–19 TO GAIN FOUNDATIONS FOR PLACE VALUE.

K.NBT.A.1

Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Essential Skills and Knowledge

- Ability to **rote count** by 10.
- Use multiple concrete materials to make groups of 10 and count the groups.
- Ability to use concrete materials (e.g., Unifix cubes, snap cubes, Digi-blocks, base ten blocks, etc.) to represent the combination of one ten and ones for each number.
- Ability to record the representations of 11 through 19 in pictures, numbers, and/or equations to show 1 ten and *x* ones.
- Understand 11–19 represents one group of ten and x ones.

K.MD Measurement and Data

K.MD.A DESCRIBE AND COMPARE MEASUREABLE ATTRIBUTES.

K.MD.A.1
Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

Essential Skills and Knowledge

- Ability to use measurement and geometric vocabulary when describing the attributes of objects.
- Participates in multiple experiences using nonstandard measurement to distinguish between length and weight.

K.MD.A.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. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

Essential Skills and Knowledge

- Reference Essential Skills and Knowledge in K.MD.B.3 prior to making comparisons
- Reference Essential Skills and Knowledge in K.CC.C.6 for building the understanding of vocabulary "more of/less of"

K.MD.B CLASSIFY OBJECTS AND COUNT THE NUMBER OF OBJECTS IN EACH CATEGORY.

K.MD.B.3

Classify objects into given categories; count the number of objects in each category and sort the categories by count (Limit category counts to be less than or equal to 10).

Essential Skills and Knowledge

- Ability to sort objects by a given attribute.
- Ability to classify objects by predetermined categories related to attributes (e.g., number of sides, number of corners).

K.G Geometry

K.G.A IDENTIFY AND DESCRIBE SHAPES (SQUARES, CIRCLES, TRIANGLES, RECTANGLES, HEXAGONS, CUBES, CONES, CYLINDERS, AND SPHERES).

K.G.A.1

Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind*, and *next to*.

Essential Skills and Knowledge

- Ability to use geometric vocabulary when describing objects.
- Ability to use terms of relative positions when describing objects in the environment.

K.G.A.2

Correctly name shapes regardless of their orientations or overall size.

Essential Skills and Knowledge

- Ability to name the various shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres) regardless of their orientation or overall size.

K.G.A.3

Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).

Essential Skills and Knowledge

- Ability to sort a variety of shapes into two-and three-dimensional categories and explain why their sorting is correct.

K.G.B ANALYZE, COMPARE, CREATE, AND COMPOSE SHAPES.

K.G.B.4

Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

Essential Skills and Knowledge

- Identify and compare like and unlike shapes.
- Identify, analyze and compare shapes of different sizes and orientations.
- Describe similarities and differences, of the parts of the shapes.
- Name the shapes.

K.G.B.5

Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

Essential Skills and Knowledge

- Use unit blocks and other shapes in the classroom or real world as a model for making three-dimensional shapes out of clay balls and sticks, or marshmallows and straws, etc.
- Identify two-dimensional shapes that make up three-dimensional shapes.

K.G.B.6

Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle?"

Essential Skills and Knowledge

- Ability to use concrete materials (e.g., pattern blocks, tangrams, and shape models to build **composite** figures.
- Ability to explain how they composed their shape and name what shapes they used to make the **composite** shape.

Kindergarten MD College and Career-Ready Vocabulary

ROTE COUNTING

Reciting numbers in order from memory without aligning them to objects, pictures, etc.

CARDINALITY

Is the understanding that when counting a set, the last number represents the total number of objects in the set.

ONE-TO-ONE CORRESPONDENCE

Linking a single number name with one object--and only one--at a time.

CONSERVATION OF NUMBER

The ability to understand that the quantity of a set does not change, no matter how the objects of the set are displayed or moved around.

SUBITIZING

The ability to recognize the total number of objects or shapes in a set without counting. Example: Recognizing that this face of a cube has five dots without counting them.

REPRESENT

Display addition or subtraction processes using concrete materials, pictures, numbers, words, or acting it out.

PART-PART-WHOLE MAT

A mat used to organize concrete materials to make sense of a problem.

DECOMPOSE NUMBERS

Breaking a number into two or more parts to make it easier with which to work.
Example: When combining a set of 5 and a set of 8, a student might decompose 8 into a set of 3 and a set of 5, making it easier to see that the two sets of 5 make 10 and then there are 3 more for a total of 13.
Decompose the number 4; can be made up of 1+3; 3+1; 2+2

COMPOSE NUMBERS

Combine numbers in a variety of ways to make a given number.
Example: 6 can be composed of 5+1, 1+5, 4+2, 2+4,3+3 =6 And 3+2+1=6, 1+1+1+2 =6 etc.

COMPOSITE

A figure that is made up of two or more geometric figures.

Table 1: Common addition and subtraction situations.

	Results Unknown	Change Unknown	Start Unknown
Add to	Two birds sat on a ledge. Three more birds flew to the ledge. How many birds are now on the ledge? $2 + 3 = ?$	Two birds sat on a ledge. Some more birds flew to the ledge. Then there were five birds on the ledge. How many birds flew over to the first two? $2 + ? = 5$	Some birds sat on a ledge. Three more birds flew to the ledge. Then there were five birds on the ledge. How many birds were on the ledge before? $? + 3 = 5$
Take From	Three oranges were on the table. I ate one orange. How many oranges are on the table now? $3 - 1 = ?$	Three oranges were on the table. I ate some oranges. Then there were two oranges. How many oranges did I eat? $3 - ? = 2$	Some oranges were on the table. I ate one orange. Then there were two oranges. How many oranges were on the table before? $? - 3 = 2$

	Total Unknown	Addend Unknown	Both Addends Unknown
Put Together/ Take Apart	Five red marbles and two green marbles are on the table. How many marbles are on the table? $5 + 2 = ?$	Ten marbles are on the table. Five are red and the rest are green. How many marbles are green? $5 + ? = 10$ or $? + 5 = 10$	Max has five marbles. How many can she put in her left hand and how many in her right hand? $5 = 0 + 5$ $5 = 5 + 0$ $5 = 1 + 4$ $5 = 4 + 1$ $5 = 2 + 3$ $5 = 3 + 2$

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare "more"	**"How many more?" version:** Macy has two cats. Marcus has five cats. How many more cats does Marcus have than Macy? $2 + ? = 5$	**Version with "more":** Marcus has three more cats than Macy. Macy has two cats. How many cats does Marcus have? $2 + 3 = ?$	**Version with "more":** Marcus has three more cats than Macy. Marcus has five cats. How many cats does Macy have? $5 - 3 = ?$
Compare "fewer"	**"How many fewer?" version:** Macy has two cats. Marcus has five cats. How many fewer cats does Macy have than Marcus? $5 - 2 = ?$	**Version with "fewer":** Macy has three fewer cats than Marcus. Macy has two cats. How many cats does Marcus have? $3 + 2 = ?$	**Version with "fewer":** Macy has three fewer cats than Marcus. Marcus has five cats. How many cats does Macy have? $? + 3 = 5$

Darker shading indicates the four Kindergarten problem subtypes. Grade 1 and 2 students work with all subtypes and variants. Unshaded (white) problems are the four difficult subtypes that students should work on in grade 1 but need not master until grade 2.

Adapted from CCSS, p.88, which is based on Mathematics Learning in Early Childhood: Paths Towards Excellence and Equity, National Research Council, 2009, pp. 32-22 and the CCSS Progression document pp. 9.