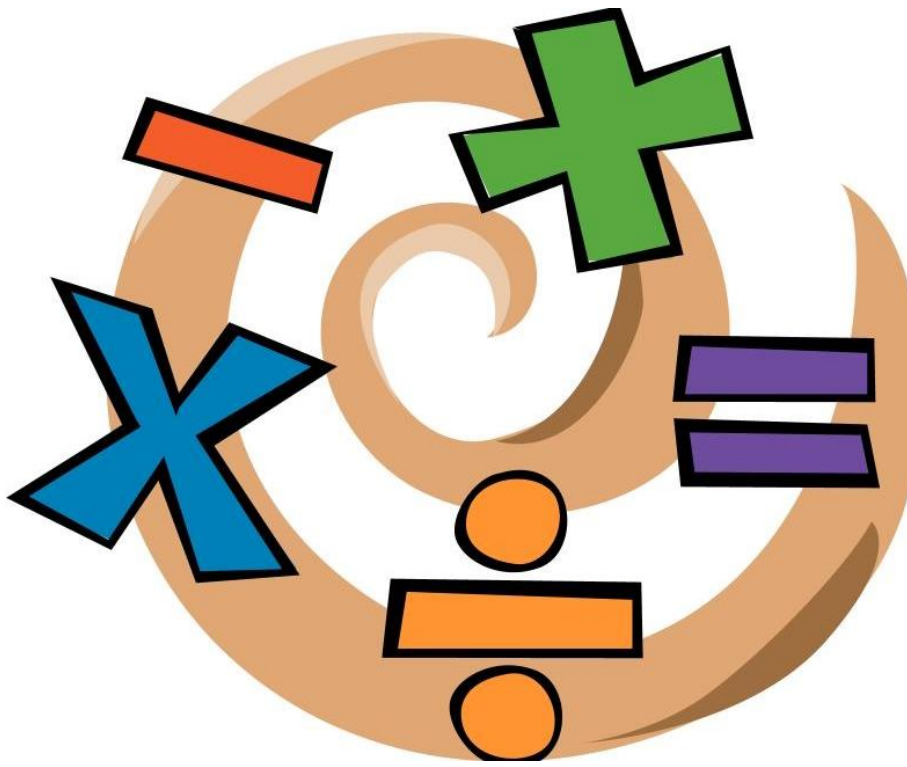


**MANOR JUNIOR**  
**SCHOOL**



**A GUIDE TO**  
**MATHEMATICS**

## MATHS AT MANOR JUNIOR SCHOOL

### **Introduction**

The national curriculum (2014) aims to ensure that all pupils are fluent in the fundamentals of mathematics, have the ability to reason mathematically and can solve problems by applying their knowledge. At Manor Junior School we have taken this approach to our maths curriculum and ensure that all children have access to these opportunities by breaking the curriculum down into the following sections:

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions
- Geometry – position and direction and shape
- Measures
- Statistics
- Algebra (Year 6 only)
- Ratio and proportion (Year 6 only)

At Manor Junior School, lessons are planned using the Concrete Pictorial Abstract (CPA) approach which is a system of learning that uses physical and visual aids to build a child's understanding of abstract topics.



This booklet aims to help you to help your child, by explaining the calculation methods we teach together with activities you can do at home to build your child's mathematics skills. The maths learning your child is doing at school may look very different to the kind of 'calculations' you remember.

**YOU DO NOT NEED TO READ THROUGH THIS BOOKLET FROM COVER TO COVER  
– JUST KEEP IT TO DIP INTO OR REFER TO!**

## HOW TO SUCCEED AT MATHEMATICS

There are things that all children need to be able to do in order to succeed in maths. They are:

- Select an efficient method for a calculation.
- Work out what calculation(s) are needed in order to solve a problem.
- Know by heart all the ***multiplication facts*** from  $0 \times 1$  to  $12 \times 12$  by the end of **Year 4**. This means that if asked "What are 7 eights?" they respond immediately with "56". Counting on fingers or in groups (i.e. 8, 16, 24, 32, 40, 48, 56) is NOT the same as memorising tables. However, please be aware that some children may find chanting tables in order in the "old-fashioned" style ("once 2 is 2; 2 2s are 4 etc"), almost impossible! Suggestions for aiding learning of tables are found later in this booklet.
- Know the ***corresponding division facts***. This means that children use their knowledge of multiplication facts to solve simple division questions, e.g.  $42 \div 7$  is 6.
- Know by heart all the ***"number bonds to 20"***. This means all the pairs of numbers that make ALL the numbers between 1 and 20, not just pairs that make 10 or pairs that make 20. (e.g. the number bonds for 12 would be:  $12+0$ ,  $11+1$ ,  $10+2$ ,  $9+3$ ,  $8+4$ ,  $7+5$ ,  $6+6$ ,  $5+7$ ,  $4+8$ ,  $3+9$ ,  $2+10$ ,  $11+1, 0+12$ ).
- Tell the time in words and on analogue and digital clocks.
- Know written methods for each type of calculation (see later in this booklet), appropriate to their age and ability.
- Know mental strategies for calculations (e.g. counting on, partitioning – see calculations section).
- Read, spell and pronounce a range of mathematical vocabulary (shown like ***this*** and explained throughout the booklet).

The attitudes towards maths that children hear can have a huge impact on how they fare at school. Remember even if you found maths difficult or didn't like it, your child won't necessarily be the same so please help your child to maintain a positive attitude, even when the going gets tough!

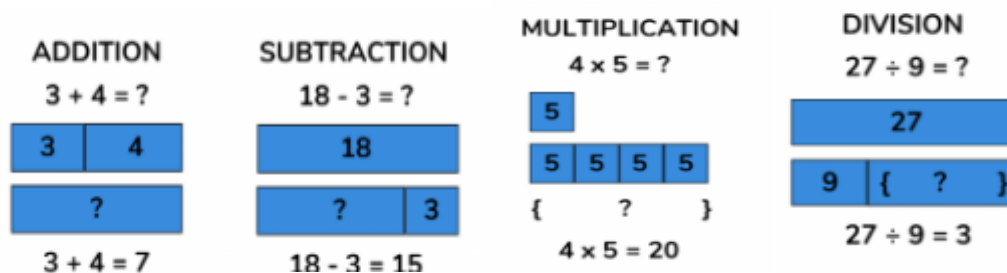
**TRY TO FIND NEW WAYS TO ENJOY THE SUBJECT – SEE OUR SUGGESTIONS PAGES!**

## THE FOUR OPERATIONS

In previous years, children have been taught a method to solve a question, calculated it correctly and have moved onto solve questions with 'harder' numbers. However, in scenarios like this it is common for children to have little understanding of the underlying maths that is taking place within the calculation. Due to this, the National Curriculum has identified what type of questions children should be able to solve at the end of each year. It is important that children do not move onto larger numbers, but instead deepen their understanding of the maths that they are actually doing through rich and sophisticated problems.

At Manor Junior School, we believe that often a calculation needs to have a context so that its purpose can be understood. We provide our children with many opportunities to use and apply their mathematical skills in different situations and to develop their problem solving and reasoning skills. Our children are taught a variety of methods, both mental and written, so that they develop the skills required to select an efficient method which is determined by the calculation. Children are encouraged to consider if a mental calculation would be appropriate before using written methods. Children are encouraged to approximate their answers before calculating and to use a suitable strategy to check for accuracy. Children are taught to use methods which are accurate, reliable and efficient.

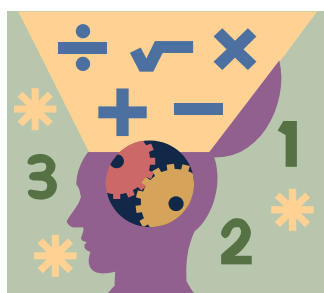
We also use the bar model as a problem-solving tool that enables children to make sense of word problems by representing the problem using rectangular bars. This allows children to see the structure of a problem in terms of parts and wholes, and to consider what calculation is required in order to solve it. The bar model method is pictorial – children draw bars to represent objects or quantities.



Over the next few pages, we have identified the type of numbers and methods that children should be working with for addition and subtraction, followed by multiplication and division.

## ADDITION AND SUBTRACTION

<b>Manor Junior School Expectations</b>		
By the end of Year 3	<ul style="list-style-type: none"> <li>Be confident with efficient mental methods for addition and subtraction and be able to use the expanded methods for addition and subtraction alongside concrete resources.</li> <li>Children also need to be able to solve problems (including those involving money and measures), missing numbers, place value and more complex addition and subtraction.</li> </ul>	Numbers up to 1,000
By the end of Year 4	<ul style="list-style-type: none"> <li>Use efficient mental and written methods including the formal column methods for addition and subtraction.</li> <li>Be able to solve addition and subtraction two step problems in context (including money and measures) deciding which operations and methods to use and why</li> </ul>	Numbers up to 10,000
By the end of Year 5	<ul style="list-style-type: none"> <li>Be able to add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) and add and subtract numbers mentally with increasingly large numbers</li> <li>Be able to solve addition and subtraction multi-step problems in context (including money and measures) deciding which operations and methods to use and why.</li> </ul>	Numbers up to 1,000,000 and decimals up to 2 decimal places e.g. (3.45+ 3.67).
By the end of Year 6	<ul style="list-style-type: none"> <li>Perform mental calculations, including with mixed operations and large numbers and use efficient methods to add and subtract.</li> <li>Be able to solve addition and subtraction more multi-step problems in context (including money and</li> </ul>	Numbers up to 10,000,000 and decimals with up to 3 decimal places



At Manor Junior School, we do not expect children to begin using formal **column** methods immediately or for all calculations, as children need to understand the concept of addition as combining two (or more) sets and as counting on and subtraction as taking away (counting back) and finding the difference by counting on. Below are the stages the children go through in being taught addition and subtraction concepts.

## Addition

$$7 + 4$$

I eat 7 sweets and my friend eats 4 sweets. How many sweets do we eat altogether?

OR There are 7 people on the bus and 4 more people get on. How many people are on the bus now?

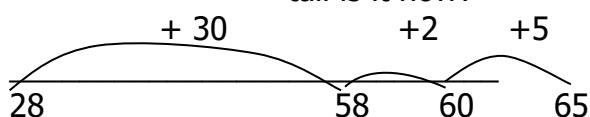
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### Early methods

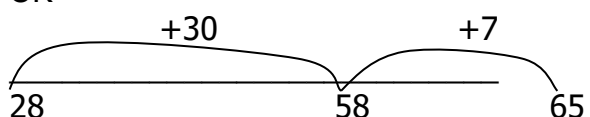
Children use apparatus (e.g. bead strings, abacus, plastic bricks, animals, Numicon tiles) or draw pictures or make marks to help them.

$$37 + 28$$

My sunflower is 28cm. It grows another 37cm. How tall is it now?



OR



Use **Empty Number Lines (ENL)** (sometimes called unstructured number lines).

Rather than starting at 1 children are taught to start at one of the numbers and add on the other. If they use multiples of 10 or 100 to help them, these are called **"landmark"** numbers. (e.g. 60 in the first example).

$$546 + 487$$

It is 546m from the school to the shop and another 487m from the shop to the church. How far is it from the school to the church?

$$\begin{array}{r} 546 \\ +487 \\ \hline 13 \text{ (add the ones)} \\ 120 \text{ (add the tens)} \\ \hline 900 \text{ (add the hundreds)} \\ \hline 1033 \end{array}$$

**Expanded methods** build on mental methods and make the value of the digits clear to children. Splitting a number into hundreds, tens and ones is called **"partitioning"**. The language used is very important e.g. they add the ones, tens and hundreds separately in their heads and when they get to the 900+120+13, they also add these in their heads – NOT in columns with carrying. If they cannot do it in their head, they are NOT ready for this or later methods.

$$12\,786 + 2\,568$$

12,786 people visited the museum last year. The numbers increased by 2,568 this year. How many people visited this year?

$$\begin{array}{r} 12786 \\ + 2568 \\ \hline 15354 \\ \hline 1111 \end{array}$$

When children are confident and accurate with the expanded method, this can be "squashed" into the traditional **column method**.

*This is the expected method for Year 6 to use in their SATs when the calculation require a written method.*



<p style="text-align: center;">3681-2357</p> <p>The school library has 3681 books. 2357 are out on loan. How many are on the shelves?</p> $\begin{array}{r} 3000+600+ 80+ 1 \\ -2000+300+ 50+7 \\ \hline 1000+300+ 20+4 \end{array}$	<p>never given back! Instead, the term "exchange" is used as in this example: 1 ten was exchanged into 10 ones.</p>
<p style="text-align: center;">9676-4928</p> <p>A sack of potatoes weighs 9676g. 4928g is eaten. How much is left?</p> $\begin{array}{r} 8916716 \\ -4928 \\ \hline 4748 \end{array}$	<p>When children are confident and accurate with the expanded method, this can be "squashed" into the traditional <b>compact method</b>.</p>

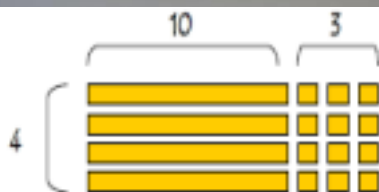
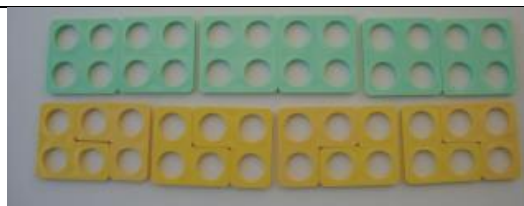


## **MULTIPLICATION & DIVISION**

### **Manor Junior School Expectations**

By the end of Year 3	<ul style="list-style-type: none"><li>• Record multiplication and division facts as arrays using a grid (rather than dots) and a number-line</li><li>• Know and multiplication and division facts for 2, 4, 8, 3, 5, 10 and 20 times tables.</li><li>• Count in multiples of 3, 4 and 8.</li><li>• Multiply and divide two-digit numbers by one-digit numbers, using mental strategies.</li><li>• Solve problems, including missing number problems, involving multiplication and division.</li></ul>
By the end of Year 4	<ul style="list-style-type: none"><li>• Know multiplication and division facts for all times tables (up to 12x12).</li><li>• Use place value, known and derived facts to multiply and divide mentally e.g. I know <math>7 \times 8 = 56</math> so <math>70 \times 8 = 560</math>.</li><li>• Multiply two-digit and three digit numbers by a one-digit number</li><li>• Solve harder problems, including missing number problems, involving multiplication and division.</li></ul>
By the end of Year 5	<ul style="list-style-type: none"><li>• Use multiplication and division fact for all times tables and related facts efficiently in a range of contexts.</li><li>• Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.</li><li>• Multiply up to four-digit numbers by a two-digit number using an efficient mental or written method depending on the numbers involved.</li><li>• Divide numbers up to 4 digits by a one-digit number using an efficient mental or written method depending on the numbers involved.</li><li>• Interpret remainders in the context of the problem.</li><li>• Solve multi step problems, including missing number problems, involving multiplication and division.</li></ul>
By the end of Year 6	<ul style="list-style-type: none"><li>• Perform mental calculations, including with mixed operations and large numbers.</li><li>• Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</li><li>• Divide numbers up to 4 digits by a two-digit whole number using the formal method of long division or short division where appropriate.</li><li>• Interpret remainders as whole number remainders, fractions.</li><li>• Solve multi step problems, including missing number problems, involving multiplication and division.</li></ul>

## Multiplication



Children use apparatus (e.g. bead strings, Numicon, abacus, plastic bricks) or draw pictures or make marks to help them.

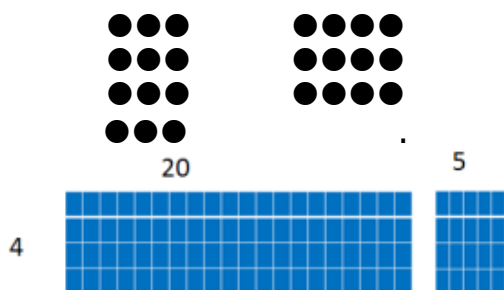
These examples visually show:  
 $3 \times 8 = 24$  and  $8 \times 3 = 24$

And

$4 \times 13$  as four lots of thirteen

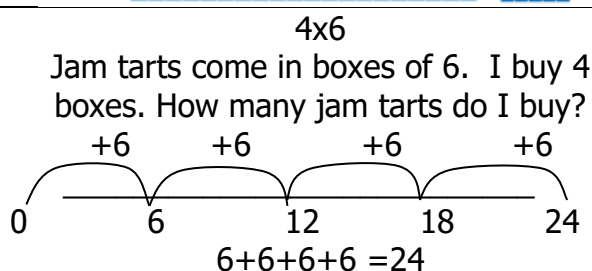
$4 \times 3$

I give 4 children 3 sweets each. How many sweets altogether?



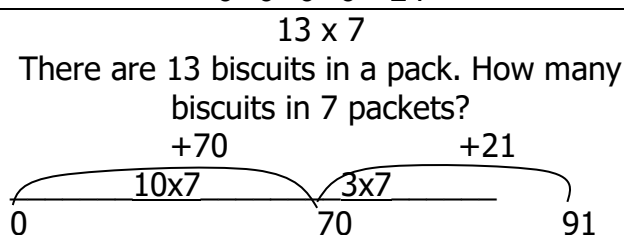
Drawing an **"array"** (4 columns of 3 or 3 rows of 4) can help children gain a mental image and to understand that  $3 \times 4$  is the same as  $4 \times 3$ .

Arrays can also be used to represent two digit numbers  $\times$  by a 1 digit number e.g.  $25 \times 4$ .



Children should use the multiplication facts they know or count on in steps of equal size using an empty number line.

This also shows the link between multiplication and repeated addition.



When children get to 2 digit  $\times$  1 digit numbers it is not efficient to jump in small steps. By partitioning the 2 digit number into tens and ones (10 and 3) and multiplying them separately before adding, it is easier to work out. This method can be used mentally for some 2 by 1 digit calculations.

There are 3 cakes in one box. How many cakes in 14 boxes.

$$\begin{aligned} 3 \times 10 &= 30 \\ 3 \times 4 &= 12 \\ 30 + 12 &= 42 \text{ cakes} \end{aligned}$$

Informal jottings can be used to help work out the answer to a calculation or a problem.



<p style="text-align: center;"><math>124 \times 6</math></p> <p>124 books costing £6 each were sold. How much money was taken?</p> $\begin{array}{r rr rr} X & 100 & 20 & 4 \\ \hline 6 & 600 & 120 & 24 \end{array}$ <p style="text-align: center;"><math>600+120+24= 744</math></p>	<p>This method is called the "<b>grid method</b>" and builds on the children's understanding of an array.</p> <p>124 is split into 100, 20 and 4 and each one is multiplied by 6. Then the 3 answers are added together.</p>				
<p style="text-align: center;"><math>72 \times 38</math></p> <p>In a theatre there are 38 rows of 72 seats. How many people can the theatre seat?</p> $\begin{array}{r rr rr} X & 30 & 8 \\ \hline 70 & 2100 & 560 & = 2660 \\ 2 & 60 & 16 & = \underline{76+} \\ & & & 2736 \end{array}$	<p>The "grid method" is also used for two-digit multiplication by two-digit (long multiplication). Partition both numbers into tens and ones and multiply each part, putting the answers in each section of the grid. Add the answers across (<math>2100+560</math> and <math>60+16</math>) and then add down (<math>2660+76</math>).</p>				
<p>An aeroplane flight to Asia costs £342 per person. How much will it cost for 7 people? <math>342 \times 7</math></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding-right: 10px;"> <p><math>342 \times 7</math> becomes</p> <math display="block">\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ \hline 21 \end{array}</math> <p>Answer: 2394</p> </td> <td style="width: 50%; padding-left: 10px;"> <p><math>2741 \times 6</math> becomes</p> <math display="block">\begin{array}{r} 2741 \\ \times 6 \\ \hline 16446 \\ \hline 42 \end{array}</math> <p>Answer: 16 446</p> </td> </tr> </table>	<p><math>342 \times 7</math> becomes</p> $\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ \hline 21 \end{array}$ <p>Answer: 2394</p>	<p><math>2741 \times 6</math> becomes</p> $\begin{array}{r} 2741 \\ \times 6 \\ \hline 16446 \\ \hline 42 \end{array}$ <p>Answer: 16 446</p>	<p>Children who are secure with the grid method and compact addition are ready to attempt formal methods, starting with short multiplication.</p> <p>Depending on the numbers, this is used when multiplying any number by a one-digit number.</p>		
<p><math>342 \times 7</math> becomes</p> $\begin{array}{r} 342 \\ \times 7 \\ \hline 2394 \\ \hline 21 \end{array}$ <p>Answer: 2394</p>	<p><math>2741 \times 6</math> becomes</p> $\begin{array}{r} 2741 \\ \times 6 \\ \hline 16446 \\ \hline 42 \end{array}$ <p>Answer: 16 446</p>				
<p>29 children pay £286 each to go on a residential visit. What is the total cost? <math>286 \times 29</math></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding-right: 20px;"> <math display="block">\begin{array}{r} 286 \\ \times 29 \\ \hline 5720 \\ 2574 \\ \hline 8294 \\ 1 \end{array}</math> </td> <td style="width: 50%;"> <p><math>286 \times 20</math></p> <p><math>286 \times 9</math></p> </td> </tr> <tr> <td style="border-right: 1px solid black; padding-right: 10px;"> <p><math>124 \times 26</math> becomes</p> <math display="block">\begin{array}{r} 124 \\ \times 26 \\ \hline 2480 \\ 744 \\ \hline 3224 \\ \hline 11 \end{array}</math> <p>Answer: 3224</p> </td> <td style="padding-left: 10px;"> <p><math>124 \times 26</math> becomes</p> <math display="block">\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ \hline 11 \end{array}</math> <p>Answer: 3224</p> </td> </tr> </table>	$\begin{array}{r} 286 \\ \times 29 \\ \hline 5720 \\ 2574 \\ \hline 8294 \\ 1 \end{array}$	<p><math>286 \times 20</math></p> <p><math>286 \times 9</math></p>	<p><math>124 \times 26</math> becomes</p> $\begin{array}{r} 124 \\ \times 26 \\ \hline 2480 \\ 744 \\ \hline 3224 \\ \hline 11 \end{array}$ <p>Answer: 3224</p>	<p><math>124 \times 26</math> becomes</p> $\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ \hline 11 \end{array}$ <p>Answer: 3224</p>	<p>The compact long multiplication method is also known as the formal column method for multiplication and is the expected written method to be used in the Year 6 SATs.</p>
$\begin{array}{r} 286 \\ \times 29 \\ \hline 5720 \\ 2574 \\ \hline 8294 \\ 1 \end{array}$	<p><math>286 \times 20</math></p> <p><math>286 \times 9</math></p>				
<p><math>124 \times 26</math> becomes</p> $\begin{array}{r} 124 \\ \times 26 \\ \hline 2480 \\ 744 \\ \hline 3224 \\ \hline 11 \end{array}$ <p>Answer: 3224</p>	<p><math>124 \times 26</math> becomes</p> $\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \\ \hline 11 \end{array}$ <p>Answer: 3224</p>				

## Division

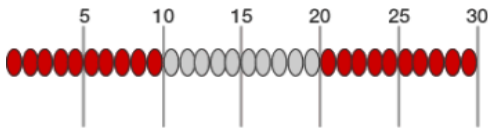
$8 \div 4$

Eight divided into four equal groups = two in each group

$8 \div 4 = 2$

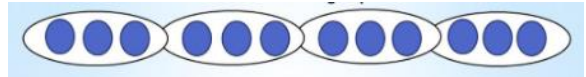
Eight can be divided into four equal groups of two or two equal groups of four



Children use apparatus (e.g. bead strings, blocks, Numicon) or draw pictures or make marks to help them represent the calculation.

Exploring the difference between **sharing** and **grouping**.

**Grouping** using a number line/bead string. We know how many are in each group but not how many groups there will be. The answer is the number of groups.

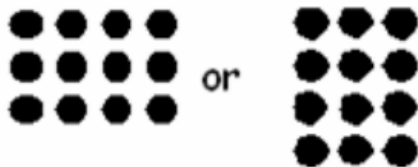


There are 12 cakes, how many children can have 3 cakes each? 4 groups  
 $12 \div 3 = 4$

Children see the link between multiplication and division and begin to recall related division facts.

**Sharing** using objects e.g. counters or cubes. We know how many groups there are but not how many are in each group. The answer is the number in each group.

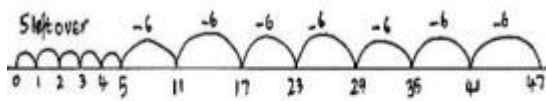
There are 12 sweets shared between 3 children, how many sweets do each child receive? 4 sweets  
 $12 \div 3 = 4$



Drawing an **"array"** (4 columns of 3 or 3 rows of 4) can help children gain a mental image. Once this image is internalised then mentally children can use times tables facts to do this kind of division.

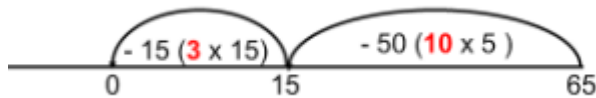
An array is a powerful image to use can show the multiplication and related division facts e.g.  $12 \div 3 = 4$ .

I have 47 eggs and each box holds 6 eggs.  
How many boxes do I need? 8 boxes.



$47 \div 6 = 7$  boxes, with 5 cakes leftover.  
You might need 8 boxes!

I have 65 eggs and each box holds 6 eggs.  
How many boxes do I need? 13 boxes



Modelling division on a number line is used to support children in their conceptual understanding and concept of division.

Children count back in steps of equal size using an empty number line or subtract using chunks of the number being divided.

$$65 \div 5 = 13$$

10 lots of 5 and 3 lots of 5

I have 84 eggs and each box holds 4 eggs.  
How many boxes do I need?  
 $84 \div 4$  by 4

$80 \div 4 = 20$  and  $4 \div 4 = 1$  so the answer is 21 OR  
 $20 \times 4 = 80$  so  $21 \times 4 = 84$

Informal jottings can be used by children using known and related facts.

Children can also use these informal methods with larger number.

If I know  $56 \div 7 = 8$  so  $560 \div 7 = 80$

73 sticks shared equally between 3 children. How many sticks each?

$$73 \div 3$$



$$\begin{array}{r} 2 \ 4 \ r1 \\ 3 \overline{) 7 \ 3} \end{array}$$

Short division with place value counters.

First group the tens, then exchange the ten for ten 1s. Next group the ones.

Show any remainder.

$312 \div 6$   
6 eggs will fit in an egg box. How many boxes will I need to 312 eggs?

$$\begin{array}{r} 052 \\ 6 \overline{)312} \end{array}$$

52 egg boxes.

$432 \div 5$  becomes

$$\begin{array}{r} 86 \text{ r } 2 \\ 5 \overline{)432} \\ \underline{40} \phantom{0} \\ 32 \\ \underline{30} \\ 2 \end{array}$$

Answer: 86 remainder 2

$496 \div 11$  becomes

$$\begin{array}{r} 45 \text{ r } 1 \\ 11 \overline{)496} \\ \underline{44} \phantom{0} \\ 56 \\ \underline{55} \\ 1 \end{array}$$

Answer:  $45 \frac{1}{11}$

$$\begin{array}{r} 078.33 \\ 3 \overline{)22325.100} \end{array}$$

Short division using the compact method is taught when children are secure with the underpinning mathematics of a division calculation.

This method is expected to be reached by year 6 for questions that involve a number being divided by a smaller than or including 12.

Children will also use this method to show a remainder as a decimal.

A shop has 432m of ribbon. The ribbon is divided in to 15 pieces. How long is each piece?  $432 \div 15$

**Long division**

$432 \div 15$  becomes

$$\begin{array}{r} 28 \text{ r } 12 \\ 15 \overline{)432} \\ \underline{30} \phantom{0} \\ 132 \\ \underline{150} \\ 12 \end{array}$$

Answer: 28 remainder 12

$432 \div 15$  becomes

$$\begin{array}{r} 28 \\ 15 \overline{)432} \\ \underline{300} \quad 15 \times 20 \\ \underline{132} \\ \underline{120} \quad 15 \times 8 \\ 12 \end{array}$$

$$\frac{12}{15} = \frac{4}{5}$$

Answer:  $28 \frac{4}{5}$

This method is expected to be used by year 6 in their SATs and therefore at the end of Key Stage 2.

## THINGS TO DO AT HOME

### **IDEAS FOR PRACTISING COUNTING AND NUMBERS**

- ☺ Practise counting out loud in different groups from different starting points (e.g. in 2s starting from 65 or in 10s starting from 187).
- ☺ Make mistakes when chanting out loud – can your child spot the mistake?
- ☺ Sing number rhymes together – kids CDs are good for this.
- ☺ For children who are struggling with counting accurately, find interesting objects to count – buttons, tricolour pasta (how many of each colour?), coins from your purse or their piggy bank etc.
- ☺ Count things you cannot touch or see – windows in an office block, skips with a skipping rope, etc.
- ☺ Play games which involve counting (snakes and ladders, Ludo, Sorry etc.).
- ☺ Choose a number of the week (8, 24 etc.) and play a game all week against your child – 1 point each for every example of that number written somewhere that you or they find (e.g. on a shopping receipt, on front doors, street lamps). See who wins!
- ☺ Try to spot a car with all odd or all even numbers on its number plate.
- ☺ Look at a car number plate. How many different ways is it possible to re-arrange the letters and numbers?
- ☺ Play dominoes.
- ☺ Estimate how many biscuits or sweets in a packet. Both you and your child guess, then count them! Who is nearest?



## IDEAS FOR PRACTISING NUMBER FACTS (TIMES TABLES AND NUMBER BONDS)

- ☺ Sometimes have a “fact of the day” (e.g.  $6 \times 4 = 24$ ; or  $7 + 6 = 13$ ). Stick it on post-its around the house. Make each other laugh by having everyone in the family say the fact out loud each time they pass it, using a loud/deep/squeaky/silly/ singing voice! Your child will probably remember it this way!
- ☺ Play “ping-pong bonds”. Agree a total (e.g. 17). You say a number, they say how much more is needed to make the total. If they are right, you say another number and they reply again. What is the longest rally of “shots” you can keep going?
- ☺ Throw 2 dice. Ask your child to find the SUM or TOTAL (add); DIFFERENCE (subtract); or PRODUCT (multiply). Can they do it without counting on their fingers or speaking out loud?
- ☺ Use a set of playing cards (no picture cards). Turn over 2 cards and ask your child to add or multiply the numbers. If they are correct, they win the pair of cards, if wrong, you win them. Who ends up with the most pairs? How many pairs can they get in 2 minutes?
- ☺ Play bingo – good if you have more than 1 child! Each player draws a 3 x 3 or a 4 x 4 grid. They write answers to possible calculations (number bonds up to 10, number bonds to 20 or all or some of the times tables). You say a calculation and if they have the answer, they cross it off. First to cross off all their answers has BINGO!
- ☺ Give your child an answer (e.g. 12). Ask your child to write as many calculations / number sentences as they can which have this answer (e.g.  $4+8=12$ ;  $2 \times 6=12$ ;  $24 \div 2= 12$ ,  $15-3=12$ ) in a given time limit (e.g. 3 minutes). If you have more than one child, let them compete.
- ☺ Domino totals. Ask your child to make a line of dominoes where the sum (total) of touching numbers is 6. How many dominoes long is the line? Try again. Try with other totals.
- ☺ Use times table songs or dances that can be found online e.g. <https://numberock.com/lessons/multiples-of-4/> or <https://www.bbc.co.uk/teach/supermovers/times-table-collection/z4vv6v4>
- ☺ Elevenses. Deal out 8 playing cards (no pictures) face up. Look for pairs that make 11. When they find a pair, deal 2 more cards. Keep going until all cards are used up – they win; or they can’t go – they lose.
- ☺ Log on to <https://play.trockstars.com/auth/school/student> or <https://www.topmarks.co.uk/maths-games/hit-the-button>

## IDEAS FOR PRACTISING CALCULATIONS

- ☺ Add-Snap (3 players). Dealer holds up 2 numbers written on bits of paper or card. The first player to call out the total wins the cards. Continue until all cards have gone. The winner has the most cards. Try using bigger numbers (e.g. between 100 and 200, or 1000 and 2000)
- ☺ Multi-snap. As for Add-snap, but the players have to multiply and call out the product. Increase to numbers up to 20.
- ☺ Using a pack of playing cards, choose two cards at random. Multiply them together. Try picking 3 cards to multiply. Or select 8 cards and quickly add them up. Start at 100, pick a card and subtract it then pick another and subtract that too.
- ☺ When out shopping, if you buy 2 or 3 items, ask your child to total their prices. How much change will you get from e.g. £5?
- ☺ When shopping ask questions like: Which is the cheapest make of ketchup? Which is better value – 4 tins of beans at 80p each or a multipack of 4 for £3? (Shops sometimes get this wrong so multipacks are NOT always cheaper!)
- ☺ For year 5/6 children, if there is a % discount, see if they can work out how much an item will cost with or without the discount.
- ☺ Keep an approximate total whilst doing the weekly shop by rounding to the nearest pound. At the checkout see how accurate the approximate total was.
- ☺ Order a takeaway within a given budget.
- ☺ Play Monopoly or Go for Broke. Can they keep track of how much money they have got?
- ☺ Destination codes – give each letter of the alphabet a number: A=1, B=2 etc. (or a simpler version where all vowels are 5 points and consonants are 2 points). Use this to work out the value of different places you are going to visit, e.g. while on holiday. Which has the largest/ smallest value? Why?
- ☺ Look at the petrol pump whilst filling the car. How much has been put in? What is the cost per litre and the total? Would it be cheaper if we could use a different kind of petrol (or use diesel)?
- ☺ Keep a running total of speed signs seen on a journey. Or start at 200 or 1000 and subtract each sign. First to 0 wins.
- ☺ Play Pub Cricket. First player has an innings. They score “runs” by counting the legs on any person or creature on a pub sign (agree a flat rate for multiple ones e.g. Fox and Hounds = 20). Keep a record of the total and continue the “innings” until you pass a sign with no legs (e.g. The Crown). The first player is now out and the next player gets an “innings”. Highest number of “runs” win.

## IDEAS FOR PRACTISING MEASURES (including time)

- ☺ Start making a habit of pointing out the time on a clock when events happen in your day, to introduce what that time looks like. Move on to asking your child to tell you what a certain time looks like: "What will the clock look like at 1 o'clock" (or more tricky "in 15 minutes") or "when it's time to play?"

- ☺ Make a clock with movable hands or have fun creating a clock outdoors

<https://www.sunhatsandwellieboots.com/2013/11/telling-time-outdoor-clock-made-with.html>



- ☺ An analogue wristwatch can help children become the terrific time tellers! It is best to choose a model with a clear dial and clear numbers.
- ☺ Play online game e.g. <https://www.topmarks.co.uk/Flash.aspx?f=matchingpairstimev3>
- ☺ Plan an evening's TV viewing. What is the length of their favourite programme? Keep a record for a week and calculate how long they have spent watching the TV or playing on a games console. Older children could work out the average. This also gives children a sense of time length as their favourite show is 20 mins.
- ☺ Use a bus or train timetable. Work out how long a journey between two places will take. If you actually go on the journey, keep track of the time to work out if it is on time or if not, how early or late it is.
- ☺ Let your child help with cooking at home. Predict how much a cake will weigh by adding the weights of the ingredients. Weigh after cooking to see how close they are. Let them help weigh/ measure ingredients. Talk about what each division on the scale represents (e.g. 25g, 10g, 200ml etc.). Older children could try to scale up or down a recipe for a different number of people.
- ☺ Take some food items out of the cupboard. Let your child order them by weight, just by holding them. Next help them weigh them to check or check by looking at weights on packets.
- ☺ Practise measuring things using rulers and tape measures. How far is it from sofa to the door? How tall is everyone in the family? Ask them to estimate before measuring. Is their estimate reasonable or wildly inaccurate?
- ☺ Make a container to fit a particular object so it doesn't slide around – they will need to measure careful.

## IDEAS FOR PRACTISING SHAPES

- ☺ Choose a shape of the week e.g. hexagon, cylinder etc. Look for this shape in the environment (e.g. road signs, tins, candles etc.). Ask your child to describe the shape (2d or flat shapes have **sides** and **corners**, 3d or solid shapes have **faces** (the flat sides), **edges** (the "creases") and **vertices** (corners).
- ☺ Play "guess my shape". One person thinks of a shape. The other asks "yes" or "no" questions to try to identify it. Can they guess in a limited number of questions (e.g. 10 or 5)?
- ☺ Go on an angle hunt. Spot right angles around the home or outside. Can they find angles bigger or smaller than a right angle?
- ☺ Look for, draw or make symmetrical objects or patterns.
- ☺ Make a model using boxes, tubes etc. Can your child describe the shapes mathematically?
- ☺ Make a cube, cuboid or complex shape from building bricks. If it was a building, how many faces would need paint on? (those on the outside)

