

# DEVELOPING MATHEMATICAL INQUIRY COMMUNITIES

Number: Number:  
Multiplication and Division  
Level 1 (Year 0/NE)  
Teacher Booklet

**Level 1 Year 0/NE: Number: Multiplication and Division**

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| <b>Task 1</b>                                       | <p>Amanda Bean loves to count. Can you help her count how many cakes she has altogether in the quickest way you can?</p> <p>What about if she sees more? Can you help her count how many she sees this time?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p>                                                                                                                                                                                                             |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Count in groups.</li> <li>• Group objects to 10 in different ways.</li> <li>• Use grouping to solve addition and multiplication problems without counting each object.</li> <li>• Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Mathematical language</b>                        | <p>Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to explain the chunking by two and use this to count by two rather than one to one.</p> <p><b>Connect:</b></p> <p>Draw a picture of the six cakes Amanda sees. Now draw circles around each group of two cakes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• Read the book “Amanda Bean’s Amazing Dream” or watch <a href="https://www.youtube.com/watch?v=4nbAsD0iKjo">https://www.youtube.com/watch?v=4nbAsD0iKjo</a> as a shared book during a literacy session.</li> <li>• During the launch, revisit Amanda Bean and some of the things she liked to do mathematically.</li> <li>• Have unifix blocks or multilink cubes. Have the cubes linked together in alternate colours and sets of two. (e.g., one red, one white repeatedly). For the first problem have six cubes altogether. Get the students to use their cubes to replicate your pattern of 6 cubes with three of each colour. Help the students to see that the cakes are made of chunks</li> </ul> |

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|                          | <p>each chunk consisting of one cube of each colour. Call each chunk the unit of repeat.</p> <p>Repeat the exercise with 10 linked cubes then repeat with 14 cubes.</p> <ul style="list-style-type: none"> <li>• Facilitate the students to notice how many cubes there are that represent the cakes altogether and how many cubes there are of each colour using chunking. Chunking is an important step towards grouping rather than counting by ones.</li> <li>• Notice the students who use ‘lots of’ to describe the chunks and reinforce this language.</li> <li>• For the independent task, you will need the problems below and objects for students to count.</li> </ul> |
| <b>Independent Tasks</b> | <p>Martha and Milli are playing with pinecones.</p> <p>What is the quickest way they could count all of the pinecones?</p> <p>What if they see more?</p> <p>Can you help them count how many they see now?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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| <b>Task 2</b>                                       | Amanda Bean decides that she is going to find out how many sheep she can see? Can you help her?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented</p> <p>An array can represent a group.</p>                                                                                                                           |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                                                                                                                                             |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects to 10 in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.</li> </ul>                                                                                                                                                                                                                             |
| <b>Mathematical language</b>                        | Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to explain the chunking by two and press the students to use this to count by two rather than one to one.</p> <p><b>Connect:</b></p> <p>Have students draw their own pictures of the model and circle the groupings of two.</p>                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• During the launch, revisit Amanda Bean and discuss some of the things she liked to count.</li> <li>• Again, have unifix blocks or multilink cubes. Have the cubes linked together in alternate colours and sets of two. (e.g., one red, one white repeatedly). For the first problem have eight cubes altogether. Get the students to use their cubes to replicate your pattern of 8 cubes with 4 of each colour. Help the students to see that the sheep are chunked and each chunk represents one cube of each colour (could be described as black and white sheep). Call each chunk the unit of repeat.</li> </ul> |

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|                          | <p>Repeat the exercise with 12 linked cubes.</p> <ul style="list-style-type: none"> <li>• Facilitate the students to notice how many cubes there are that represent the sheep altogether and how many cubes there are of each colour using chunking. Reinforce that chunking in twos is an important step towards grouping rather than counting by ones.</li> <li>• Notice the students who use ‘lots of’ to describe the chunks and reinforce this language and model with words for the students.</li> <li>• For the independent task, use round counters to represent the cards and shells. Have bags of counters with between 12-30 counters for students to choose.</li> </ul> |
| <b>Independent Tasks</b> | <p>Jason and Nu are sorting their cards.</p> <p>What is the quickest way they could count all of their cards?</p> <p>What if they find 2 more?<br/>Can you help them count how many they have now?</p> <p>Nola and Shaz are counting their shells.</p> <p>What is the quickest way they could count all of the shells?</p> <p>What if they find 4 more?<br/>Can you help them count how many they have now?</p>                                                                                                                                                                                                                                                                     |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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| <b>Task 3</b>                                       | <p>Amanda Bean cannot get to sleep and so she decides that she will count sheep. She sees a flock of 6 sheep, so she decides to put them into chunks (groups) of 2. How many groups of 2 will she have?</p> <p>What about if she sees a flock of 8 sheep? How many groups of 2 will she have now?</p>                                                                                                                                                                                                                                 |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p> |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                    |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects to 10 in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.</li> </ul>                                                                                                    |
| <b>Mathematical language</b>                        | <p>Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half</p>                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to use materials or drawings to illustrate their chunking by two of the sheep.</p> <p><b>Connect:</b></p> <p>Show students groupings of two of the multilink cubes of 4 (then 8). Have them draw and record in an organised way what is represented (could be drawings where each grouping is circled or could be notation).</p>                                                                                                                                                             |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• For the launch have counters under a card and let children see them for only 3 seconds before covering them (so they do not have time to count them) and ask them how many counters they saw. Place the counters in groupings of two rather than randomly.</li> </ul>                                                                                                                                                                                                                        |

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|                          | <ul style="list-style-type: none"> <li>• Have available different materials with only two-colour choices for students to select from to use solve the problems.</li> <li>• Facilitate the students to notice that it is quicker and easier to count by twos and that even when you have the total chunking into twos and counting how many lots of twos will lead to the answer.</li> <li>• Expect students to represent using drawings and circling the groups of two as well as materials. Teacher record symbols to represent the groupings.</li> <li>• For the independent task, use round counters to represent the stickers. Have bags of counters with between 12-30 counters for students to choose.</li> </ul> |
| <b>Independent Tasks</b> | <p>Ocean has some stickers. She wants to know how many stickers she has.</p> <p>Can you help her count the stickers?</p> <p>Can you arrange the stickers into an easy way to count them?</p> <p>Draw your pattern and write the numbers to match.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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| <b>Task 4</b>                                       | <p>In Amanda Bean's dream all the sheep are riding bicycles. Amanda is tired of counting sheep, so she decides to count the wheels on the bicycles. She counts 3 sheep. How many wheels are there altogether?</p> <p>In Amanda Bean's dream all the sheep are riding bicycles. Amanda is tired of counting sheep, so she decides to count the wheels on the bicycles. She counts 5 sheep. How many wheels are there altogether?</p>                                                                                                   |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p> |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                    |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects to 10 in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.</li> <li>• Justify that quantity does not change when objects are regrouped.</li> </ul>                       |
| <b>Mathematical language</b>                        | Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half, pair                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to use materials, drawings and symbols to illustrate their chunking by two of the bicycle wheels.</p> <p><b>Connect:</b></p> <p>Show students different pictures of groups of scooters with two wheels. Have them count the wheels by twos.</p>                                                                                                                                                                                                                                              |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• For the launch repeat previous subitising activity of having counters under a card and let children see them for only 3 seconds before covering them (so they do not have time to</li> </ul>                                                                                                                                                                                                                                                                                                 |

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|                          | <p>count them) and ask them how many counters they saw. Place the counters in groupings of two rather than randomly.</p> <ul style="list-style-type: none"> <li>Have available different materials with only two-colour choices and multiple pictures of bicycles for students to select from to use solve the problems.</li> </ul> <div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 20px;">•</div>  </div> <ul style="list-style-type: none"> <li>Facilitate the students to notice that it is quicker and easier to count by twos and that even when you have the total chunking into twos and counting how many lots of twos will lead to the answer.</li> <li>Expect students to represent using drawings and circling the groups of two if they have used materials. Teacher record symbols to represent the groupings.</li> <li>For the independent task, use round counters to represent the cards and shells. Have bags of counters with between 12-30 counters for students to choose.</li> </ul> |
| <b>Independent Tasks</b> | <p>Ronaldo has been collecting cicada shells. He wants to tell his mum how many he has. Can you help him count them?</p> <p>Can you arrange the cicada shells in different ways to find out how many of them he has?</p> <p>Make sure you show the groups that you used and write the numbers to match them.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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| <b>Task 5</b>                                       | <p>Amanda Bean is at school, and she decides she wants to count all the books in her library corner. She takes down these books, but she knows it will take her forever if she counts all the books one by one.</p> <p>Can you help her to use groups to count the books she has started with? How many are there?</p>                                                                                                                                                                                                                |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p> |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                    |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.</li> <li>• Justify that quantity does not change when objects are regrouped.</li> </ul>                             |
| <b>Mathematical language</b>                        | <p>Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half, pair</p>                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who have used pairs and are able to use materials, drawings and symbols to show and explain their reasoning.</p> <p><b>Connect:</b></p> <p>Give the students 12 counters and have them arrange them in pairs and use digit cards (2,4,6,8,10,12) to represent each grouping</p>                                                                                                                                                                                                                           |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• Have available different materials and digit cards.</li> <li>• Facilitate the students to notice that counting in twos is a pattern and that after ten the pattern starts again.</li> </ul>                                                                                                                                                                                                                                                                                                  |

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|                          | <ul style="list-style-type: none"> <li>• Expect students to represent using drawings and circling the groups of two if they have used materials. Teacher record symbols to represent the groupings.</li> <li>• For the independent task, use round counters to represent the grapes. Have bags of counters with between 12-30 counters for students to choose.</li> </ul> |
| <b>Independent Tasks</b> | <p>Lasi has 12 grapes and two bowls.</p> <p>What are all the ways she could put the grapes into the bowls?</p> <p>Record your ideas using drawings and number sentences.</p>                                                                                                                                                                                              |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                           |

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| <b>Task 6</b>                                       | <p>Amanda Bean has got herself in a muddle. She wants to make up pairs of counters and she has 5 counters. She puts her counters into pairs but there is one left over. So, she gets another counter and tries again. Is she able to make up pairs of counters this time?</p> <p>Can you find out which groups of counters (from 7-12) can be put into pairs without any left over?</p>                                                                                                                                               |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p> |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                    |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.</li> <li>• Justify that quantity does not change when objects are regrouped.</li> </ul>                             |
| <b>Mathematical language</b>                        | <p>Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half, pair, odd, even</p>                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to use materials, drawings and symbols to show in a systematic way groupings of even numbers.</p> <p><b>Connect:</b></p> <p>With the students use the counters to make an array first with 2 counters, then 4 counters...up to 10. Count by twos with each pattern.</p>                                                                                                                                                                                                                      |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• Have available counters and digit cards.</li> <li>• Facilitate the students to notice that counting in twos is a pattern and that when you count by twos you are counting even numbers.</li> </ul>                                                                                                                                                                                                                                                                                           |

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|                          | <ul style="list-style-type: none"> <li>• Notice and build on students who are able to see odd and even numbers in their reasoning.</li> <li>• Expect students to represent their reasoning using the counters.</li> <li>• For the independent task, use round counters to represent the grapes. Have bags of counters with between 12-30 counters for students to choose.</li> </ul> |
| <b>Independent Tasks</b> | <p>Lasi has some grapes and two bowls.</p> <p>What are all the ways she could put the grapes into the bowls?</p> <p>Record your ideas using drawings and number sentences.</p>                                                                                                                                                                                                       |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                      |

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| <b>Task 7</b>                                       | <p>Amanda Bean is thinking about all the grandma's knitting jumpers. If each grandma has three balls of wool and there are two grandmas, how many balls of wool are there altogether?</p> <p>Amanda Bean is thinking about all the grandma's knitting jumpers. If each grandma has three balls of wool and there are five grandmas, how many balls of wool are there altogether?</p>                                                                                                                                                  |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p> |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                    |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.</li> <li>• Justify that quantity does not change when objects are regrouped.</li> </ul>                             |
| <b>Mathematical language</b>                        | Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half, pair, odd, even                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to use materials, drawings and symbols to show in a systematic way groupings of three.</p> <p><b>Connect:</b></p> <p>Have students draw 12 balls of wool in groupings of three and circle the groupings. Record the developing pattern.</p>                                                                                                                                                                                                                                                  |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• During the launch, use rhythmic counting to count to 20 (1, 2, 3, 4, 5...)</li> <li>• Have available a range of materials to represent the balls of wool up to 20.</li> </ul>                                                                                                                                                                                                                                                                                                                |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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|                          | <ul style="list-style-type: none"> <li>• Facilitate the students to notice that there is a pattern to their grouping and counting by threes is the same as grouping by twos.</li> <li>• Monitor for students using vocabulary which indicate early multiplication reasoning such as lots of and sets of.</li> <li>• Expect students to represent using drawings and circling the groups of three if they have used materials. Teacher record symbols to represent the groupings.</li> <li>• For the independent task, use round counters to represent the marbles.</li> </ul> |
| <b>Independent Tasks</b> | <p>Sepi has 12 marbles.</p> <p>Can you help her arrange them into rows that have the same amount in each?</p> <p>How many rows can you make?</p> <p>How many marbles are in each row?</p> <p>Record your ideas using drawings and write the numbers to match.</p>                                                                                                                                                                                                                                                                                                             |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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| <b>Task 8</b>                                       | <p>Amanda Bean has decided that it is quicker to put the sheep in groups of three instead of two to count them. If she has 9 sheep how many groups of sheep will she have?</p> <p>Amanda Bean has decided that it is quicker to put the sheep in groups of three instead of two to count them. If she has 12 sheep how many groups of sheep will she have?</p>                                                                                                                                                                        |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p> |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                    |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.</li> <li>• Justify that quantity does not change when objects are regrouped.</li> </ul>                             |
| <b>Mathematical language</b>                        | <p>Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half, pair, odd, even, threes</p>                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to use materials, drawings and symbols to show in a systematic way groupings of three.</p> <p><b>Connect:</b></p> <p>Have students draw 12 sheep in groupings of three and circle the groupings then draw another set of 12 sheep and put them in groupings of two. Explore and discuss how many groups of sheep there are in twos and threes.</p>                                                                                                                                           |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• During the launch, use counting by twos from 10 to 30. Teacher record and discuss the patterns.</li> <li>• Have available a range of materials to represent the balls 9 and 12 objects.</li> </ul>                                                                                                                                                                                                                                                                                           |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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|                          | <ul style="list-style-type: none"> <li>• Facilitate the students to notice that there is a pattern to their grouping and counting by threes is the same as grouping by twos. Have them notice that there are more groups when counting by twos than counting by threes.</li> <li>• Monitor for students using vocabulary which indicate early multiplication reasoning such as lots of and sets of.</li> <li>• Expect students to represent using drawings and circling the groups of three if they have used materials and record using symbols to represent the groupings.</li> <li>• For the independent task, use round counters to represent the marbles.</li> </ul> |
| <b>Independent Tasks</b> | <p>Joshua has 16 marbles.</p> <p>Can you help him arrange them into rows that have the same amount in each?</p> <p>How many rows can you make?</p> <p>How many marbles are in each row?</p> <p>Record your ideas using drawings and write the numbers to match.</p>                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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| <b>Task 9</b>                                       | <p>On the way to school Amanda Bean saw 5 lots of 2 cupcakes in the cakeshop window. She counted how many cupcakes there were altogether. How many were there?</p> <p>On the way to school Amanda Bean saw 3 lots of 3 cupcakes in the cakeshop window. She counted how many cupcakes there were altogether. How many were there?</p>                                                                                                                                                                                                 |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p> |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                    |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.</li> <li>• Justify that quantity does not change when objects are regrouped.</li> </ul>                             |
| <b>Mathematical language</b>                        | Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half, pair, odd, even, threes                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to use materials, drawings and symbols to show in a systematic way groupings of two and three.</p> <p><b>Connect:</b></p> <p>How many sheep are there altogether?<br/>1 lot of 2, 2 lots of 2, 3 lots of 2, 4 lots of 2....</p>                                                                                                                                                                                                                                                              |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• During the launch, use counting by twos from 16 to 36. Teacher record and discuss the patterns.</li> <li>• Have available a range of materials for students to use to explore their reasoning.</li> </ul>                                                                                                                                                                                                                                                                                    |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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|                          | <ul style="list-style-type: none"> <li>• Facilitate the students to notice that the term lots of indicates groupings of the same size.</li> <li>• Monitor for students using vocabulary which indicate early multiplication reasoning such as lots of and sets of.</li> <li>• Expect students to represent using drawings and circling the groups of two or three if they have used materials and record (or teacher record for them) using symbols to represent the groupings.</li> <li>• For the independent task, have counters available (up to 20 in a bag for each student).</li> </ul> |
| <b>Independent Tasks</b> | <p>Can you make these arrays using counters and draw them? Record a matching number sentence.</p> <p>3 by 2</p> <p>3 by 3</p> <p>4 by 2</p> <p>2 by 5</p> <p>3 by 5</p> <p>4 by 5</p>                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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| <b>Task 10</b>                                      | <p>Amanda Bean is counting all sorts of different things on her way to school.<br/>She sees 7 lots 2 wheels on bicycles. How many wheels are there altogether?</p> <p>Amanda Bean is counting all sorts of different things on her way to school.<br/>She sees 3 lots of 4 wheels on cars. How many wheels are there altogether?</p>                                                                                                                                                                                                  |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p> |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                    |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between 0-10 using pictures, numbers, and words.</li> <li>• Justify that quantity does not change when objects are regrouped.</li> </ul>                             |
| <b>Mathematical language</b>                        | <p>Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half, pair, odd, even, threes</p>                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to use materials, drawings and symbols to show in a systematic way groupings of two and three.</p> <p><b>Connect:</b></p> <p>How many legs of sheep are there altogether?<br/>1 lot of 4, 2 lots of 4, 3 lots of 4, 4 lots of 4....</p>                                                                                                                                                                                                                                                      |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• During the launch, use counting by twos from 30 to 50. Teacher record and discuss the patterns.</li> <li>• Have available a range of materials for students to use to explore their reasoning.</li> </ul>                                                                                                                                                                                                                                                                                    |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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|                          | <ul style="list-style-type: none"> <li>• Facilitate the students to notice that the term lots of indicates groupings of the same size.</li> <li>• Monitor for students using vocabulary which indicate early multiplication reasoning such as lots of and sets of.</li> <li>• Expect students to represent using drawings and circling the groups of two or three if they have used materials and record (or teacher record for them) using symbols to represent the groupings.</li> <li>• For the independent task, have the problems below prepared and materials for the students.</li> </ul> |
| <b>Independent Tasks</b> | <p>Lim's soccer team scored 9 goals in one game and 4 goals in another game. How many goals did his team score altogether?</p> <p>Lisa's soccer team scored 8 goals in one game and 6 goals in another game. How many goals did her team score altogether?</p> <p><math>7 + 5 =</math></p> <p><math>6 + 8 =</math></p> <p><math>5 + 9 =</math></p> <p><math>2 + 2 + 2 =</math></p> <p><math>6 - 3 =</math></p> <p><math>8 - 4 =</math></p>                                                                                                                                                       |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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| <b>Task 11 (optional)</b>                           | Amanda Bean is puzzled. She has seen a pattern with her groupings of things in twos and threes. She says that 2 lots of 3 is the same as 3 lots of 2. Use your counters to explore whether she is right.                                                                                                                                                                                                                                                                                                                              |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p> |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                    |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between using pictures, numbers, and words.</li> <li>• Justify that quantity does not change when objects are regrouped.</li> </ul>                                  |
| <b>Mathematical language</b>                        | Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half, pair, odd, even, threes, same as                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to use materials, drawings and symbols to show in a systematic way that the groupings are the same whichever way they are represented.</p> <p><b>Connect:</b></p> <p>If 2 lots of 3 is the same as 3 lots of 2. What about 2 lots of 4 and 4 lots of 2. Are they the same?</p>                                                                                                                                                                                                               |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• Have available a range of materials for students to use to explore their reasoning.</li> <li>• Monitor for students using vocabulary which indicate early multiplication reasoning such as lots of and sets of and the same as.</li> <li>• Expect students to represent using drawings and circling the groups of two or three if they have used materials and</li> </ul>                                                                                                                    |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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|                          | <p>record (or teacher record for them) using symbols to represent the groupings- as equivalent (<math>2 \times 3 = 3 \times 2</math>).</p> <ul style="list-style-type: none"> <li>For the independent task, have the problems below prepared and materials for the students.</li> </ul>                                                                                                    |
| <b>Independent Tasks</b> | <p>Mere had 5 shells and gave her mum 4 shells. How many shells does Mere have left?</p> <p>Coco had 10 shells and gave her mum 5 shells. How many shells does Coco have left?</p> <p>Daisy had 12 shells and gave her mum 6 shells. How many shells does Daisy have left?</p> <p><math>7 - 3 =</math><br/> <math>9 - 3 =</math><br/> <math>10 - 4 =</math><br/> <math>12 - 4 =</math></p> |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                            |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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| <b>Task 12 (optional)</b>                           | Amanda Bean is still puzzled. She has seen other patterns with her groupings of things in twos and threes. She says that 5 lots of 3 is the same as 3 lots of 5. Use your counters to explore whether she is right.                                                                                                                                                                                                                                                                                                                                                 |
| <b>Big ideas</b>                                    | <p>Objects in a set can be grouped and counted to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>There are patterns to the ways numbers are formed.</p> <p>Objects in a set can be grouped in twos or fours to get a final total. Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.</p> <p>An array can represent a group.</p>                               |
| <b>Curriculum links</b>                             | <p><b>NA1-1:</b> Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.</p> <p><b>NA1-3:</b> Know groupings with five, within ten, and with ten.</p> <p><b>NA1-4:</b> Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.</p>                                                                                                                                                                                                                                  |
| <b>Learning Outcomes: Students will be able to:</b> | <ul style="list-style-type: none"> <li>• Use grouping to solve multiplication problems without counting each object.</li> <li>• Count in groups.</li> <li>• Group objects in different ways.</li> <li>• Describe how an array represents a group.</li> <li>• Represent an array in a structured way.</li> <li>• Represent, explain, and justify number groupings between using pictures, numbers, and words.</li> <li>• Justify that quantity does not change when objects are regrouped.</li> <li>• Explain the commutative property of multiplication.</li> </ul> |
| <b>Mathematical language</b>                        | Times, multiply, equals, repeat, chunking, multiplication, lots of, twice, double, half, pair, odd, even, threes, same as                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Sharing back/Connect</b>                         | <p>Select students to share who are able to use materials, drawings and symbols to show in a systematic way that the groupings are the same whichever way they are represented.</p> <p><b>Connect:</b></p> <p>Can we write as a number sentence 2 lots of 3 are the same as 3 lots of 2 or 2 lots of 10 are the same as ?</p>                                                                                                                                                                                                                                       |
| <b>Teacher Notes</b>                                | <ul style="list-style-type: none"> <li>• Have available a range of materials for students to use to explore their reasoning.</li> <li>• Monitor for students using vocabulary which indicate early multiplication reasoning such as lots of and sets of and the same as.</li> <li>• Notice students who use their hands to gesture the concept of flipping the numbers. Build on their reasoning.</li> </ul>                                                                                                                                                        |

**Level 1 Year 0/NE: Number: Multiplication and Division**

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|                          | <ul style="list-style-type: none"> <li>• Expect students to represent using drawings and circling the groups of two or three if they have used materials and record (or teacher record for them) using symbols to represent the groupings- as equivalent (<math>2 \times 3 = 3 \times 2</math>).</li> <li>• For the independent task, have counters available (up to 30 in a bag for each student).</li> </ul>                        |
| <b>Independent Tasks</b> | <p>Can you make these arrays using counters and draw them?</p> <p>3 by 2</p> <p>2 by 3</p> <p>4 by 5</p> <p>5 by 4</p> <p>3 by 6</p> <p>6 by 3</p> <p>What do you notice? Record your ideas.</p> <p><u>OR</u></p> <p>Select one or more of the following assessment tasks (attached at the end of the document) as the independent activity:</p> <ul style="list-style-type: none"> <li>• N2 : Multiplication and Division</li> </ul> |
| <b>Anticipations</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# DMIC

## DEVELOPING MATHEMATICAL INQUIRY COMMUNITIES ASSESSMENT TASK

NUMBER MULT DIV: LEVEL 1

Task N2

There are 20 children in the classroom. The teacher asks them to get into groups which are the same size. Can you show all the different ways that they could get into groups?