

# Denmead Infant School Calculation Policy 2025

## Part Two – Multiplication & Division



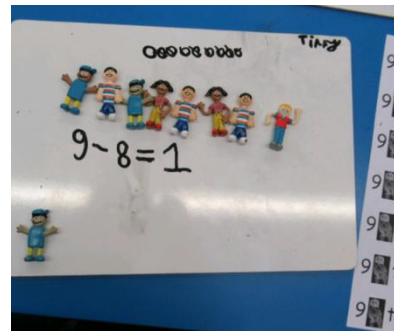
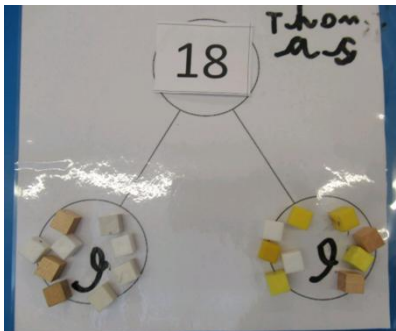
The Denmead Infant School calculation policy is set out in year group stages; however, it is important that we take into account prior attainment of our children and move on only when they are ready to take on the next challenge.

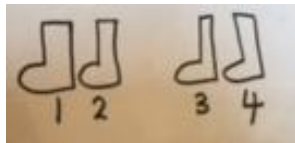
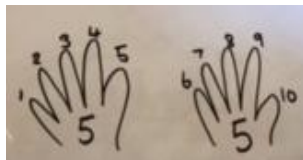
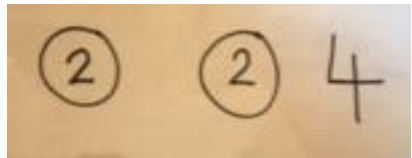
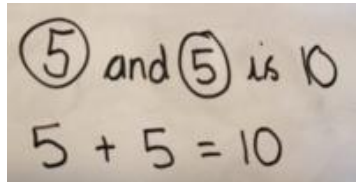
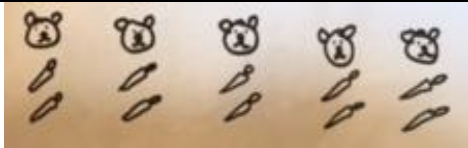
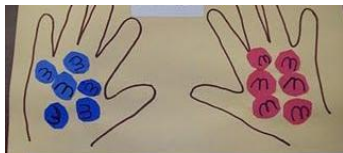
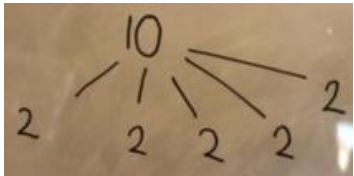
This calculation policy is for all school staff, parents and carers. It documents the methods used when teaching calculation at Denmead Infant School; this guidance can be used by parents and carers to support their children with maths learning at home.

At Denmead Infant School we use the CPA approach to teaching maths. This stands for Concrete, Pictorial, Abstract. Children will only be able to sufficiently master new mathematical concepts in the abstract form (i.e.  $7 + 5 = 12$ ) if they have first explored the concept through use of concrete objects and pictorial images. Even once a child is able to successfully access abstract recordings they should still continue to be exposed to, and encouraged to use, both concrete and pictorial approaches so that they can continue to develop strong links between the three approaches.

The children have opportunities to develop fluency, reasoning and problems solving skills in each Mathematical journey and flexible groupings ensure support and challenge is provided for all children. Key Instant Recall facts are shared with parents each half term and practised at school to develop children's automatic recall of number facts to support them to gain confidence and fluency in more complex mathematical thinking and build a strong foundation for reasoning and problem-solving.

The teaching and learning of Maths at Denmead Infant School is developed in line Hampshire Schemes of Learning units and we use the Hampshire assessment model in Years 1 and 2 which can be found on our website.

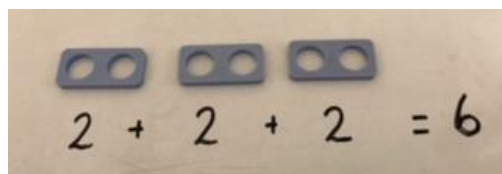


| Progression in<br>Multiplication & Division |                                                                                                                       | Odd and Even numbers will be taught and revisited in all years R-2.                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                     |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year R                                      |                                                                                                                       | Concrete resources                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Pictorial image                                                                                                                                                                                                                                                                                                                                                                | Abstract recording                                                                                                                                                                                                                                                                  |
|                                             |                                                                                                                       | Multiplication and division learning in Year R will be through real life contexts, role play and stories. Children will also be exposed to counting in 2s, 5s and 10s towards the end of the year.                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                     |
|                                             | Using quantities and objects to solve problems, including: <ul style="list-style-type: none"> <li>doubling</li> </ul> | <p>Sam and Jess both have wellies on today. How many wellies can we see?</p>  <p>We have 5 fingers on one hand. How many fingers do we have on 2 hands?</p>  <p>As well looking at the 'real' problems children will be encouraged to use concrete resources such as Numicon and counting objects to act out the problem.</p> |  <p>Children are encouraged to represent the problem in a way that is meaningful to them and as such each child's drawing may look different.</p>                                                       |  <p>Children may use numbers to record in the abstract. If known, they may use symbols such as + and =.</p>  |
|                                             | <ul style="list-style-type: none"> <li>halving and sharing.</li> </ul>                                                | <p>Can you share the 10 carrots equally between the 5 teddies?</p>  <p>You have 12 sweets and you need to give half to your friend. How many sweets will you each get?</p>  <p>How can we cut this apple in half?</p>                  |   <p>I shared my 12 m &amp; m's with my friend Nayah. I got 6 m &amp; m's and my friend got 6 m &amp; m's.</p>  |                                                                                                           |

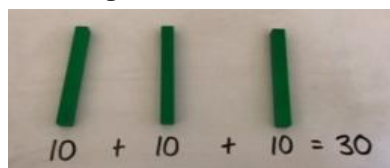
Children will learn to count in 2s, 5s and 10s and make links to times tables. In Year 1, we use repeated addition and the language of 'groups of' when learning multiplication. The purpose of this is to provide all children with a sound understanding of multiplication when they use the x symbol in Year 2.

Concrete resources such as numicon or counting equipment support children to solve real life problems.

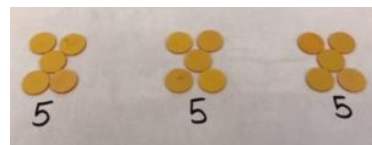
*3 children take their shoes off for P.E and leave them in a hoop. How many shoes are in the hoop?*



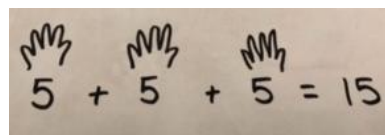
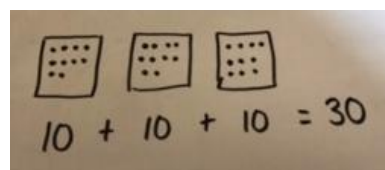
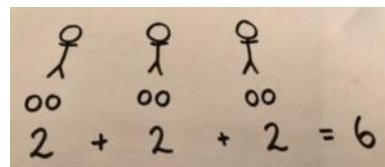
*Sweets come in bags of 10. How many sweets would be in 3 bags?*



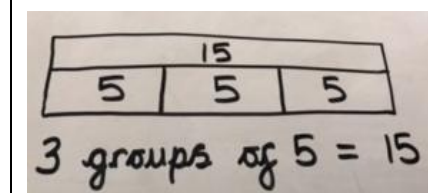
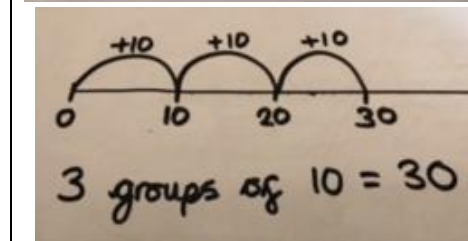
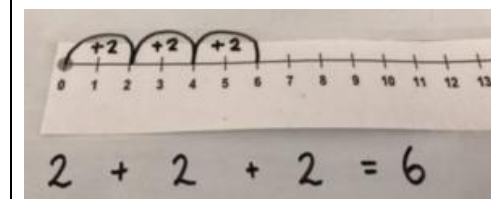
*The teacher can see three hands up. How many fingers can he see?*



Children will be encouraged to draw out the problem to show their understanding as well as to supporting them to solve it.

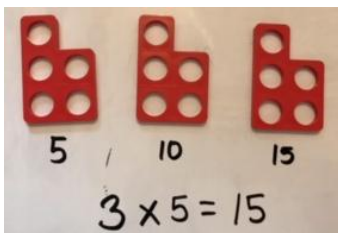
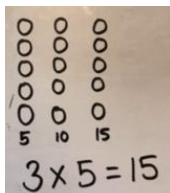
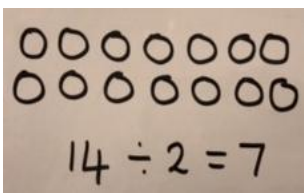
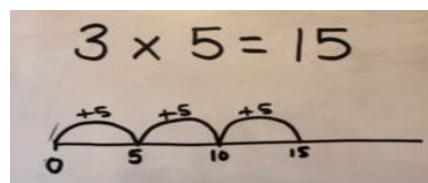
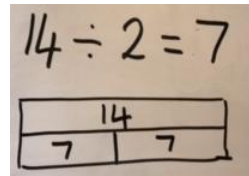
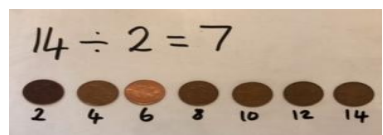
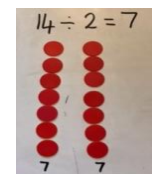
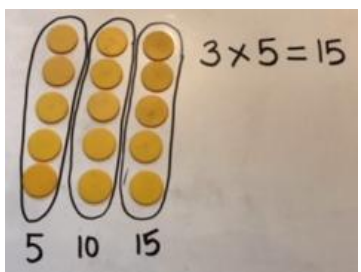
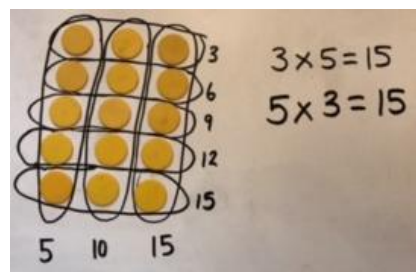
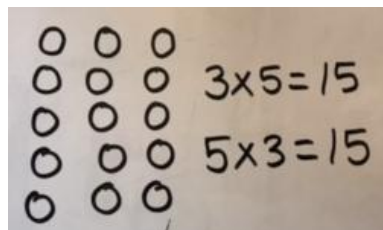
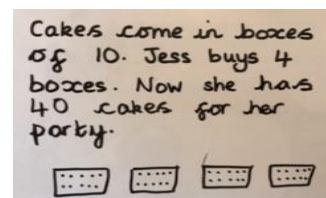
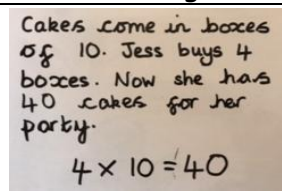


When children have developed a good understanding of repeated addition and can interpret what the question is asking they may use more abstract models such as number lines and bar models or known number facts.



$$3 \times 5 = 15$$

|                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------|
| Solve one-step problems involving multiplication and division by calculating the answer using arrays with the support of the teacher.                                                                                                                                                 | Arrays allow children to make the link between multiplication and division as they can be interpreted in multiple ways. When we look at arrays we talk about rows and columns as well as groups.<br>In this array there are 3 rows and 2 columns.<br>You could say: 3 groups of 2 is 6<br>2 groups of 3 is 6<br>6 shared into 2 is 3<br>6 shared into 3 is 2 |                                                                        |                                                          |
|                                                                                                                                                                                                                                                                                       | Children will interpret arrays as well as making their own arrays:<br>                                                                                                                                                                                                                                                                                       |                                                                        |                                                          |
| When learning division, children will use two methods; grouping and sharing. In Year 1, we use repeated subtraction and the language of 'groups of' and 'shared between' to provide all children with a sound understanding of division so that when they use the ÷ symbol in Year 2. |                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                          |
| Solve one-step problems involving division by calculating the answer using concrete objects and pictorial representations with the support of the teacher.                                                                                                                            | <p><b>Grouping:</b><br/>You have 6 gloves, how many groups of 2 can you make?</p>                                                                                                                                                                                                                                                                            |                                                                        | Repeated subtraction on an unstructured number line.<br> |
|                                                                                                                                                                                                                                                                                       | <p><b>Sharing:</b><br/>'There are 15 cakes. Share them equally between 3 friends.'</p>                                                                                                                                                                                                                                                                       | <p>Division by grouping can also be shown as repeated subtraction.</p> |                                                          |
| Children will draw one object at a time in each group until they have drawn the total amount they needed to share.                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                              |                                                                        |                                                          |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 2                                                                                                                                                                                  | Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals (=) signs.                        | Year 2 continue to learn the 2, 5 and 10 times tables and also be introduced the 3 times table. Children will use $\times$ and $\div$ symbols.                                                                                                                                                                                    |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                         |                                                                                                                                                                                                                           | <div><math>3 \times 5 =</math><br/><br/><math>3 \times 5 = 15</math></div>                                                                                                                                                                       | <div><br/><math>3 \times 5 = 15</math></div> <div><br/><math>14 \div 2 = 7</math></div> | <div><math>3 \times 5 = 15</math><br/></div> <div><math>14 \div 2 = 7</math><br/></div> |
|                                                                                                                                                                                         |                                                                                                                                                                                                                           | <div><math>14 \div 2 =</math><br/>(grouping using 2p coins)<br/><br/><math>14 \div 2 = 7</math></div> <div>(sharing)<br/><br/><math>14 \div 2 = 7</math></div> | Children will use arrays to support their understanding of commutativity ( $2 \times 3 = 6$ , $3 \times 2 = 6$ ) and inverse operations ( If we know $5 \times 10 = 50$ we also know $50 \div 10 = 5$ ).                                                      |                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                         | Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.                                                                                              | Use an array to show that $3 \times 5 = 5 \times 3$                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                         |                                                                                                                                                                                                                           | <br>$3 \times 5 = 15$                                                                                                                                                                                                                           | <br>$3 \times 5 = 15$<br>$5 \times 3 = 15$                                                                                                                                 | <br>$3 \times 5 = 15$<br>$5 \times 3 = 15$                                                                                                                                 |
| Solve problems involving multiplication and division using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. | Children will solve increasingly complex problems using methods they have previously learnt and resources they are familiar with and will be asked to show these in different ways to demonstrate depth of understanding. |                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                         |                                                                                                                                        |                                                                                                                                                                                                                                              | <br>$4 \times 10 = 40$                                                                                                                                                   |                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                         | Children will begin to use their knowledge of the 2, 5 and 10 times tables to secure the concept of <i>inverse</i> in multiplication and division.                                                                        |                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                               |

