**Blackwater Community School Curriculum Map 2016-2017**

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| **Kindergarten Quarter 3 (46 Days)** |
| **Number Pairs, Addition and Subtraction to 10****Approximately 40 Instructional Days – January 5th – March 20th** The next exciting step in math for kindergartners, addition and subtraction! They begin to harness their practiced counting abilities, knowledge of the value of numbers, and work with embedded numbers to reason about and solve addition and subtraction expressions and equations. Decomposition and composition are taught simultaneously using the number bond model so that students begin to understand the relationship between parts and wholes before moving into formal work with addition and subtraction in the rest of the module. |
| **Major Clusters:** | **K.OA.A - Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.** |
| Supporting Clusters: |  |
| Vocabulary | Addition, Addition and subtraction sentences, Make 10, Minus, Number bond, Number pairs or partners, Part, Put together, Subtraction, Take apart, Take away, Whole |
| **Domain** | **Cluster** | **Standard** | **Arizona’s College and Career Ready Standards** | **Explanations & Examples** | **Notes & Resources** |
| **K.OA** | **A** | **1** | Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. (Drawings need not show details, but should show the mathematics in the problems. This applies wherever drawings are mentioned in the Standards.)*K.MP.1*. Make sense of problems and persevere in solving them.*K.MP.2.* Reason abstractly and quantitatively.*K.MP.4*. Model with mathematics.*K.MP.5*. Use appropriate tools | Using addition and subtraction in a word problem context allows students to develop their understanding of what it means to add and subtract.**Examples**:Students should use objects, fingers, mental images, drawing, sounds, acting out situations and verbal explanations in order to develop the concepts of addition and subtraction. Then, they should be introduced to writing expressions and equations using appropriate terminology and symbols which include “+,” “–,” and “=”.* Addition terminology: add, join, put together, plus, combine, total
* Subtraction terminology: minus, take away, separate, difference, compare

Students may use document cameras or interactive whiteboards to represent the concept of addition or subtraction. This gives them the | **Engage NY**M4 Lessons 1-24,33-41**enVision**Topic 7,8<http://www.bwcs.k12.az.us/> |

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|  |  |  | strategically. | opportunity to communicate their thinking. |  |
| **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.*K.MP.1*. Make sense of problems and persevere in solving them.*K.MP.2*. Reason abstractly and quantitatively.*K.MP.3*. Construct viable arguments and critique the reasoning of others.*K.MP.4*. Model with mathematics. *K.MP.5*. Use appropriate tools strategically. | Using a word problem context allows students to develop their understanding about what it means to add and subtract. Addition is putting together and adding to. Subtraction is taking apart and taking from. Kindergarteners develop the concept of addition/subtraction by modeling the actions in word problem using objects, fingers, mental images, drawings, sounds, acting out situations, and/or verbal explanations. Students may use different representations based on their experiences, preferences, etc. They may connect their conceptual representations of the situation using symbols, expressions, and/or equations. Students should experience the following addition and subtraction problem types (see Table 1).* Add To word problems, such as, “Mia had 3 apples. Her friend gave her 2 more. How many does she have now?”
	+ A student’s “think aloud” of this problem might be, “I know that Mia has some apples and she’s getting some more. So she’s going to end up with more apples than she started with.”
* Take From problems such as:
	+ José had 8 markers and he gave 2 away. How many markers does he have now? When modeled, a student would begin with 8 objects and remove 2 to get the result.
* Put Together/Take Apart problems with Total Unknown gives students opportunities to work with addition in another context such as:
	+ There are 2 red apples on the counter and 3 green apples on the counter. How many apples are on the counter?
* Solving Put Together/Take Apart problems with Both Addends Unknown provides students with experiences with finding all the
 | **Engage NY**M4 Lessons 13-24,29-41**enVision**Topic 7,8<http://www.bwcs.k12.az.us/> |

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|  |  |  |  | decompositions of a number and investigating the patterns involved.o There are 10 apples on the counter. Some are red and some are green. How many apples could be green? How many apples could be red?Students may use a document camera or interactive whiteboard to demonstrate addition or subtraction strategies. This gives them the opportunity to communicate and justify their thinking. |  |
| **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).*K.MP.1*. Make sense of problems and persevere in solving them.*K.MP.2*. Reason abstractly and quantitatively.*K.MP.4*. Model with mathematics. *K.MP.7*. Look for and make use of structure.*K.MP.8*. Look for and express regularity in repeated reasoning. | This standard focuses on number pairs which add to a specified total, 1-1. These number pairs may be examined either in or out of context.

Students may use objects such as cubes, two-color counters, square tiles, etc. to show different number pairs for a given number. For example, for the number 5, students may split a set of 5 objects into 1 and 4, 2 and 3, etc.Students may also use drawings to show different number pairs for a given number. For example, students may draw 5 objects, showing how to decompose in several ways.https://vpn.azed.gov/vdesk/filemanager/nogzip/download.php3/koa%203.gif?Z=47,2Sample unit sequence:* + A contextual problem (word problem) is presented to the students such as, “Mia goes to Nan’s house. Nan tells her she may have 5 pieces of fruit to take home. There are lots of apples and bananas. How many of each can she take?”
	+ Students find related number pairs using objects (such as cubes or two-color counters), drawings, and/or equations. Students may use different representations based on their experiences,
 | **Engage NY**M4 Lessons 1-28,33-36**enVision**Topic 9<http://www.bwcs.k12.az.us/> |

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|  |  |  |  | preferences, etc.* Students may write equations that equal 5 such as:

o 5=4+1o 3+2=5o 2+3=4+1This is a good opportunity for students to systematically list all the possible number pairs for a given number. For example, all the number pairs for 5 could be listed as 0+5, 1+4, 2+3, 3+2, 4+1, and 5+0. Students should describe the pattern that they see in the addends, e.g., each number is one less or one than the previous addend. |  |
| **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.*K.MP.1*. Make sense of problems and persevere in solving them.*K.MP.2*. Reason abstractly and quantitatively.*K.MP.4*. Model with mathematics. *K.MP.7.* Look for and make use of structure.*K.MP.8.* Look for and express regularity in repeated reasoning. | The number pairs that total ten are foundational for students’ ability to work fluently within base-ten numbers and operations. Different models, such as ten-frames, cubes, two-color counters, etc., assist students in visualizing these number pairs for ten.**Example 1:**Students place three objects on a ten frame and then determine how many more are needed to “make a ten.”Students may use electronic versions of ten frames to develop this skill.https://vpn.azed.gov/vdesk/filemanager/nogzip/download.php3/koa%204.gif?Z=48,2**Example 2:**The student snaps ten cubes together to make a “train.”* Student breaks the “train” into two parts. S/he counts how many are in each part and record the associated equation (10 = +

 ).* Student breaks the “train into two parts. S/he counts how many are in one part and determines how many are in the other part without directly counting that part. Then s/he records the associated equation (if the counted part has 4 cubes, the equation would be 10 = 4 + ).
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|  |  |  |  | * Student covers up part of the train, without counting the covered part. S/he counts the cubes that are showing and determines how many are covered up. Then s/he records the associated equation (if the counted part has 7 cubes, the equation would be 10 = 7 + ).

**Example 3:**The student tosses ten two-color counters on the table and records how many of each color are facing up. |  |
| **K.OA** | **A** | **5** | Fluently add and subtract within 5.*K.MP.2*. Reason abstractly and quantitatively.*K.MP.7*. Look for and make use of structure.*K.MP.8.* Look for and express regularity in repeated reasoning. | This standard focuses on students being able to add and subtract numbers within 5. Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.* Students should have opportunities solving word problems such as “Grandma has five flowers. How many can she put in her red vase and how many in her blue vase?” (Table 1) to develop conceptual understanding of fluency.

Strategies students may use to attain fluency include:* Counting on (e.g., for 3+2, students will state, “3,” and then count on two more, “4, 5,” and state the solution is “5”)
* Counting back (e.g., for 4-3, students will state, “4,” and then count back three, “3, 2, 1” and state the solution is “1”)
* Counting up to subtract (e.g., for 5-3, students will say, “3,” and then count up until they get to 5, keeping track of how many they counted up, stating that the solution is “2”)
* Using doubles (e.g., for 2+3, students may say, “I know that 2+2 is 4, and 1 more is 5”)
* Using commutative property (e.g., students may say, “I know that 2+1=3, so 1+2=3”)
* Using fact families (e.g., students may say, “I know that 2+3=5, so 5-3=2”)

Students may use electronic versions of five frames to develop fluency of these facts. | **Engage NY**M4 Lessons 1-6**enVision**Topic 7,8<http://www.bwcs.k12.az.us/> |