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| **Foundations of Multiplication and Division**  **Approximately 25 Instructional Days : April 3 – May 5**  The conceptual foundation is layed for multiplication and division in Grade 3 and for the idea that numbers other than 1, 10, and 100 can serve as units. Topics include: Formation of Equal Groups, Arrays and Equal Groups, Rectangular Arrays as a Foundation for Multiplication and Division, and The Meaning of Even and Odd Numbers. | | | | | |
| **Major Clusters:** | | |  | | |
| Supporting Clusters: | | | 2.OA.C – Work with equal groups of objects to gain foundations for multiplication.  2.G.A – Reason with shapes and their attributes. | | |
| Vocabulary | | | Array, Columns, Even number, Odd number, Repeated addition, Rows, Tessellation, Whole number | | |
| **Domain** | **Cluster** | **Standard** | **Arizona’s College and Career Ready Standards** | **Explanations & Examples** | **Notes & Resources** |
| 2.OA | C | 3 | Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.  2.MP.2. Reason abstractly and quantitatively.  2.MP.3, Construct viable arguments and critique the reasoning of others.  2.MP.7. Look for and make use of structure.  2.MP.8. Look for and express regularity in repeated reasoning. | Students explore odd and even numbers in a variety of ways including the following: students may investigate if a number is odd or even by determining if the number of objects can be divided into two equal sets, arranged into pairs or counted by twos. After the above experiences, students may derive that they only need to look at the digit in the ones place to determine if a number is odd or even since any number of tens will always split into two even groups.  Example:  Can extend to other families.  Students need opportunities writing equations representing sums of two equal addends, such as: 2 + 2 = 4, 3 + 3 = 6, 5 + 5 = 10, 6 + 6 = 12, or 8 + 8  =16. This understanding will lay the foundation for multiplication and is closely connected to 2.OA.4.  The use of objects and/or interactive whiteboards will help students develop and demonstrate various strategies to determine even and odd numbers. | **Engage NY**  M6 Lessons 17-20  **enVision**  Topic 5  <http://www.bwcs.k12.az.us/> |
| **Domain** | **Cluster** | **Standard** | **Arizona’s College and Career Ready Standards** | **Explanations & Examples** | **Notes & Resources** |
| 2.OA | C | 4 | Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a  sum of equal addends.  2.MP.2. Reason abstractly and quantitatively.  2.MP.3, Construct viable arguments and critique the reasoning of others.  2.MP.7. Look for and make use of structure.  2.MP.8. Look for and express regularity in repeated reasoning. | Students may arrange any set of objects into a rectangular array. Objects can be cubes, buttons, counters, etc. Objects do not have to be square to make an array. Geoboards can also be used to demonstrate rectangular arrays. Students then write equations that represent the total as the sum  of equal addends. (use objects with the examples below)    Interactive whiteboards and document cameras may be used to help students visualize and create arrays. | **Engage NY**  M6 Lessons 1-16  **enVision**  Topic 4  <http://www.bwcs.k12.az.us/> |
| 2.G | A | 2 | Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.  2.MP.2. Reason abstractly and quantitatively.  2.MP.6. Attend to precision.  2.MP.8. Look for and express regularity in repeated reasoning. | This standard is a precursor to learning about the area of a rectangle and using arrays for multiplication. An interactive whiteboard or manipulative such as square tiles, cubes, or other square shaped objects can be used to help students partition rectangles.  Rows are horizontal and columns are vertical.  2_g_2 | **Engage NY**  M6 Lessons 10-16  **enVision**  Topic 12  <http://www.bwcs.k12.az.us/> | |