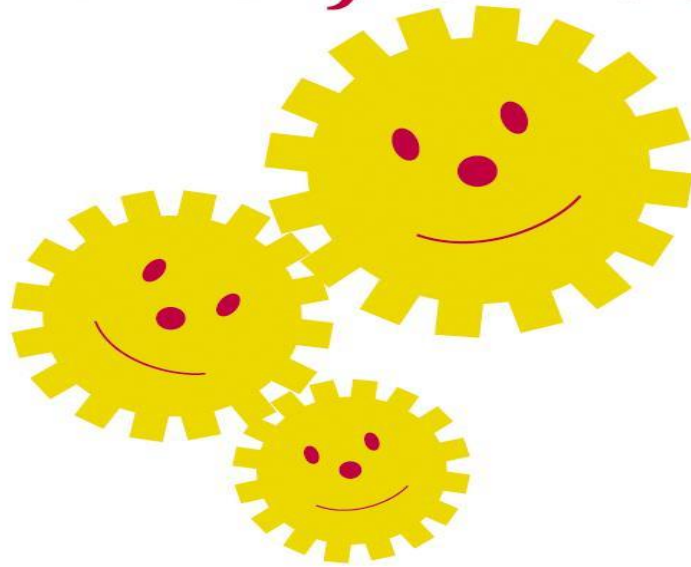


Chuckery Primary School

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Primary School



Working Together

Mental Mathematics Policy

2022 - 2023

(Reviewed September 2022)

The starting point for all calculations should be,
'Am I able to calculate this mentally?' 'If so, do I need to use jottings.'

We use the acronym RAPA CODA NUMBO to indicate the different mental strategies that we use and these need to be specifically taught strategies.

It is very important that children understand that a mental strategy is NOT a written strategy that is completed mentally but it is a specific strategy which involves manipulation of numbers and may include the use of jottings.

(Using jottings does not turn it into a written strategy.)

Rounding

RA - Round and Adjust

You would round when you get a sum like $129 + 134$
You would round 129 to 130 and you would round 134 to 135.
At the end you would get 265.
Because we added one to each number we minus 2 from the answer.

You should get an answer of 263.



PA – Partition

This may involve partitioning numbers to enable a division calculation to be done mentally which would otherwise be done using a formal written method.

Eg $378 \div 6$ becomes $(360 + 18) \div 6$

OR $378 \div 7$ becomes $(350 + 28) \div 7$

CO - Count On

Counting on

Counting on is really useful when you are counting up or down to a number close to your starting number.

An example is $7+6$ so you have seven and you have to count on 6 (8 9 10 11 12 13)

Example

$7+6=13$

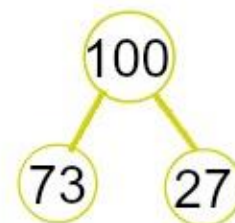
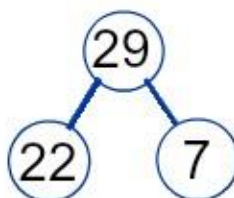
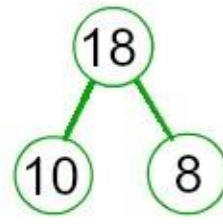
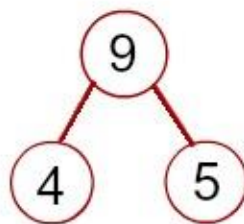
8 9 10
11 12 13

DA-Double and Adjust

Eg $29 + 29$ becomes $30 + 30$ and subtract 2
 201×2 becomes $200 + 200$ and add 2

NUMBO-Number Bonds

Number Bonds



Expectations for times tables for each year group

Year 1	Count in multiples of 2, 5 and 10. Recall and use all doubles to 10 and corresponding halves.
Year 2	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.
Year 3	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables, including recognising odd and even numbers.
Year 4	Recall and use multiplication and division facts for multiplication tables up to 12x12
Year 5	Revision of all times tables and division facts up to 12x12
Year 6	Revision of all times tables and division facts up to 12x12

Year Group	Rapid Recall	Mental Strategies
1	Children should be able to recall rapidly:	Children should be able to use the following strategies, as appropriate, for mental calculations:
	<ul style="list-style-type: none"> - all pairs of numbers with a total of 10, e.g. 3+7 - addition and subtraction facts for all numbers to at least 5; - work out the corresponding subtraction facts - doubles of all numbers to at least 10 and the corresponding halves 	<ul style="list-style-type: none"> - count on and back in 1's, 2's, 5's and 10's and use this to derive the multiples of 2, 5 and 10 to the tenth multiple - reorder numbers in a calculation; - begin to bridge through 10, and later 20, when adding a single digit number; - use known number facts and place value to add and subtract pairs of single digit numbers; - add 9 to single digit numbers by adding 10 then subtracting 1; - identify near doubles, using doubles already known; - use patterns of similar calculations. - Count reliably 20 objects - Estimate a number of objects - Relate addition to counting on - Understand that addition can be done in any order - Understand subtraction as take away – find the difference by counting on



Year Group 2	Rapid Recall	Mental Strategies
	Children should be able to recall rapidly:	Children should be able to use the following strategies, as appropriate, for mental calculations:
	<ul style="list-style-type: none"> - addition and subtraction facts for all numbers to at least 10; - all pairs of numbers with a total of 20, e.g 13+7 - all pairs of multiples of 10 with a total of 100, eg 30+70 - multiple facts for the 2, 5 and 10 times tables and corresponding division facts; - partition addition into tens and units then recombine 	<ul style="list-style-type: none"> - count on and back in 10, 5, 2's and 1's; - find a difference by counting up from the smaller to the larger number; - reorder numbers in a calculation; - Add three small numbers by putting the largest number first and/or find a pair totalling 10; - Use known number facts and place value to add or subtract pairs of numbers; - Partition into '5 and a bit' when adding 6,7,8, or 9, then recombine; - Add or subtract 9, 19, 11 or 21 by rounding and compensating; - Identify near doubles; - Use patterns of similar calculations; - Use the relationship between addition and subtraction; - Use knowledge of number facts and place value to multiply or divide by 2, 5 or 10 - Recognise multiples of 2, 5 and 10 - Use doubles and halves and halving as the inverse of doubling and derive and recall doubles of all numbers to 20, and the corresponding halves - Use knowledge of number facts and operations to estimate and calculate - Add/sub mentally a 1 digit number or multiple of 10 to or from any 2 digit number - Count up to 100 obj by grouping - Know the value of each digit in 2 digit numbers including where '0' is a place holder - Partition numbers in different ways

Year Group 3	Rapid Recall	Mental Strategies
	Children should be able to recall rapidly:	Children should be able to use the following strategies, as appropriate, for mental calculations:
	<ul style="list-style-type: none"> - addition and subtraction facts for all numbers to 20; - sums and differences of multiples of 2, 5 or 10 up to 1000 - all pairs of multiples of 100 with a total of 1000; - all pairs of multiples of 5 with a total of 100; - all number pairs that total 100 eg 62+38 - multiplication facts for the 2, 3, 4, 5 and 10 times-tables and corresponding division facts. - begin to know multiplication facts for the 6 times tables; - recognise multiples of 2, 5 or 10 up to 1000 	<ul style="list-style-type: none"> - count on or back to zero in single digit or multiples of 10; - find a small difference by counting up from the smaller to the larger number (2 dig – 1 dig) - reorder numbers in a calculation; - add three or four small numbers by putting the largest number first and/or by finding pairs totalling 9, 10 or 11; - partition into tens and units then recombine; - bridge through a multiple of 10, then adjust; - use knowledge of number facts and place value to add or subtract pairs of numbers; - partition into '5 and a bit' when adding 6, 7, 8 or 9; - add or subtract mentally a 'near multiple of 10' to or from a two-digit number; - identify near doubles; - use patterns of similar calculations; - say or write a subtraction statement corresponding to a given addition statement; - to multiply a number by 10/100, shift its digits one/two places to the left; - use knowledge of number facts and place value to multiply or divide by 2, 5, 10 or 100; - use doubling or halving; - say or write a division statement corresponding to a given multiplication statement. - Use knowledge of number operations and corresponding inverses, including doubling and halving, to estimate and check calculations - Add or subtract combinations of one digit and 2 digit numbers - Find unit fractions of numbers and quantities ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, & $\frac{1}{6}$) - Read write and order whole numbers to at least 1000. position on a number line - Partition 3 digit numbers into multiples of 100, 10 & 1 in different ways

Year Group 4	Rapid Recall	Mental Strategies
	Children should be able to recall rapidly:	Children should be able to use the following strategies, as appropriate, for mental calculations
	<ul style="list-style-type: none"> - know by heart all multiplication facts up to 10x10; and derive quickly all corresponding division facts; - recognise multiples of numbers up to the 10th multiple. 	<ul style="list-style-type: none"> - Count back in repeated steps of 1, 10 and 100; - Count through the nearest multiple of 10, 100 or 1000; - Reorder numbers in a calculation; - Add 3 or 4 small numbers, finding pairs totalling 10; - Add three two-digit multiples of 10; - Partition in to tens and units, adding the tens first; - Bridge through 100; - Use knowledge of number facts and place value to add or subtract any pair of three-digit numbers; - Use knowledge of addition and subtraction facts and place value to derive sums and differences of pairs of multiples of 10, 100 or 1000 - Add or subtract 9,19,29,11,21 or 31 by rounding and compensating; - Add or subtract the nearest multiple of 10, then adjust; - Identify near doubles; - Continue to use the relationship between addition and subtraction; - Identify the doubles of two-digit numbers; use these to calculate doubles of multiples of 10 and 100 and derive the corresponding halves - Double any two-digit number by doubling the tens first; - Use known number facts and place value to multiply or divide, including multiplying and dividing by 10 and then 100; - Partition to carry out multiplication; - Use closely related facts to carry out multiplication and division; - Use the relationship between multiplication and division. - Use knowledge of rounding, number operations and inverses to estimate and check calculations - Identify pairs of fractions that total 1 - Recognise and continue number sequences (counting on and back in steps of constant size - Add or subtract mentally pairs of 2 digit whole numbers - Multiply and divide numbers to 1000 by 10, then 100 (whole number answers) - Find fractions of numbers, quantities or shapes (e.g 1/2, 3/8)

Year Group 5	Rapid Recall	Mental Strategies
	Children should be able to recall rapidly:	Children should be able to use the following strategies, as appropriate, for mental calculations
	<ul style="list-style-type: none"> - Multiplication facts to 10x10; - Division facts corresponding to tables up to 10x10. - Use these to multiply pairs of multiples of 10, 100 - 	<ul style="list-style-type: none"> - Count through the next multiple of 10, 100 or 1000; - Reorder numbers in a calculation; - Partition into hundreds, tens and units, adding the most significant digit first; - Use known number facts and place value to add or subtract pairs of three-digit multiples of 10 and two-digit numbers with one decimal place; - Add or subtract the nearest multiple of 10 or 100 then adjust; - Identify near doubles; - Add several numbers; - Develop further the relationship between addition and subtraction; - Identify pairs of factors of two-digit whole numbers and find common multiples (e.g. for 6 and 9) - Partition to carry out multiplication; - Use doubling and halving; - Use closely related facts to carry out multiplication and division; - Use the relationship between multiplication and division; - Use knowledge of number facts and place value to multiply or divide. - Multiply and divide decimals by 10 or 100 and integers by 1000, explain the effect. - Use knowledge of rounding, place value, number facts and inverse operations to estimate and check calculations - Use knowledge of place value and addition and subtraction to derive quickly doubles and halves of two-digit decimals eg 3.8x2, 0.76x2 - Count from any given number in whole number and decimal steps. Extend beyond zero when counting backwards. Relate these numbers to their position on a number line - multiply two digit number by one digit number, to multiply by 25, to subtract one near multiple of 1000 from another

Year Group 6	Rapid Recall	Mental Strategies
	Children should be able to recall rapidly:	Children should be able to use the following strategies, as appropriate, for mental calculation:
	<ul style="list-style-type: none"> - Use knowledge of place value and multiplication facts to 10×10 to derive related multiplication and division facts involving decimals (e.g. 0.8×7, $4.8 \div 6$) - Use knowledge of multiplication facts to quickly derive squares of numbers to 12×12 and the corresponding squares of multiples of 10 	<ul style="list-style-type: none"> - Consolidate all strategies from previous years; - Use knowledge of number facts and place value to add or subtract pairs of three-digit multiples of 10 and two-digit numbers with one decimal place. - Add or subtract the nearest multiple of 10, 100 or 1000 then adjust; - Continue to use the relationship between addition and subtraction; - Use factors; - Partition to carry out multiplication; - Use doubling and halving; - Use closely related facts to carry out multiplication and division; - Use the relationship between multiplication and division; - Use knowledge of number facts and place value to multiply or divide. - Recognise that prime numbers have only two factors, identify prime numbers less than 100; find the prime factors of two-digit numbers - Use approximations, inverse operations and tests of divisibility to estimate and check results - Find the difference between a positive and negative integer / or 2 negative integers IN CONTEXT - Calculate TU multiplied/divided by U U.t multiplied/divided by U

Signed:  Print: Mr. James Pearce Date: 5th September 2022 Head teacher	Signed:  Print: Mrs. Nicola Rudge Date: 5th September 2022 Chair of Governors
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