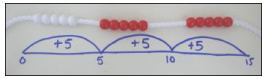
Richardson Dees Primary School

Mental Maths Progression of Skills

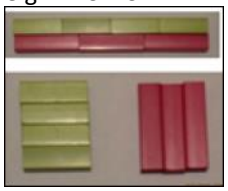
Number and Place Value							
Skill	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number and Place Value: Securing numbers, Ordering and Comparing	Counting forwards and backwards in 1s to 20- teen numbers. Order a set of consecutive numbers to 10.	Counting forwards and backwards in 1s to 20 - teen numbers. Order a set of consecutive and then random numbers to 20.	Counting forwards and backwards in 1s to 100. Order a set of random numbers to 100 Compare numbers using symbols < and <	Count in 100, 10s, 1s from any number to 1000. Order a set of random numbers to 1000 Compare numbers using symbols < and < up to 1000	Count in 1s across boundaries 1000, 10,000, 100,000 Order a set of random numbers to 100,000 Compare numbers using symbols < and < up to 100,000	Count in 1s forwards and backwards across boundaries 1000 10,000, 100,000, 1000, 000 Read, write, order and compare numbers to at least 1,000,000 and determine the values of each digit. Eg What is the value of the 6 in 681,927?	Count in 1s forwards and backwards across boundaries 1000 10,000, 100,000, 1000, 000+ Read, write, order and compare numbers to at least 10,000,000 and determine the values of each digit eg what is the vale of 8 in 8,239,146?

Number and Place Value							
Skill	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number and Place Value: counting		Counting forwards in multiples of 10 to 100. Counting forwards and backwards in 1s to 100. Adding any number to 10 eg 10 + 5 10 + 7	Counting forwards/backwards in 10s and 1s to 100 (mixed counting). Eg 20, 30, 40 etc 20, 30, 31, 32, 33 etc 80, 70, 60 etc	Add 100 to any 2/3digit number e.g. 45 + 100 145 + 100 Add multiples of 100 to any 2/3 digit number 45 + 200 145 + 200 145 + 700 (regrouping)	Count in 10, 100s, 1000s forwards and backwards across boundaries 1000 10,000, 100,000 What is 10, 100, 1000 more/less than ….? Round any number to the nearest 10, 100 or 1 000 Round decimals with one decimal place to the nearest whole number	Count in 10, 100s, 1000s forwards and backwards across boundaries 1000 10,000, 100,000, 1000, 000 What is 10, 100, 1000 more/less than ….? Counting forwards and backwards in powers of 10 from any given number up to 1,000,000 e.g. 30, 60, 90 etc count in 10,000s from 329,109 round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000 Round decimals with two decimal places to the nearest whole number and to one decimal place Interpret negative numbers in context, count forwards and backwards with + and – numbers including zero eg continue the sequence -7, -14, -21 etc	Count in 10, 100s, 1000, 10,000s forwards and backwards across boundaries 100,000, 1000, 000+ What is 10, 100, 1000/10000 more/less than ….? 1 million – 1 1 million – 5 etc What is 0.1, 0.01 more than/less than ….? Round any whole number to a required degree of accuracy Eg round 3,819,278 to nearest million. round any whole number or decimal to a required degree of accuracy Use negative numbers in context and calculate intervals across zero eg What is difference between -37.4°C and 29.8 °C

Addition and Subtraction							
Skill	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition & Subtraction: Multiples	Partitioning 3/4 objects in different ways Number bonds to 5 Knowing 1 more/less than numbers to 5/10 Counting all-combining groups Counting on to add from any number. Knowing 1 less than numbers to 5 Counting back to subtract	Adding/subtracting 1 more/less to any number up to 100 Number bonds to 5 extending to 10 Counting on from largest number/re-ordering numbers to add Eg 1 + 8 Counting on/back in 1s to add/subtract any 1 digit number to teens number. Eg 13 + 5, 17 - 2 Partition numbers to 10 (using concrete resources for number bonds) to find addition and subtraction facts. E.g. 8 + 2 = 10 so 8 + 3 = 8 + 2 + 1 10 – 2 = 8 so 11 – 2 = 9 Number bonds to 10 Number bonds to 20 8 + 2 = 10 so 18 + 2 = 20 10 – 8 = 2 so 20 – 18 = 2	Recall number bonds to 20 and use this to find bonds to 18, 19 Add 3 numbers where bond to 10 evident.  Reorder numbers to add. E.g. 7 + 4 + 3 Partition numbers (1 number) using number bonds to add/subtract (reordering numbers) e.g. 8 + 7 = 8 + 2 + 5 13 – 5 = 13-(3-5) 16 + 5 (16 + 4 + 1) Subtracting any single digit number from a multiple of 10. e.g. 80 – 7 (knowledge of bonds to 10)	Add any multiple of 10 to a 2/3 digit number. e.g. 153 + 20 153 + 70 (regrouping) Subtract any multiple of 10 from a 2/3 digit number. e.g. 153 - 20 153 – 70 (regrouping) Counting in 10s Eg Use number bonds/partitioning 153 – (50 + 20) To subtract many amounts, combine to add first in context. eg £1 - (20p – 30p) £1 – 50p	Add any multiple of 10 to a 4 digit number. e.g. 2153 + 20 2153 + 70 (regrouping) Add any multiple of 100 to a 4 digit number. e.g. 2153 + 100 2153 + 300 2153 + 900 (regrouping)	Add any multiple of 10/100 to a 4 digit number e.g. 2153 + 110 2153 + 330 2153 + 350 2153 + 910 2153 + 950 Add and subtract numbers mentally with increasingly large numbers eg what is 12,463 – 23,000?	Perform mental calculations, including with mixed operations and large numbers eg 700,000 - 904 Use knowledge of the order of operations to carry out calculations involving the four operations eg what is 2 + 7 x 6? Solve addition and subtractions multi-step problems in contexts, deciding which operations and methods to use and why eg How much change from £10 if you spend £1.45 and then £2.57? Perform mental calculations, including with mixed operations and large numbers eg 7000 x 0.9

Addition and Subtraction							
Skill	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Addition and Subtraction: Adding/subtracting 10s, 100s, 1000s		Counting in multiples of 10s Representing 2 digit numbers using concrete resources. What changes/stays the same when you add/subtract 1, 10?	Add 1 to any number to 100. Counting in 10s from any number (forwards/backwards) Add/subtract near 10s and adjusting. e. 9, 11, Number bonds to 100. 70 + 30 Adding multiples of ten e.g. 30 + 20 30 + 60 30 + 80	Add 10 to any number. 43 + 10 143 + 10 Add multiples of 10 to any number. 43+ 30 (no regrouping) 43 + 70 (regrouping) 143 + 30 (no regrouping) 143 + 70 (regrouping) Explain effects of adding 10. Why do 1s not change when adding 10s. When will 100s change? Add near multiples of 10 +99, 31, 29 etc Including in simple money context- 99p, £1.99			

Multiplication and division							
Skill	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication and Division: Doubling numbers/Near doubles	Double numbers to 5 Halve even numbers up to 10 by sharing	Recall double numbers to 5/10 e.g. up to double 10 = 20 Doubling 1 digit numbers Eg 6 + 6 Adding near doubles (adjusting) e.g. 6 + 7 (double 6 add 1 or double 7 subtract 1) Halve even numbers to 20. Half of 20 = 10 Recognise odd numbers as those that cannot be shared into 2 equal groups. Adding near doubles e.g. 6 + 7	Double teen numbers 16 + 16 Near doubles 16 + 17 Double multiples of 10 to 100 e.g double 20 Halve multiples of 10 with even number of 10s to 100 Eg half of 40. Focus on doubling/halving multiples of 10 with odd number of 10s by partitioning and recombining. e.g. half of 30, 50, 70. 30 = 20+10 Half is 10 + 5 = 15 Doubling even numbers up to 100 by partitioning and recombining. Halving even numbers up to 100 by partitioning and recombining.	Doubles of multiples of 10/near10s 60 + 60 60 + 70 Review doubling/halving multiples of 10 with odd number of 10s by partitioning and recombining. e.g. half of 30, 50, 70. 30 = 20+10 Half is 10 + 5 = 15 Double simple 3 digit numbers (multiples of 10, 50, 100) e.g. double 200 double 250	Near doubles to multiple of 10 e.g. 60 + 59 Double simple 3 digit numbers by recall of known facts or partitioning and recombining (multiples of 10, 50, 100) e.g. double 200 double 250 double 220, half of 140.	Near doubles to multiples of 10 or 100 e.g. 198+198 Double simple 3/4 digit numbers by recall of known facts or partitioning and recombining (multiples of 10, 50, 100) e.g. double 200 double 250 double 220, half of 140. Double decimals to 1/2dp e.g. 0.3 x 2 (no regrouping) 0.6 + 0.6 or 0.6 x 2 (regrouping) Near doubles 0.16 + 0.17 or 0.16 x 2 Focus on regrouping after not regrouping	Double decimals to 1dp e.g. 0.3 x 2 (no regrouping) 0.6 + 0.6 or 0.6 x 2 (regrouping) Near doubles 0.16 + 0.17 or 0.16 x 2 Focus on regrouping after not regrouping

Multiplication and Division							
Skill	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication and Division: Order of operations			Explore commutativity using arrays e.g. 4 x 3 = 3 x 4  Rewrite repeated addition as multiplication. Relationship between 5x and 10x table and doubling and halving.	Multiplication and division of whole numbers by 10 exploring the effect of moving digits. 6 x 10 10 x 10 16 x 10 Use known facts to multiply and divide by multiples of 10. 6 x 3 6 x 30 Reorder calculations using associative rule: e.g. 4 x 12 x 5 4 x 12= 48 48 x 5= 240 4 x 5 x 12 4 x 5 = 20 20 x 12 Knowledge of doubling e.g. double 4x table = 8x Know that… 50 x 2 = 100 25 x 4 = 100 20 x 5 = 100 Link to measure and reading scales. 50p x 2 = £1.00 £50 x 2 = £100 25 p x 4 = £1.00 £25 x 4 = £100 20p x 5 = £1.00 £20 x 5 = £100 1000g = 1kg 1000ml = 1l 1000cm = 1km 1000 ÷ 2 = 500 1000 ÷ 4 = 250 ½ l/kg/km = 500 ¼ l/kg/km = 250 ¾ l/kg/km = 750	Multiplication and division of whole numbers by 10 and 100 and multiples of. 6 x 100 10 x 100 16 x 100 16 x 300 etc Distributive law 39 x 7= 30 x 7+ 9 x 7 Associative law and reordering calculations to make it easier, expressing equal calculations. 2 x 6 x 5 = 10 x 6 Multiply by 50 by multiply by 100 and halving. e.g. 23 x 50= half of 23 x 100 Know all the table facts and the related division facts 500 x 2 = 1000 1000 ÷ 2 = 500 250 x 4 = 1000 1000 ÷ 4 = 250 200 x 5 = 1000 1000 ÷ 5 = 200 Know facts linked to measures e.g. £5.00 x 2 = £10.00£500 x 2 = £1000 £2.50 x 4 = £10.00 £250 x 4 = £1000 £2.00 x 5 = £10.00 £200 x 5 = £1000 And corresponding division facts.	Multiplication and division of whole numbers by 10 and 100 and 1000 Use partitioning and recombining to calculate mentally 14 x 1000 14 x 1200 Use cubed and squared to express calculations 3 x 3 x 5 = 3^2 x 5 Multiply pairs of multiples of 10 and 100. e.g. 20 x 300	Multiply and divide decimals using knowledge of place value. 3 x 0.5 15 x 0.6 Revisit mental skills of partitioning and recombining and using place value. Perform mental calculations, including with mixed operations and large numbers eg 7000 x 0.9 BIDMAS

Multiplication and Division							
Skill	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Multiplication and Division: Rounding and Adjusting					Rounding and adjusting decimals in context of money. Eg 3 items costing 99p or £1.99	Rounding and adjusting Multiply by 10, 100 and 1000 and adjust e.g. 99 x 15 use 100 x 15 Use arrays to show how to adjust.	999 x 16 1000 x 16 and adjust 101 x 16 Explore efficiency of methods e.g. 20 x 399 20 x (400 – 20) Multiply decimals 0.99 x 16

Fractions, Decimals and Percentages							
Skill	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Fractions, Decimals and Percentages: Comparing, ordering and calculating			Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line	count up and down in tenths	count up and down in hundredths compare numbers with the same number of decimal places up to two decimal places round decimals with one decimal place to the nearest whole number recognise and write decimal equivalents of any number of tenths or hundredths recognise and write decimal equivalents to $^{1}/_{4}$; $^{1}/_{2}$; $^{3}/_{4}$	compare and order fractions whose denominators are all multiples of the same number read, write, order and compare numbers with up to three decimal places round decimals with two decimal places to the nearest whole number and to one decimal place read and write decimal numbers as fractions (e.g. 0.71 = $^{71}/_{100}$) write percentages as a fraction with denominator 100 as a decimal fraction	Compare and order fractions including those >1 eg enter the correct sign between the fractions (< or > or =) 1 4/6 1 39/48 Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions eg 1 ¾ + 2 ½ Multiply simple pairs of proper fractions eg ¾ x 2/5 Divide proper fractions by whole numbers Eg 1/3 ÷ 2 Identify the value of each digit in numbers given to 3DP x and ÷ numbers by 10, 100 and 1000 giving answers up to 3DP eg 47 ÷ 1000 Multiply 1 digit number with up to 2DP by whole numbers eg 0.09 x 12 Recall and use equivalences between F D and P eg 78% as a fraction associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)