

## On the Boil

**Year 6: Pupils need to continuously use mathematical language alongside manipulation of objects to understand the key concepts in Year 6**

Domain/aspect	Autumn	Spring	Summer	Key resources, representations and games
Counting	Count forwards and backwards in multiples of 1,2,3,4,5,6,7,8,9,10,11 and 12. Count forwards and backwards in tenths, hundredths, and thousandths from any number.			Counting sticks, 1p, 2p, 5p and 10p coins and money box/pot, Numicon 1,2,5,10 shapes Numicon or straws bundled into tens for counting on in tens from numbers other than 10. ITPS – counting, counting on and back, numbergrid, numberline, beadsticks, thermometer, Gattegno chart Switch game ITP fraction wall
Counting	Counting forwards and backwards in halves, quarters, thirds, fifths, sixths, sevenths, eights, ninths, tenths, elevenths and twelfths.			Thermometer, counting stick, numberlines including negative numbers, fraction numberline, masking tape
Counting	Count forwards and backwards in 10, 100, 1000s etc. across zero into negative numbers.			Counting sticks, Numicon, straws bundled in tens, dienes, 200 square, 1p,10p, £1 coins. Numberlines including negative numbers, Switch game
Fractions, decimals and percentages	Convert fractions into decimals, percentages and ratios.			ITP fraction wall
Number and place value	Partitioning and re-combining numbers with thousandths in many different ways ie. $946.265 = 900 + 40 + 6 + 0.2 + 0.005 + 0.06$ or $100 + 800 + 40.2 + 6.065$			Numicon Cuisenaire Coins Zap the digit calculator game
Number and place value	Rounding numbers to the nearest one, ten, hundred and thousand and to the nearest one and two decimal places.			Numberlines, thousand square, decimal square to 1
Number and place value	Make any number with tenths, hundreds and thousandths using structured apparatus ie. Dienes, and using arrow cards to explain verbally and represent the value of each digit.			Multi-link, counters, Numicon, Coins, Straws bundled into tens Dienes, pixie dienes, value arrow cards, place value counters Nasty game,
Addition and subtraction	Rapid recall of addition and subtraction facts within 20, represented as missing number problems with = symbol in any position. Make links to algebra ie. $2x + 3 = 20$			Numicon, Cuisenaire Double sided counters, tens frames, balance pans, fingers, shut the box, splat function machine keeper of the key, guardian of the rule
Addition and subtraction	Derive as many facts as possible from bonds to 10/20 using place value knowledge ie. $120 + 80 = 200$ because $12 + 8 = 20$ and $3.1 + 0.9 = 4$ because one tenth and nine tenths equal ten tenths or one. Make links to algebra $5 + ? = 10.6$			Numicon, cuisinaire, fingers, dienes, pixie dienes, coins, derivation charts
Addition and subtraction	Children practice selecting which mental calculation strategy is the most efficient when presented with increasingly challenging calculations ie. Round and adjust, find the difference, reorder, partition, count on, count back, doubles, near doubles, halves and bonds.			Bead strings, Numicon, Cuisenaire, number lines, dienes, Teaching children to calculate mentally 2010 P35-38
Multiplication and division	Use key vocabulary – sum, product, difference, square, cube to practice finding the sum, product, difference, square and cube of given numbers.			Dienes, pixie dienes, Cuisenaire, coins, place value charts, arrow cards
Multiplication and division	Rapid recall of all multiplication facts up to $12 \times 12$	Rapid recall of known factors within childrens' multiplication facts.	Deriving common factors for appropriate numbers	Identify prime numbers within a given range and square numbers up to 144. 2p and 10p coins, Numicon, fingers, money pots Multiplication squares, times table charts, arrays, numberlines
Measurement	Conversion within mass, lengths, mass etc.,			Measurement equipment, scales, ITP - measurement