



# Multiplication Tables Guidance booklet

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Effective understanding and recall of times tables is the foundation of most of the maths children will do at Overstone Combined School, and the curriculum puts an emphasis on knowing them at an early stage.

Overstone has always put tremendous effort and resources into getting children to have instant recall of their multiplication table facts. Being fluent in calculation and knowing multiplication tables by heart are a maths essential. Knowing the multiplication tables (and their associated division facts) supports mathematical learning and understanding. Those children who have a strong grasp of them tend to be more self-assured when learning new concepts.

The National Curriculum states that children should learn, with recall, the multiplication tables facts for the 2s, 5s and 10s in Year 2, then the 3s, 4s and 8s in Year 3 and finally know all facts to  $12 \times 12$  (and corresponding division facts) by the end of Year 4.

Every child will work towards obtaining their multiplication tables certificates, and will be able to work through at their pace. If however, a child feels like they have prepared enough for the next certificate, then there is nothing stopping them from trying to earn it, we would encourage this willingness to learn!

The real secret to learning multiplication tables and getting them to 'stick' comes through hard work, but work filled with special ingredients: jokes, giggles, movement, puzzles, music games, team work and novelty. If we can fill multiplication tables with fun, curiosity, surprises and memories then we are giving children every chance of growing maths muscles that can answer  $7 \times 8$  without dissolving into tears.

Our aim is that for every pupil moving on from Overstone Combined School, will hold a fluent, accessible and automatic knowledge of their multiplication tables.

Mrs F Willett  
January 2021



In the table below, are the National Curriculum multiplication tables end of year expectations for each year group.

Children regularly work on their multiplication tables in school but it is important for them to practice at home too.

|        |                                                                                                                                                                                                                           |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EYFS   | The use of practical activities and equipment to aid understanding and lay the foundations for visual images that represent numbers.                                                                                      |
| Year 1 | Counting in 2s, 5s and 10s, from different multiples, and to develop their recognition of patterns in the number system and make connections using arrays.                                                                |
| Year 2 | Count in steps of 2, 3, 5 & 10s from 0, and in 10s from any number, forward and backward in multiples. Counting in multiples of 3 to support a later understanding of a third.                                            |
| Year 3 | Pupils will continue to practise and recall multiples of 2, 3, 4, 5, 8, 10, 50 & 100.                                                                                                                                     |
| Year 4 | Pupils will continue to practise recalling and using multiplication tables and related division facts to aid fluency. They will recall multiplication and division facts for multiplication tables up to $12 \times 12$ . |
| Year 5 | Identify multiples and factors, and to continue to practise to multiply and divide numbers mentally, drawing upon known facts from all tables.                                                                            |
| Year 6 | Pupils continue to use all the multiplication tables to calculate mathematical statements in order to main fluency.                                                                                                       |






In order to help children understand that multiplication and division represents real-life situations, the teaching of multiplication tables in KS1 and lower KS2 will use concrete and pictorial methods, such as asking them to spilt groups of objects into a number of equal groups and find the total of groups of objects.



## EYFS

As a whole school we ensure that progression in mathematical concepts starts from the very beginning and will frequently use practical equipment to support the children's learning of new concepts. Using practical activities and equipment gives our young children materials to manipulate, aid their understanding and lay the foundations for visual images that represent numbers.

One approach to homework in the Reception class is that we encourage playing mathematical games as home alongside their reading books. Games include lots of counting, recognising the number of dots on a dice and simple calculations. Children enjoy playing snakes and ladders, snap and dominoes as a way of embedding, in a fun and engaging way, their early mathematical understanding. Counting, numeral recognition and the additive composition of number are the prerequisites for later, more complex mathematical concepts. It is therefore important that our Reception children understand the five counting principles.

| One-To-One Principle                                                                                                                                                                                         | Stable Order Principle                                                                                                                                                                                                                         | Cardinal Principle                                                                                                                                                                                                               | Abstraction Principle                                                                                                                                                                                       | Order Irrelevance Principle                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Each item in a set to be counted gets only one number name.                                                                                                                                                  | When counting, number words are always assigned in the same order.                                                                                                                                                                             | The number of objects in a set equals the final number counted.                                                                                                                                                                  | Anything can be counted using the abstract ideas in the preceding principles.                                                                                                                               | It Doesn't matter where you start, provided that all items are counted.                                                                                                                                                                             |
| <p>For Example:</p> <p>When counting a set of three rubber ducks, only one duck can have the number name <i>Two</i>.</p>  | <p>For Example:</p> <p>When counting a set of stuffed bears, you shouldn't say, "One, Two, Three, Four" on time and, "Two, One, Three, Four" the next.</p>  | <p>For Example:</p> <p>You'll know there are five apples in the set below when you get to the number 5 and have no more apples to count.</p>  | <p>For Example:</p> <p>Using the previous principles, you can count alligators, zebras, and everything in between.</p>  | <p>For Example:</p> <p>Start with the bottom left flower, the top right flower, or any other flower—if you count them all there will always be 7 flowers.</p>  |

### Skills taught:

- Autumn term Reception – identify representations of 1, 2 & 3
- Spring term Reception – numbers to 10
- Summer term Reception – counting to 20
- Counting in single and double digits to 20

### Suitable websites:

<https://nrich.maths.org/early-years>

<https://www.bbc.co.uk/cbeebies/shows/numberblocks>



## Year 1

At Overstone we use the CPA approach (Concrete-Pictorial-Abstract) approach to underpin knowledge, understanding and skills. This involves giving children a better chance of creating a long term memory, based on manipulation of physical resources and constructing images before or alongside the abstract e.g. the facts written as numbers:  $1 \times 2 = 2$ .

The children practise counting by reciting numbers and counting objects. They are taught to count in 2s, 5s and 10s, from different multiples, to develop their recognition of patterns in the number system, e.g. odd and even numbers.

The children will use apparatus for developing the concept of multiplication:

- A variety of real objects to sort and count, e.g. counters, beans, shells
- Interlocking cubes, e.g. multilink
- Cuisenaire rods
- Base-10 equipment, e.g. Diennes
- Number lines and grids (marked and unmarked)
- Washing lines and 0-100 number cards with pegs
- Money
- Pegboards and pegs
- Pictures
- Arrays
- Multiplication number grids (for number sequences and pattern spotting)

### **Skills taught:**

- Counting/ordering beyond 20 and up to 100, in 2, 5 & 10s
- Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens
- Basic one step problems  $\times/\div$
- Recognise Place Value

### **Suitable websites:**

<https://www.topmarks.co.uk/maths-games/5-7-years/times-tables>

<https://www.bbc.co.uk/teach/supermovers/times-table-collection/z4vv6v4>

<https://www.bbc.co.uk/cbeebies/shows/numberblocks>



## Year 2

Year 2 is when children start to build their knowledge of multiplication tables. They practise to become fluent in the 2, 5 & 10 multiplication tables, and connect them to each other. Counting in multiples of 3 to support a later understanding of a third.

Once the child has a good understanding of the 2s multiplication table, they move on to the 5s multiplication table and then the 10s multiplication table. The 10s multiplication table follows similar rules to the 5s multiplication table, so learning them in this order will help build the child's understanding of number-relationships more generally.

The process of learning tables should begin with children building up a table using concrete apparatus, moving on to a pictorial representation, then symbolising the two types of table (e.g.  $1 \times 2 = 2$ ,  $2 \times 1 = 2$ ) and then practising the tables both in written and oral forms.

**Tip: focus on the easy facts ( $\times 0$ ,  $\times 1$ ,  $\times 2$ ,  $\times 3$ ,  $\times 5$ ,  $\times 10$ ) and build on these. Starting with the easy facts for 1, 2, 10 and 5 emphasises how useful doubling and halving can be.**

The children begin to use other multiplication tables and recall multiplication facts including using related division facts to perform written and mental calculations. Using the suggested hand-on resources below, the children will make connection when learning their multiplication tables.

- listening and singing to times tables songs
- playing games like Fizz Buzz, Tables Bingo etc.
- playing multiplication and division 'Snap' type games
- using flash cards with missing numbers
- playing with loop cards
- using dice games
- playing cards, dominoes and darts
- using graphing tables
- interacting with Venn and Carroll diagrams
- using jog your memory cards
- fun mnemonics, e.g. use phrases which sound like numbers (sticky floor = 64, plenty more = 24 etc)
- promoting 'Personal Best' multiplication timed races

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## Year 2

Working with a range of materials and contexts, in which multiplication and division relate to groups and sharing discrete and continuous quantities, to arrays and repeated addition. The children will use commutativity and inverse relations to develop multiplicative reasoning e.g.  $4 \times 5 = 20$  and  $20 \div 5 = 4$ .

It is important that as well as practicing in class, children must have time to practice them at home using recommended websites.

### **Skills taught:**

- Steps up to 100 from 2, 3, 5 in 10s
- Basic one step problems  $\times/\div$  e.g.  $4 \times 5 = 20$   $20 \div 5 = 4$
- Mental fluency of 4 operations
- Arrays and number patterns

### **Suitable websites:**

<https://www.topmarks.co.uk/maths-games/5-7-years/times-tables>

<https://www.bbc.co.uk/teach/supermovers/times-table-collection/z4vv6v4>

<https://www.timestables.co.uk>

<https://trockstars.com/>



## Year 3

With lots of multiplication tables to learn in Year 3, learning them in a specific order can really help. The 4s multiplication table is a great place to begin, as the number rules the child will have picked up from the 2s multiplication table will come into play. To find  $4 \times 3$ , for example, they can work out  $2 \times 3$  and double the answer.

Working next on to the 3s multiplication table, once the child is comfortable with multiples of 3, introduce the 6 and 9 multiplication tables. Ensure to highlight helpful number rules as they learn these multiplications. For example, if they were to double an answer from the 3 multiplication table, they would have an equivalent answer for the 6 multiplication table.

To develop number sense and times table proficiency, children to be able to 'see' the maths in different representations, and have the language to describe their own thinking. Mental image activities, which encourage this, include children closing their eyes and mentally moving groups of objects or small arrays of dots. Number lines and grids can be imagined and movements and patterns on them described.

Precision in the use of language is important, if we are to reach shared understandings, we need to make sure that children know the right vocabulary to use when talking about multiplication. As well as practicing in class, children must have time to practice them at home using recommended websites.

### **Skills taught:**

- Commutativity & inverse  $\times \div$
- To develop multiplication reasoning
- Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

### **Suitable websites:**

<https://www.mathsisfun.com/tables.html>

<https://www.timestables.co.uk>

<https://ttrockstars.com/>

<https://www.topmarks.co.uk/maths-games/7-11-years/times-tables>

<https://www.bbc.co.uk/teach/supermovers/times-table-collection/z4vv6v4>

<https://www.youtube.com/watch?v=dzVyBQ5uTbo>

[https://www.youtube.com/watch?v=8QU\\_E0u-tP4](https://www.youtube.com/watch?v=8QU_E0u-tP4)



## Year 4

By Year 4, the children will need to be able to recall multiplication and division facts for multiplication tables up to  $12 \times 12$ . Pupils will continue to practise their mental recall of multiplication statements in order to improve fluency. Through doubling, they connect the 2, 4 & 8 multiplication tables.

Although multiplication tables over 10 may seem daunting, fear not! Start with the 11s multiplication tables, and then move on to the 12s multiplication tables. Armed with their other multiplication tables and having learned them in order, reassure pupils that they in the final stretch to becoming multiplication wizards!

The 10s multiplication tables is easy to memorise and uses the 5s multiplication table through halving. The 6s multiplication is double the 3s multiplication table. The 9s multiplication table can be related to the 10s by subtracting from 10, such as  $7 \times 9 = 7 \times 10 - 7$ . Strategies using fingers and the sum of the digits of multiples of 9 will also help in learning the multiples of 9. This leaves the 7s multiplication table but most of the multiples of 7 will have already been encountered in the other multiplication tables.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

## **Multiplication Tables Check – end of year 4**

From the 2019/20 academic year, the multiplication tables check (MTC) is statutory for all year 4 pupils. The purpose of the MTC is to determine whether pupils can recall their times tables fluently, which is essential for future success in mathematics. It will help schools to identify pupils who have not yet mastered their times tables, so that additional support can be provided.

### **MTC websites:**

<https://www.timestables.co.uk/multiplication-tables-check/>

<https://urbrainy.com/mtc>

<https://mathsframe.co.uk/en/resources/resource/477/Multiplication-Tables-Check>

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## Year 4

### **Skills taught:**

- Multiples of 6, 7, 9, 25, 100s
- Commutativity & inverse  $\times \div$  for all 12 x 12 multiplication tables
- Mental calculations, e.g.  $600 \div 3 = 200$  derived from  $2 \times 3 = 6$
- Pupils will continue to practise recalling and using multiplication tables and related division facts to aid fluency.

### **Suitable websites:**

<https://www.mathsisfun.com/tables.html>

<https://www.timestables.co.uk>

<https://ttrockstars.com/>

<https://www.topmarks.co.uk/maths-games/7-11-years/times-tables>

<https://www.bbc.co.uk/teach/supermovers/times-table-collection/z4vv6v4>

<https://www.bbc.co.uk/teach/skillswise/times-tables/z4gs7nb>



## **Year 5: putting multiplication tables into practice!**

By these later years, pupils are challenged to apply the knowledge they have gained. By practising all of the multiplication tables they have learned in the order above, pupils can keep their knowledge fresh and develop their instant recall. When exploring multiplication and division facts, teaching should include a balanced range of experiences that ensure pupils consolidate and extend their learning.

Part of the National Curriculum for Year 5 is to identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers.

$6 \times 4 = 24$  is a known number fact so children could be asked questions including:

$$60 \times 4 = \quad 240 \div 40 = \quad 0.4 \times 6 = \quad 24 \div 0.4 = \quad 2.4 \div 6 =$$

$$60 \times 40 = \quad 600 \times 4 = \quad 0.4 \times 0.6 = \quad 240 \div 60 = 40 \quad 2400 \div 600 =$$

### **Skills taught:**

- Ensure extended understanding of number system, place value & larger integers.
- Connections between  $\times/\div$  10, 100 & 1000s
- Identify all multiples and factors
- Apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations
- Multiply numbers up to 4-digits by one/two-digit numbers using a formal written method, including short & long multiplication for two-digit numbers.
- Pupils use multiplication and division as inverses to support the introduction of ratio in Year 6.

### **Suitable websites:**

<https://nrich.maths.org/>

<https://www.bbc.co.uk/teach/supermovers/times-table-collection/z4vv6v4>

<https://www.bbc.co.uk/teach/skillswise/times-tables/z4gs7nb>

<https://www.timestables.co.uk/>

<https://ttrockstars.com/>

<https://www.topmarks.co.uk/maths-games/7-11-years/times-tables>



## Year 6: using all the multiplication tables

Pupils continue to use all the multiplication tables to calculate mathematical statement in order to maintain their fluency. It is therefore crucial that children go deeper and understand what the numbers mean and how to apply their knowledge in a maths problem.

Planned experiences and activities for learning about multiplication must be sequenced and ordered in order to support progression and real understanding.

### **Skills taught:**

- Mental calculations of mixed operations/larger integers
- Common factors, multiples and prime numbers
- Connection between  $\times/\div$  fractions, decimals & ratio
- Multiply multi-digit numbers up to 4-digits by a two-digit whole number using the formal written method of long multiplication
- Pupils continue to use all the multiplication tables to calculate mathematical statements in order to main fluency

### **Suitable websites:**

<https://www.bbc.co.uk/teach/supermovers/times-table-collection/z4vv6v4>

Factors, prime numbers & multiples: <https://www.bbc.co.uk/bitesize/topics/zfq7hyc>

<https://www.timestables.co.uk/>

[https://www.transum.org/Tables/Times\\_Tables.asp](https://www.transum.org/Tables/Times_Tables.asp)

<https://trockstars.com/>

<https://www.topmarks.co.uk/maths-games/7-11-years/times-tables>