Mental Maths Essentials - Home Guide

KS1

Year Group	Year 1	Year 2
Number bonds	**Number pairs to 10** E.g. 1 + 9, 2 + 8, 3 + 7 etc.	**Recall of number pairs to 20** E.g. 10 + 10, 11 + 9, 12 + 8 etc. **Number pairs to 100 (multiplies of 10)** E.g. 10 + 90, 20 + 80, 30 + 70 etc.
Number facts	**Addition facts 1-5** E.g. 1 + 4, 3 + 2, etc. **One more or less than any 2-digit number** E.g. 12 - 1 = 11, 12 + 1 = 13 etc. **Ten more or less than any 2-digit number.** E.g. 24 – 10 = 14, 24 + 10 = 34 etc.	**Number facts for all numbers to 12** E.g. 8 + 3, 7 + 5, 4 + 7 etc. **What needs to be added to a 2 digit to make next multiple of 10** E.g. 34 + __ = 40, 67 + __ = 70 etc. **Subtract a single digit number from a multiple of 10 less than 100** E.g. 90 – 6 = 84, 70 – 3 = 67 etc. **Add or subtract a single digit number from a 2-digit number crossing a 10s boundary.** E.g. 34 + 8 = 42, 82 – 5 = 77 etc.
Doubles and halves	**Doubles and halves numbers to 20** E.g. double 11 = 22, half 18 = 9 etc. **Add near doubles** E.g. 5 + 6 = 11 (5 + 5 = 10 + 1 = 11) **Partition and adjust numbers up to 10** E.g. 8 + 6 = 14 (8 + 2 + 4 = 14)	**Doubles and halves up to 40** E.g. double 16 = 32, half of 24 = 12 etc. **Add near doubles under 40** E.g. 14 + 15 = (14 + 14 = 28 + 1 = 29)
Table facts	**Counting out loud in 2, 5 and 10** E.g. 2, 4, 6, 8, 10…	**Quick recall of 2, 5 and 10 facts** E.g. 3 x 5 = 15, 6 x 10 = 60 etc.
Fractions, decimals and percentages	**Recognise ½ and ¼ of shape or quantity** $\frac{1}{2}$ by splitting into 2 groups and counting how many in 1 group. $\frac{1}{4}$ by splitting into 4 groups and counting how many in 1 group.	**Recognise a $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ of a quantity or shape.** $\frac{1}{3}$ by splitting into 3 groups and counting how many in 1 group. $\frac{3}{4}$ by splitting into 4 groups and counting how many in 3 groups.
Number properties	**Odd and even numbers up to 20** Odd: 1, 3, 5, 7, 9 etc. Even: 2, 4, 6, 8, 10 etc.	**Recognise odd and even up to 100** Look at the ones column Odd: 1, 3, 5, 7, 9 etc. Even: 2, 4, 6, 8, 10 etc. E.g. 47 is odd, 38 is even
Measure	**Tell time to hour and half past** E.g. 11 o'clock, half past 4	**Tell time to hour, half, quarter and 5 minutes.** E.g. 11 o'clock, half past 4, quarter to 8, 25 past 3 etc.

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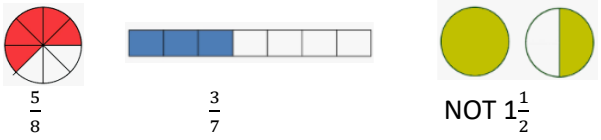
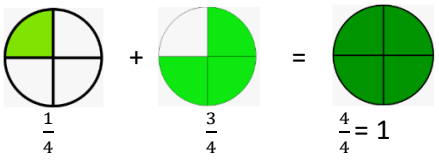
LKS2

Year Group	Year 3	Year 4
Number bonds	**Pairs of 2 digit numbers that total 100** E.g. 21 + 79, 22 + 78, 23 + 77 etc. **Number pairs to 1000 (multiplies of 100)** E.g. 100 + 900, 200 + 800, 300 + 700 etc.	**Decimal pairs to 1 with 1dp** E.g. 0.9 + 0.1, 0.8 + 0.2, 0.7 + 0.3 etc.
Number facts	**Number facts for numbers up to 20** E.g. 14 + 3, 2 + 15, 12 + 7 etc. **Count on in 50 from 0** E.g. 50, 100, 150, 200 etc. **Additions and differences for multiples of 10** E.g. 30 + 40 = 70, 90 – 30 = 60 etc. **Add and subtract any 2-digit by partitioning and counting on.** E.g. 43 + 21 = 64 (40 + 20 = 60, 3 + 1 = 4, 60 + 4 = 64) **Roman numerals to 12** E.g. I = 1, V = 5, X = 10 etc.	**What must be added to a 3-digit number to make the next multiple of 100** E.g. 378 + 22 = 400, 539 + 61 = 600 etc. **1000 more and less than a given number.** E.g. 3472 + 1000 = 4472, 3472 – 1000 = 2472 **Add or subtract near multiples of 10** E.g. 24 + 9 24 + 10 (then remove 1) = 33 24 + 11 24 + 10 (then add 1 more) = 34 **Count in multiples of 25.** E.g. 25, 50, 75, 100, 125 etc. **Read Roman numerals to 100** E.g. XX = 20, L = 50, C = 100 **Find the difference between near multiples** E.g. 607-600 600 + 600 = 1200 1200 + 7 = 1207
Doubles and halves	**Doubles and halves of numbers to 100 with ones numbers less than 5** E.g. double 34 = 64, half of 84 = 42 etc. **Doubles and halves of multiples of 10 and 100** E.g. Double 30 = 60, Half of 400 = 200 **Add near doubles under 100** E.g. 34 + 35 = (34 + 34 = 68 + 1 = 69)	**Addition of doubles and halve to 100** e.g. 38+38 E.g. double 40 = 80 80 – 4 = 76 (the 4 comes from adding 2 on to each 38) **Revise doubles of multiples of 10 and 1000** E.g. Double 30 = 60, Half of 400 = 200 **Finding the number half way between 2 numbers** E.g. Halfway between 26 and 58 58 – 26 = 32 Half of 32 = 16 26 + 16 = 42

Table facts	**Quick recall of 2, 3, 4, 5, 8, 10 and 11** E.g. 3 x 4 = 12, 8 x 6 = 48 etc. **Partition teen numbers to multiply by a single digit** E.g. 16 x 3 = (10 x 3 = 30, 6 x 3 = 18, 30 + 18 = 48) **Multiply by 4 by double and double again** E.g. 15 x 4 Double 15 = 30 Double 30 = 60 **Divide by 4 by halving and halving again** E.g. 60 ÷ 4 60 halved = 30 30 halved = 15	**Recall of all multiplication fact 12x12** E.g. 3 x 7 = 21, 8 x 9 = 72 etc. **Partition and multiply a 2-digit number by a single digit.** E.g. 36 x 3 = (30 x 3 = 90, 6 x 3 = 18, 90 + 18 = 108) **Multiply by 10 and 100** E.g. 37 x 10 = 370, 487 x 100 = 487000 etc. **Multiply by 8 by double, double and double again** E.g. 15 x 8 Double 15 = 30 Double 30 = 60 Double 60 = 120 **Divide by 8 by halving, halving and halving again** E.g. 120 ÷ 8 120 halved = 60 60 halved = 30 30 halved = 15
Fractions, decimals and percentages	**Identifying a fraction less than 1** E.g.  $\frac{5}{8}$ $\frac{3}{7}$ NOT $1\frac{1}{2}$ **Fraction and decimal equivalents for halves and tenths.** E.g. $\frac{1}{2}$ = 0.5, $\frac{2}{10}$ = 0.2, $\frac{7}{10}$ = 0.7	**Pairs of fractions to 1** E.g.  $\frac{1}{4}$ + $\frac{3}{4}$ = $\frac{4}{4}$ = 1 **Fraction, Decimal, Percentage equivalents of ½, quarters, tenths and hundredths.** E.g. $\frac{1}{2}$ = 0.5 = 50%, $\frac{1}{4}$ = 0.25 = 25%, $\frac{3}{4}$ = 0.75 = 75%, $\frac{1}{10}$ = 0.1 = 10%, $\frac{1}{100}$ = 0.01 = 1% etc. **Instant recall of fractions of amounts with numerators of 1** E.g. $\frac{1}{3}$ of 120, $\frac{1}{5}$ of 45 etc.
Number properties	**Recognise any odd and even number** Look at the ones column Odd: 1, 3, 5, 7, 9 etc. Even: 2, 4, 6, 8, 10 etc. E.g. 347 is odd, 638 is even	**Factor pairs for known multiplication facts** E.g. Factor pairs of 18: 1 and 18, 2 and 9, 3 and 6 **Common multiples** E.g. Common multiples of 30 and 18: 1, 3, 6
Measure	**Key time facts e.g. minutes in an hour, days of the week, days in a month etc.** E.g. 60 minutes in 1 hour, 7 days in a week etc. **Tell time to the nearest minute** E.g. 12 minutes past 6, 13 minutes to 5	**Know all the units of measure.** E.g. mm, cm, m, km g, kg ml, l

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UKS2

Year Group	Year 5	Year 6
Number bonds	**Decimal pairs to 1 using 2dp** E.g. 0.81 + 0.19, 0.72 + 0.28 etc. **Decimal pairs to 10 with 2dp** E.g. 7.34 + 2.66, 3.58 + 6.42 etc.	**Decimal pairs for 3dp to whole numbers.** E.g. 3.475 + 0.525 = 4 6.389 + 0.611 = 7 etc.
Number facts	**What must be added to 4-digit number to make the next multiple of 1000** E.g. 3785 + 215 = 4000, 5396 + 604 = 6000 etc. **Add or subtract near multiples of numbers** E.g. 524 + 29 524 + 30 (remove 1) = 553 524 + 31 524 + 30 (add 1 more) = 554 **What must be added to decimal with 1dp to make the next whole number?** E.g. 754.6 + 0.4 = 755 etc. **Roman numerals to 1000** E.g. CL = 150, CM = 900, M = 1000	**Count on back to through positive and negative numbers.** E.g. -5, -4, -3, -2, -1, 0, 1, 2, 3, 4 **Add positive and negative numbers together**. (temp) E.g. The temperature in the morning was -5°. By lunchtime, it had risen by 10 degrees. What is the temperature at lunchtime?
Doubles and halves	**Doubles and halves of decimals to 10 with 1dp** E.g. Double 4.7 = 9.4 Half of 6.8 = 3.4 etc. **Finding the number half way between 2 numbers** E.g. Halfway between 2.6 and 5.8 5.8 – 2.6 = 3.2 Half of 3.2 = 1.6 2.6 + 1.6 = 4.2	**Doubles and halves of decimals to 100** E.g. Double 38.7 = 77.4 Half of 98.2 = 49.1 etc. **Finding the number half way between 2 numbers** E.g. Halfway between -2 and 6 The difference between -2 and 6 = 8 Half of 8 = 4 -2 + 4 = 2
Table facts	**Squares to 12x12** E.g. $4^2 = 4 \times 4 = 16$, $9^2 = 9 \times 9 = 81$ etc. **Use factors and multiples in multiplication.** E.g. 43 x 4 is double 43 x 2 (because we would double 2 to make 4) 43 x 4 = 172 43 x 2 = 86 Etc. **Multiplication by 50 and 25** E.g. 6 x 50 = 300 6 x 25 = 150	**Cubes to 10 x 10 x 10** E.g. $4^3 = 4 \times 4 \times 4 = 64$ $9^3 = 9 \times 9 \times 9 = 729$ etc. **Use rounding in mental multiplication** E.g. 34 x 19 is 34 x 20 -34

	Know tests for divisibility E.g. a number is divisible by 3 if the sum of the digits is divisible by 3 (129 is divisible by 3 because 1+2+9 = 12 and 12 can be divided by 3) E.g. A whole number is divisible by 4 if the last two digits are divisible by 4. 1312 is (12 ÷ 4 = 3) Yes ✓ 7019 is not (19 ÷ 4 = 4.75) No × **Revise multiplying and dividing by 4 and 8** (See Year 3 and 4 examples)	
Fractions, decimals and percentages	**Equivalents to halves, quarters, tenths, hundredths, thirds and fifths.** See year 4 examples and E.g. $\frac{1}{3}$ = 0.333 = 33.3% $\frac{1}{5}$= 0.2 = 20% etc. **Mentally derive fractions of amounts. With numerator above 1 (divide by the denominator then multiply by the numerator)** E.g. $\frac{2}{3}$of 21 21 ÷ 3 = 7 7 x 2 = 14	**Equivalents to halves, quarters, tenths, hundredths, thirds and fifths. Try ninths and elevenths** See year 4 and 5 examples and E.g. $\frac{1}{9}$ = 0.11111 = 11.1% $\frac{1}{11}$ = 0.090909 = 9.09% etc. **Mentally derive fractions of amounts.** With numerator above 1 See year 5 examples **Percentages of amounts.** E.g. 30% of 120, 45% of 300
Number properties	**Factor pairs numbers up to 100** E.g. Factor pairs of 52:1 and 52, 2 and 26, 4 and 13 etc. **Prime numbers to 20** (A number that can only be divided by 1 and itself) E.g. 2, 3, 5, 7, 11, 13, 17, 19	**Prime up to 100** E.g. 2,3,5,7,11,13,17,19, 23,29,31,37,41, 43,47,53,59,61,67,71, 73,79,83, 89 and 97 **Prime factors of numbers up to 100** A factor that is a prime number. In other words: any of the prime numbers that can be multiplied to give the original number. E.g. The prime factors of 15 are 3 and 5 (because 3 × 5=15, and 3 and 5 are prime numbers).
Measure	**Know all the metric conversions.** E.g. mm to cm, cm to m, m to km g to kg ml to l and vice versa	**Revise the previous work.** See other year group examples.