Brinscall St Johns C.E./ Methodist Primary School

Mathematics: Mental Calculation and Vocabulary Policy

Date of policy: January 2023
Date approved by Governing Body: June 2023
Review date: January 2025

This policy is intended to be read in conjunction with the Mathematics Policy and the Calculation Policy. It is intended to support these documents and further clarify the range of strategies used in the teaching of mathematics.

It is split into the four operations, each subdivided by year group, with each year group being divided into the following sections:

1) Children understand that…

This is the key learning in mental mathematics in this operation and year group

2) Practical equipment, models and images

This supplements the methods detailed in the calculation policy by detailing imagery /resources that are used to support the development of mental mathematics

3) Vocabulary

This is the vocabulary introduced in this year group. It is assumed the vocabulary from previous year groups is learnt and used. There is a separate progression grid at the end of this document covering this, which also covers vocabulary linked to written as well as mental mathematics.

4) Essential core learning

This details the skills needed with examples and pre-requisite knowledge. The pre-requisite knowledge may be taught as part of the year group detailed, or part of the learning of previous year groups.

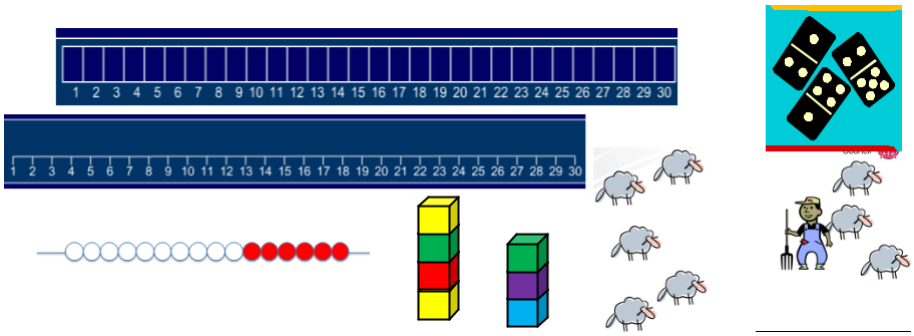
Addition

EYFS - Progression in Mental Calculation Skills / Strategies for Addition

Children understand that:

- addition is the combining of two or more quantities resulting in a larger total;
- addition is commutative i.e. that 3 + 5 = 8 and 5 + 3 = 8 through practical experience

Practical equipment, models and images to support children with mental addition:



Vocabulary

+ add, more, more than, less than, fewer than, make, altogether, tens, ones (units), equals

Essential core learning

Mental calculation skills:	Examples:	Requisite prior knowledge:
Add a pair of single digit numbers	3 + 2 Represent this calculation using cubes, cars, small world people, a number track / line	Know the number names up to 10 in order, in symbols (using numerals) and words (spoken) Understand the amounts the symbols and words represent Count on from any given single digit number Know that the last

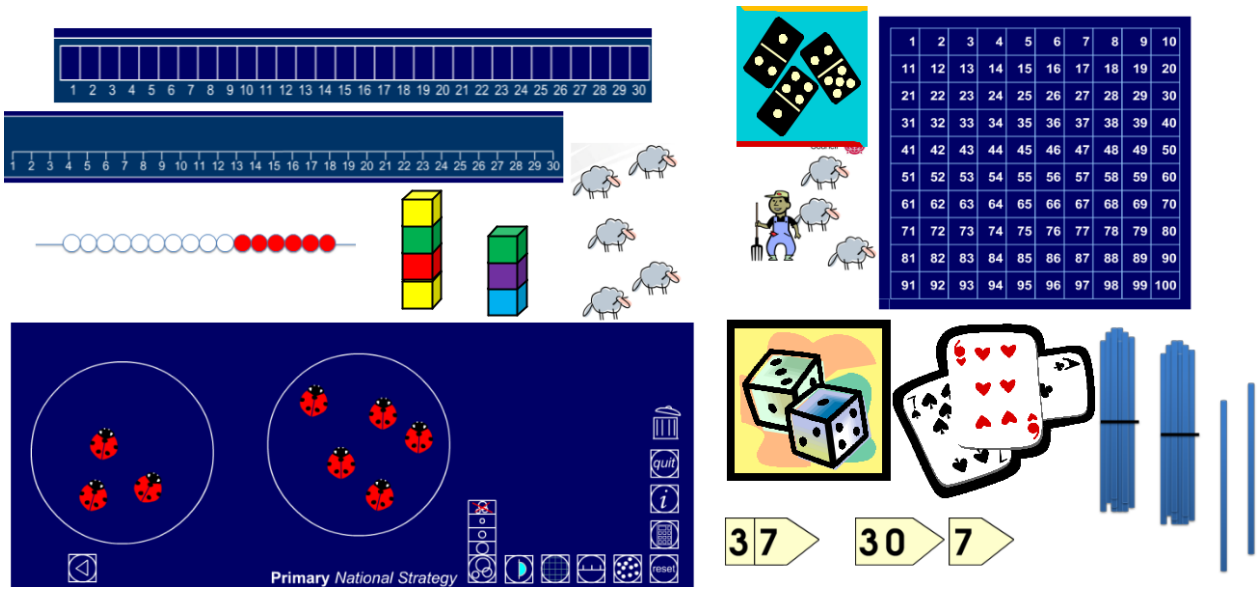
		number said is the total (cardinality) Place value - identify the largest number in order to count on from this Reorder the numbers to start from the largest number making the count more efficient *Subitise small amounts to make the count more efficient*

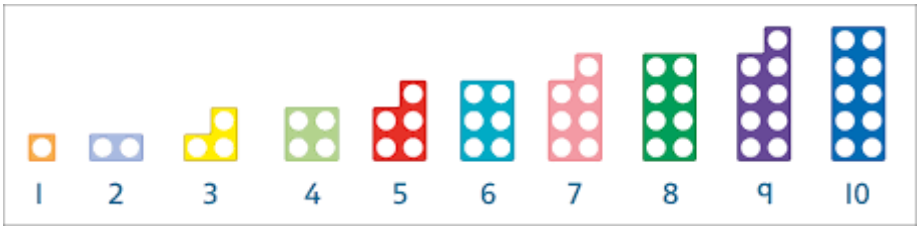
Year 1 - Progression in Mental Calculation Skills / Strategies for Addition

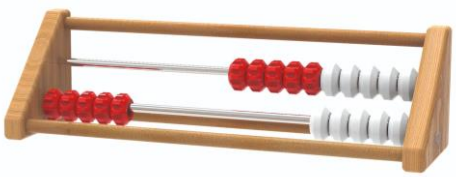
Children understand that:

- addition is the combining of two or more quantities resulting in a larger total;
- addition is the inverse of subtraction;
- addition is commutative i.e. that 3 + 5 = 8 and 5 + 3 = 8

Practical equipment, models and images to support children with mental addition:







Vocabulary

\+ add, more, more than, plus, make, total, sum, altogether, score, Rekenrek, Numicon, fewer than, greater than, less than, tens, ones (units),

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Add a pair of single digit numbers	3 + 5 Represent this calculation using cubes, cars, small world people, a number track / line If 3 + 5 = 8, what else do you know?	• Know the number names up to 10 in order, in symbols (using numerals) and words (spoken) • Understand the amounts the symbols and words represent • Count on from any given single digit number • Know that the last number said is the total (cardinality) • Place value - identify the largest number in order to count on from this • Reorder the numbers to start from the largest number making the count more efficient • *Subitise small amounts to make the count more efficient*
Add a single digit number to a teens number	13 + 5 Represent this calculation using cubes, cars, small world people, a number track / line If 13 + 5 = 18, what else do you know?	As above plus: • Know the number names up to 20 in order, in symbols (using numerals) and words (spoken) • Understand the amounts the symbols and words represent • Count on from any given teens number • Know and use related addition facts e.g. 3 + 5 = 8 so 13 + 5 = 18 • Place value - understand what each digit represents in a teens number
Add a single digit number to 10 or a multiple of 10	10 + 7 7 + 30 Represent these calculations using cubes, base 10 equipment, bundles of straws, a number track / line, a 100 square	As above plus: • Know the decade number names up to 100 in order, in symbols (using numerals) and words (spoken) • Understand the amounts the

		symbols and words represent • Place value – understand what each digit represents in a two-digit number
Enhanced Strategies		
Add near doubles	6 + 7	• Place value - recognise when numbers are close to each other • Double any single digit number • Add or subtract 1 to or from any number

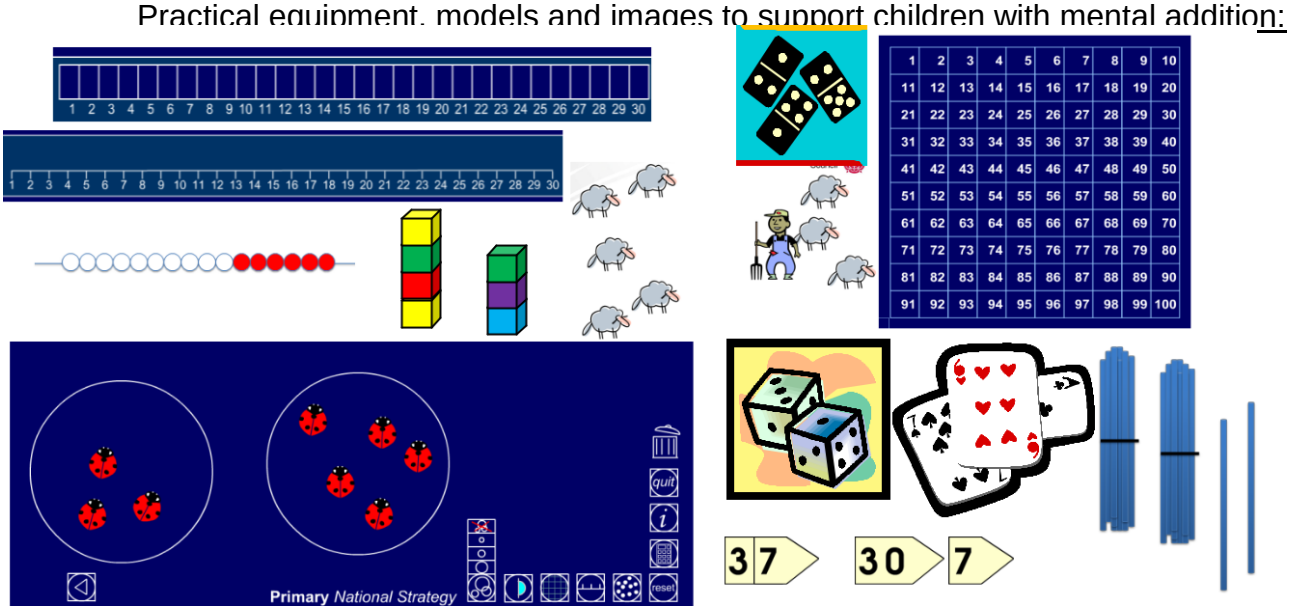
Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready.

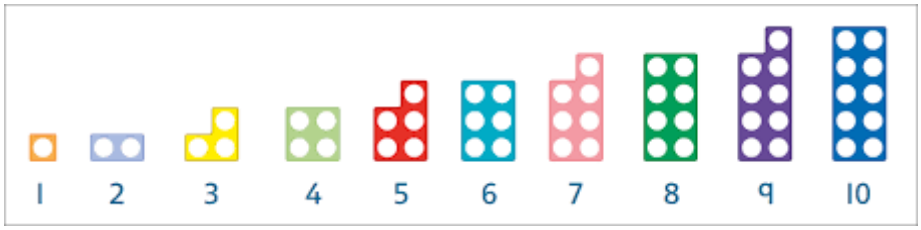
Year 2 - Progression in Mental Calculation Skills / Strategies for Addition

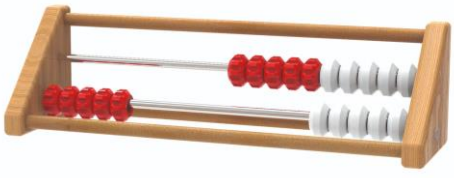
Children understand that:

- addition is the combining of two or more quantities resulting in a larger total;
- addition is the inverse of subtraction;
- addition is commutative i.e. that 3 + 5 = 8 and 5 + 3 = 8

Practical equipment, models and images to support children with mental addition:







Vocabulary

+ add, more, more than, plus, make, total, sum, altogether, score, addition

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Add a pair of single-digit numbers, including crossing 10	5 + 8 Represent this calculation using cubes, cars, small world people, a number track/line. Straws, multi-link, bead bars	• Know the number names up to 10 in order, in symbols (using numerals) and words (spoken) • Understand the amounts the symbols and words represent • Count on from any given single digit number • Place value - identify the largest number in order to count on from this • Reorder the numbers to start from the largest number making the count more efficient • Place value –value of tens/ones (units) • Addition can be done in any order • *Know and use number bonds to 10* • *Subitise small amounts to make the count more efficient*
Add any single-digit number to a multiple of 10	60+5 70 + ? = 73	• Know the decade number names up to 100 in order, in symbols (using numerals) and words (spoken) • Understand the amounts the symbols and words represent • Place value – understand what each digit represents in a two-digit number • *Use knowledge of place value to recognise that*

		combining 60 and 5 equals 65
Add a single-digit number to a two-digit number, including crossing a tens boundary	23 + 5 28 + 5	• Count on from any two-digit number in 1s • *Use number bonds to efficiently add numbers to bridge 10*
Add a multiple of 10 to any two-digit number	27 + 60 Show how to work this out on a 100 square/number line/using base 10/a bead string/bundles of straws If there is 36p in the piggy bank and I drop in four 10p coins, how much does the piggy bank have in it now?	• Know what is 10 more than any given two-digit number • Count on in 10s from any two-digit number
Enhanced Strategies		
Add 9, 19, 29,... or 11, 21, 31,...	23 + 9 34 + 11 Show what these calculations would look like on a number line	• Add 10 to any number • Add a multiple of 10 to any number • Be able to round to the nearest 10
Add near doubles	13 + 14	• Double any two-digit number

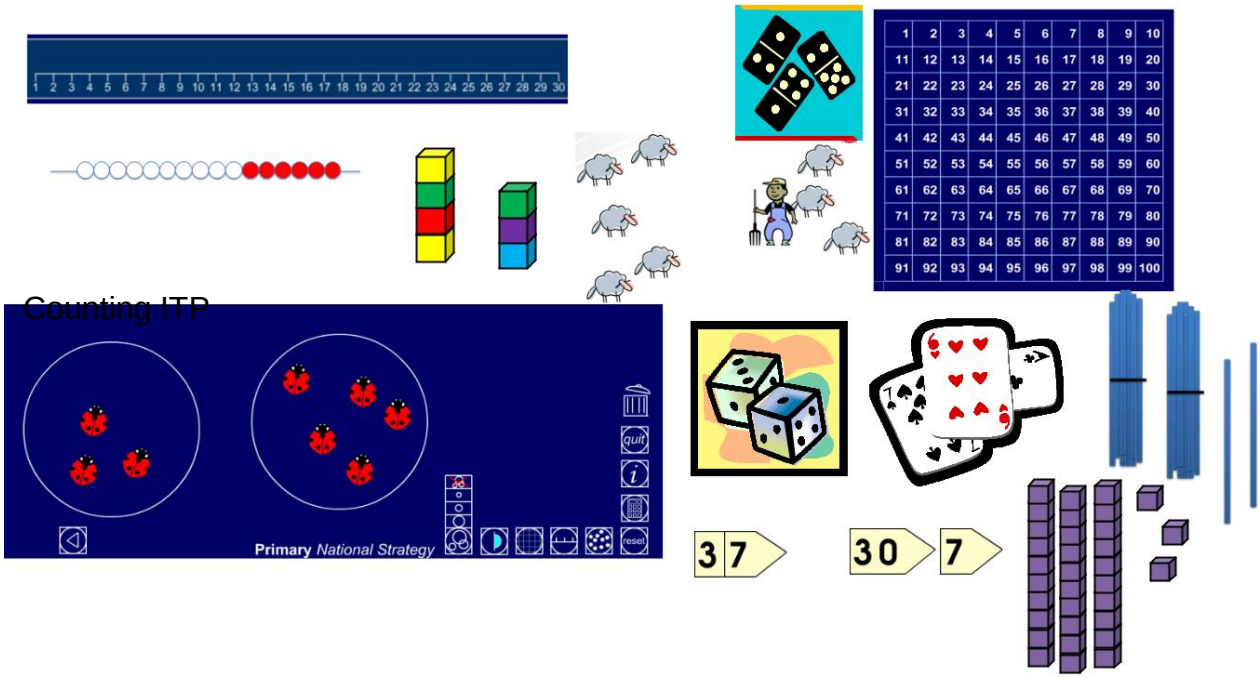
Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

Year 3 - Progression in Mental Calculation Skills / Strategies for

Addition Children understand that:

- addition is the combining of two or more quantities resulting in a larger total;
- addition is the inverse of subtraction;
- addition is commutative i.e. that 3 + 5 = 8 and 5 + 3 = 8

Practical equipment, models and images to support children with mental addition:



Vocabulary

\+ add, more, more than, plus, make, total, sum, altogether, score, addition

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Add groups of small numbers	5 + 3 + 2 6 + 1 + 4	• Count on from any given number • Know number bonds to 10 • Add number bonds first
Add a two digit number to a multiple of 10	50 + 38 Show how to work this out on a 100 square/number line/using base 10/a bead string/bundles of straws	• Partition the non-multiple of 10 e.g. • 38 into 30 +8 • Count on in 10s from a multiple of 10 • Use knowledge of place value to relate 5+3 = 8 to 50+30 = 80
Add two-digit numbers (not crossing tens)	34 + 65 Show why 23 + 56 equals 79 using practical equipment or written jottings	• Partition a two-digit number into tens and ones (units) • Recombine tens and ones (units) • Know and use knowledge of number bonds of all numbers up to 10

Enhanced Strategies		
Add near doubles	18 + 16	• Double any two-digit number

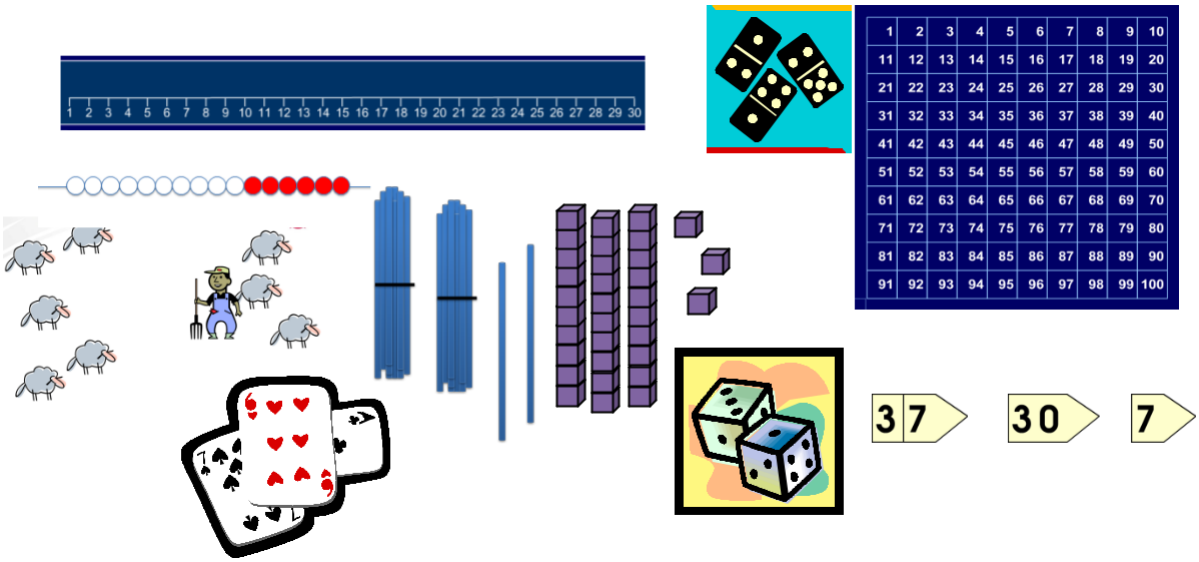
Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

Year 4 - Progression in Mental Calculation Skills / Strategies for

Addition Children understand that:

- addition is the combining of two or more quantities resulting in a larger total;
- addition is the inverse of subtraction;
- addition is commutative i.e. that 3 + 5 = 8 and 5 + 3 = 8

Practical equipment, models and images to support children with mental addition:



Vocabulary

+ add, more, more than, plus, make, total, sum, altogether, score, addition, increase, inverse

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Add any pair of two-digit numbers, including crossing tens and 100 boundary	47 + 58 Prove that 67 + 55 = 122 using practical equipment or jottings	• Partition two-digit numbers into tens and ones (units) • Understand place value in three-digit numbers
Add two-digit or three-digit multiples of 10	140 + 150 140 + 70	• Use knowledge of place value to relate e.g. 14 +15 = 29 so • 140 +150 = 290 • Count on in 10s from any multiple of 10

		• *Use knowledge of number bonds to efficiently add numbers to bridge 100*
Enhanced Strategies		
Add a near multiple of 10	56 + 29 Show what this would look like on a number line or 100 square	• Add 10 to any number • Add a multiple of 10 to any number • Round to the nearest 10
Add near doubles of two-digit numbers	38 + 37	• Double any two-digit number

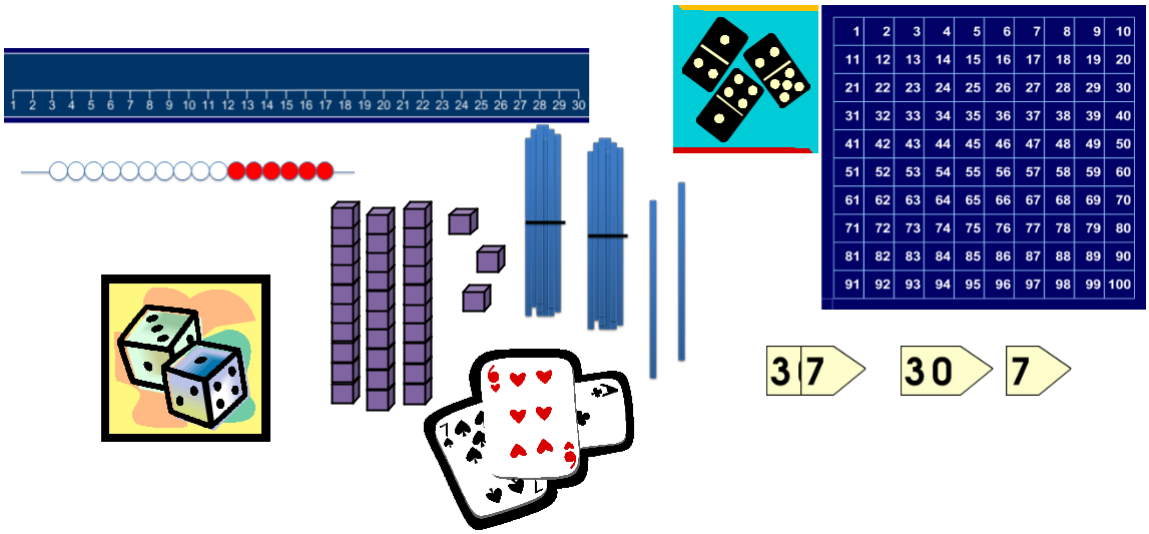
Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

Year 5 - Progression in Mental Calculation Skills / Strategies for

Addition Children understand that:

- addition is the combining of two or more quantities resulting in a larger total;
- addition is the inverse of subtraction;
- addition is commutative i.e. that 3 + 5 = 8 and 5 + 3 = 8

Practical equipment, models and images to support children with mental addition:



Vocabulary

+ add, more, more than, plus, make, total, sum, altogether, score, addition, increase, inverse

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Add a pair of two-digit numbers or three-digit multiples of 10	38 + 86 350 +360	• Partition two-digit numbers into tens and ones (units) • Understand place value in three-digit numbers • Use knowledge of place value to relate e.g. 35 +36 = 71 to
Add a near multiple of 10 or 100 to any two-digit or three digit number	235 + 198	• Add 100 to any number • Add a multiple of 100 to any number • Round to the nearest 100
Add any pair of decimal fractions each with ones (units) and tenths	5.7 + 2.5	• Partition ones (units) and tenths • Count on in tenths, including bridging through 1 • Use knowledge of place value to relate e.g. 57 + 25 = 82 to • 5.7 + 2.5 = 8.2
Enhanced Strategies		
There are no enhanced strategies for Year 5.		

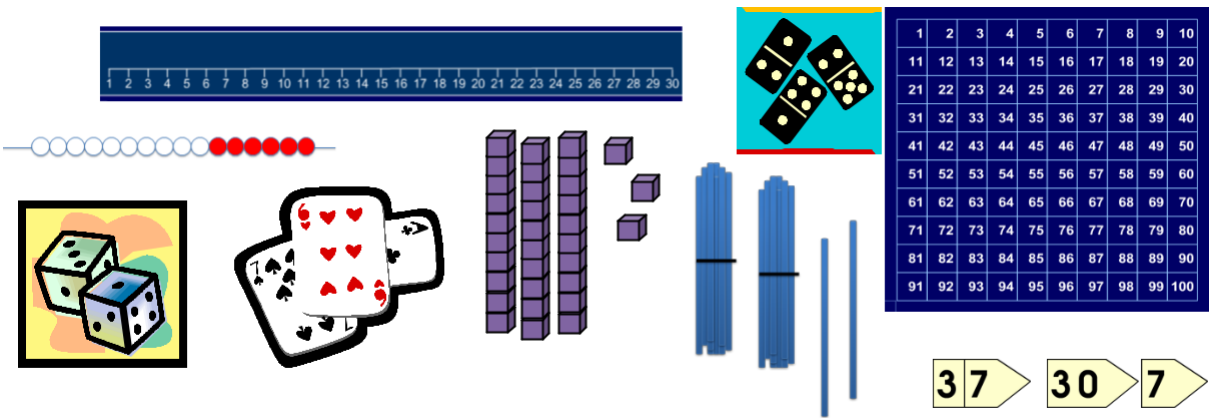
Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

Year 6 - Progression in Mental Calculation Skills / Strategies for

Addition Children understand that:

- addition is the combining of two or more quantities resulting in a larger total;
- addition is the inverse of subtraction;
- addition is commutative i.e. that 3 + 5 = 8 and 5 + 3 = 8

Practical equipment, models and images to support children with mental addition:



Vocabulary

+ add, more, more than, plus, make, total, sum, altogether, score, addition, increase, inverse

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Add pairs of decimals with ones (units), tenths or hundredths	0.7 + 3.38 4.52 + 2.78	• Partition ones (units), tenths and hundredths • Understand place value of tenths and hundredths • Recombine ones (units), tenths and hundredths
Find doubles of decimals each with ones (units) and tenths	1.6 + 1.6	• Double any two-digit number • Understand place value
Add a decimal with ones (units) and tenths, that is nearly a whole number	4.3 + 2.9	• Round a decimal to the nearest whole number • Add a whole number to any decimal number
Enhanced Strategies		
Add near doubles of decimals	2.5 + 2.6	• Double any two-digit number • Use knowledge of place value and related facts

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

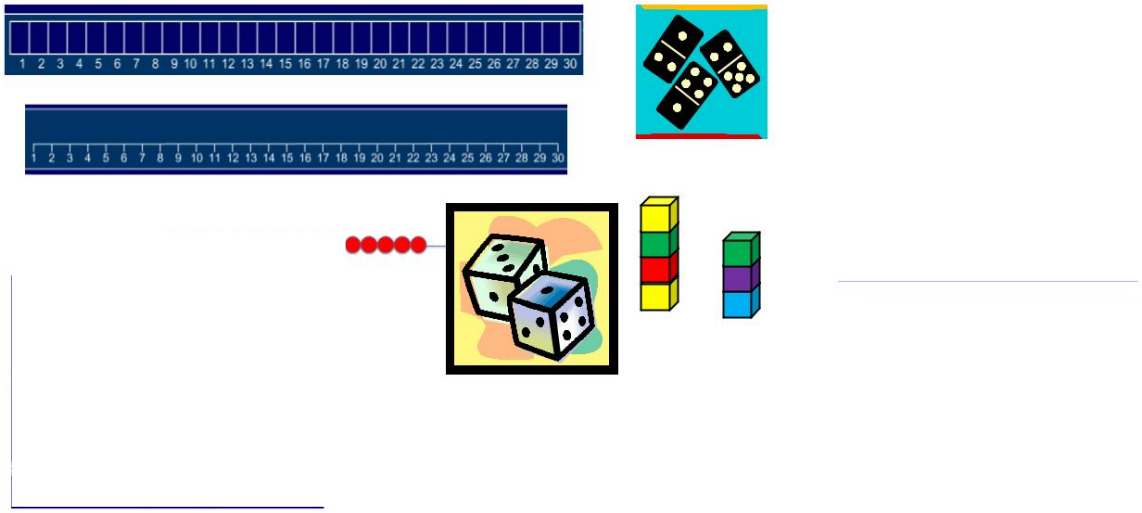
Subtraction

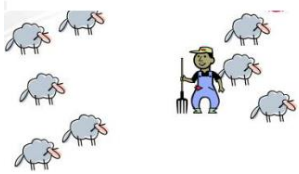
EYFS – Progression in Mental Calculation Skills / Strategies for Subtraction

Children understand that:

- subtraction is the removing or taking away a quantity from another;

Practical equipment, models and images to support children with mental subtraction





Vocabulary

take (away), , how many are left / left over? How many have gone? One less, , how many fewer is...than...?

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Subtract a pair of single-digit numbers	8-3 Model this calculation using cubes, small world people, a number line / track. If 8 – 3 = 5, what else do you know?	• Know number names up to 10 in order in symbols and words and understand the amounts they represent

		• Understand the amounts the symbols and words represent • Count back from any given single digit number • Know that the last number said is the amount left. • Place value – identify the largest number in order to count back from this.

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

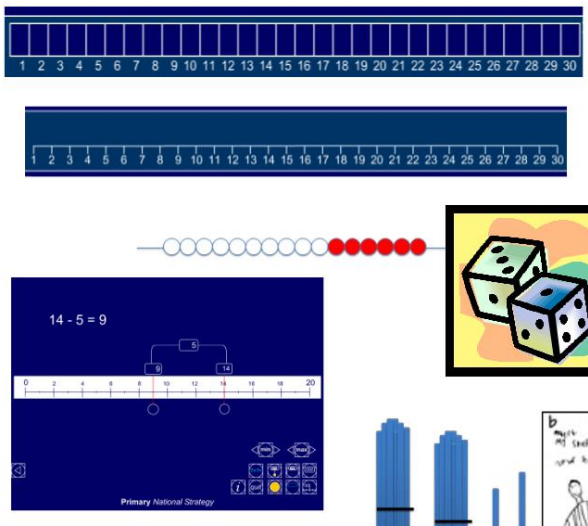
Year 1 – Progression in Mental Calculation Skills / Strategies for Subtraction

Children understand that:

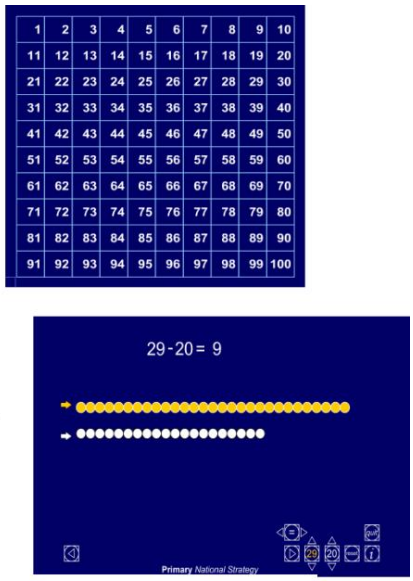
- subtraction is the removing or taking away a quantity from another;
- subtraction is the inverse of addition;
- subtraction is **not** commutative unlike addition i.e.

  3 + 5 = 5 + 3 but 5 – 3 ≠ 3 – 5

Practical equipment, models and images to support children with mental subtraction



Number line ITP



Difference ITP

Vocabulary

subtract, take (away), minus, leave, how many are left / left over? How many have gone? One less, two less, ten less, how many fewer is...than...? difference between

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Subtract a pair of single-digit numbers	8-3 Model this calculation using cubes, small world people, a number line / track. If 8 – 3 = 5, what else do you know?	• Know number names up to 10 in order in symbols and words and understand the amounts they represent • Understand the amounts the symbols and words represent • Count back from any given single digit number • Know that the last number said is the amount left. • Place value – identify the largest number in order to count back from this.
Subtract a single-digit number from a teens number	15-3 Model this calculation using cubes, small world people, a number line / track. If 15 – 3 =12, what else do you know?	As above plus: • Know number names up to 20 in order in symbols (using numerals) and words (spoken) • Count back from any given teens number • Count back in ones • Know and use related subtraction facts e.g. 5 - 3=2 so 15 - 3=12 • Place value- understand what each digit represents in a teens number
Subtract a single-digit number from 10	10-7 10 - ? = 6 10 - ? = ?	As above plus: • Count back in ones • Know number bonds to 10

		• *Understand and use subtraction as the inverse of addition*

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

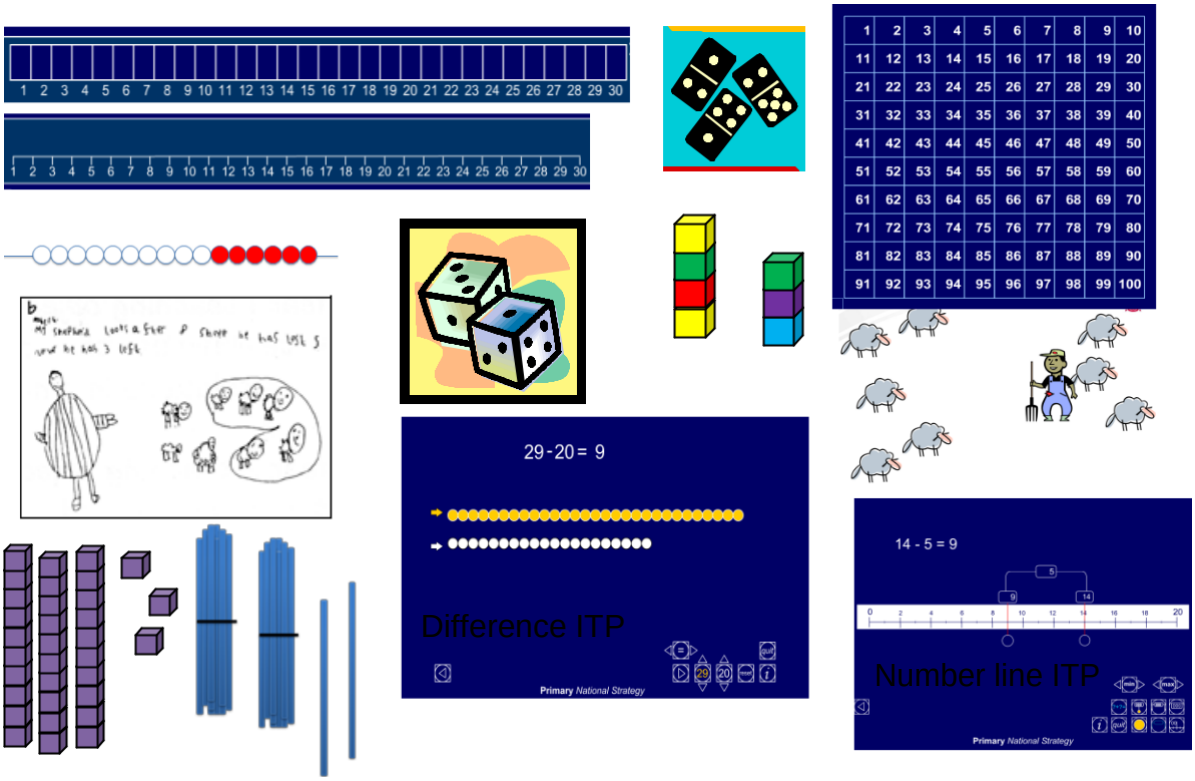
Year 2 – Progression in Mental Calculation Skills / Strategies for Subtraction

Children understand that:

- subtraction is the removing or taking away a quantity from another;
- subtraction is the inverse of addition;
- subtraction is **not** commutative unlike addition i.e.

  3 + 5 = 5 + 3 but 5 – 3 ≠ 3 – 5

Practical equipment, models and images to support children with mental subtraction



Vocabulary

subtract, subtraction, take (away), minus, leave, how many are left / left over? How many have gone? One less, two less, ten less, one hundred less, how many fewer is...than...? Difference between,

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Subtract a pair of single-digit numbers and a single-digit number from a teens number, including crossing 10	12-7 Model this calculation using cubes, small world people, a number line / track. If 12 – 7 = 5, what else do you know?	• Know the number names up to 20 in order, in symbols (using numerals) and words (spoken) • Understand the amounts the symbols and words represent • Use and apply number bonds to 10 • Count back in ones from any teens number or single digit number • Place value – identify the largest number in order to count back from this • Place value – understand the value of each digit in a teens number • *Know number bonds of all numbers up to 10*
Subtract any single-digit from a multiple of 10	20-3 40 - ? = 32 30 - ? = 2?	As above plus: • Know the decade number names up to 100 in order, in symbols (using numerals) and words (spoken) • Understand the amounts the symbols and words represent • Place Value – understand what each digit represents in a two-digit number
Subtract a single-digit number from any two-digit number including crossing the tens boundary	32-6 44 - ? = 37 52 - ? = 4?	As above plus: • Understand subtraction as finding the difference • Count back from any two-digit number in ones • Count on from any two-digit number in ones

		• *Use number bonds to efficiently bridge through a multiple of 10*
Subtract a multiple of 10 from any two-digit number	63-40 47 - ? = 7 73 - ? = 33 56 - ? = ?6	As above plus: • Know what is 10 less than any given two-digit number • Count back in tens from any given number

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

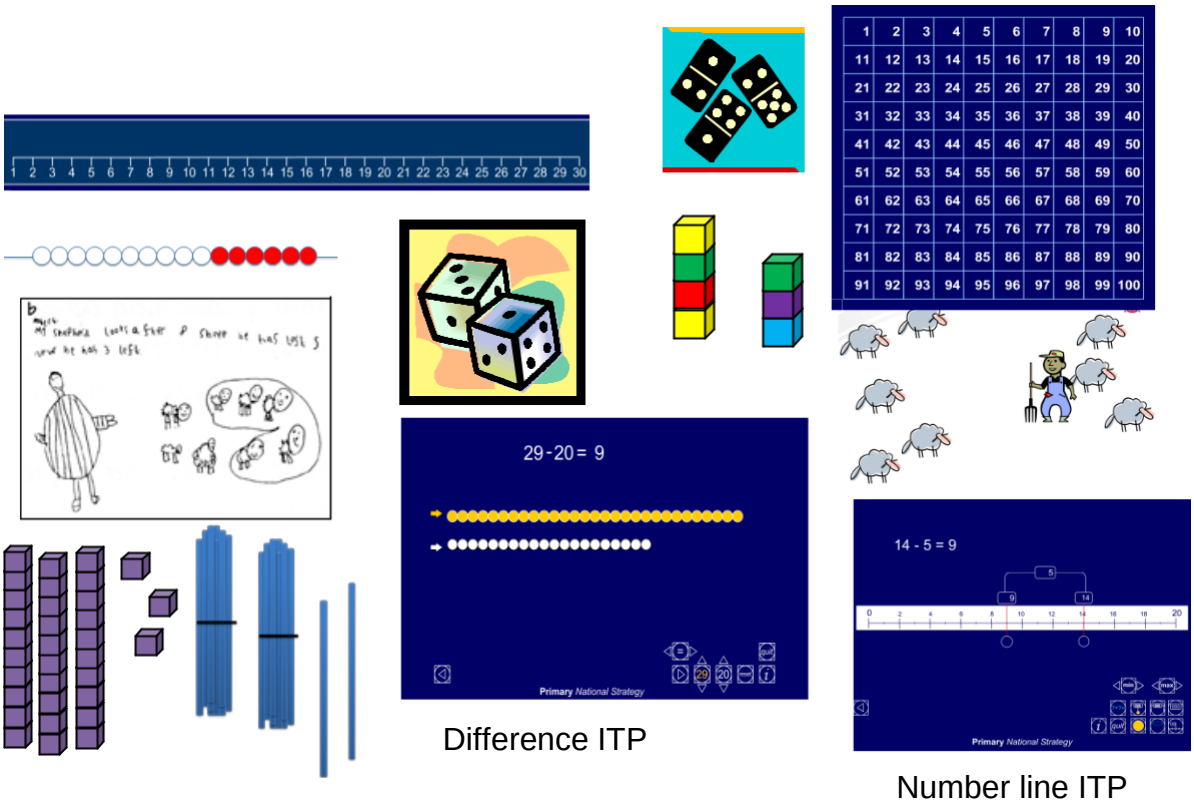
Year 3 – Progression in Mental Calculation Skills / Strategies for Subtraction

Children understand that:

- subtraction is the removing or taking away a quantity from another;
- subtraction is the inverse of addition;
- subtraction is **not** commutative unlike addition i.e.

  3 + 5 = 5 + 3 but 5 – 3 ≠ 3 – 5

Practical equipment, models and images to support children with mental subtraction



Difference ITP

Number line ITP

Vocabulary

subtract, subtraction, take (away), minus, leave, how many are left / left over? How many have gone? One less, two less, ten less, one hundred less, how many fewer is...than...? Difference between,

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Subtract groups of small numbers	7-3-2 in context eg. There were 7 children on the bus, 3 got off in Preston, 2 got off in Chipping, how many were left on the bus?	• Count on and back in ones from any given number • Know number bonds to 10
Subtract a two-digit number from a multiple of 10	90 - 27	• Partition the non-multiples of 10 e.g 27 into 20+7 • Count on and back in tens and ones • Use knowledge of place value to relate • 9 – 2 =7 to 90 – 70 =20
Subtract two-digit numbers	68 - 35	• Partition two-digit numbers into tens and ones (units) • Recombine tens and ones (units) • Count on and back in tens and ones • Know and use knowledge of number bonds to 10
Enhanced Strategies		
	7 – 3 – 2 is the same as 7 – 5 (which is 3+2) 14 – 5 – 4 = 14 – 4 – 5	• Re-order numbers to enable more efficient calculations.

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

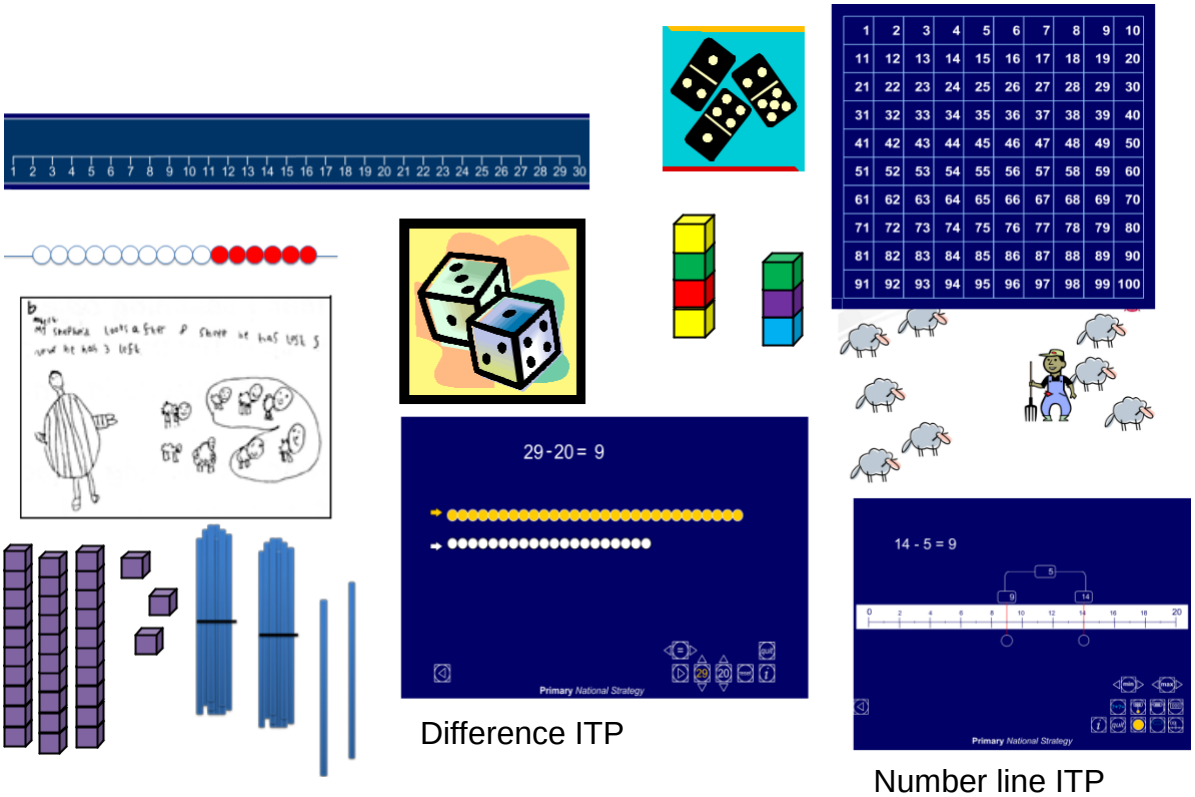
Year 4 – Progression in Mental Calculation Skills / Strategies for Subtraction

Children understand that:

- subtraction is the removing or taking away a quantity from another;
- subtraction is the inverse of addition;
- subtraction is **not** commutative unlike addition i.e.

  3 + 5 = 5 + 3 but 5 – 3 ≠ 3 – 5

Practical equipment, models and images to support children with mental subtraction



Difference ITP

Number line ITP

Vocabulary

subtract, subtraction, take (away), minus, leave, how many are left / left over? How many have gone? One less, two less, ten less, one hundred less, how many fewer is...than...? Difference between, decrease, inverse

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Subtract any pair of two-digit numbers, including crossing the tens boundary	91 - 35	• Count on and back in ones from any two-digit number • Count on and back in tens from any two-digit number • Partition two digit numbers to tens and ones (units) • Understand place value in two digit-number

Subtract two-digit or three-digit multiples of 10	120 - 40 370 - 180	• Use knowledge of place value to relate 12 – 4 to 120 - 40 • Count on and back in tens • Use knowledge of number bonds to efficiently subtract numbers
Enhanced Strategies		
Subtract a near multiple of 10	63 - 19 Model using practical equipment	• Round to the nearest 10 • Add a multiple of 10 to any number • Count on and back in tens and ones

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

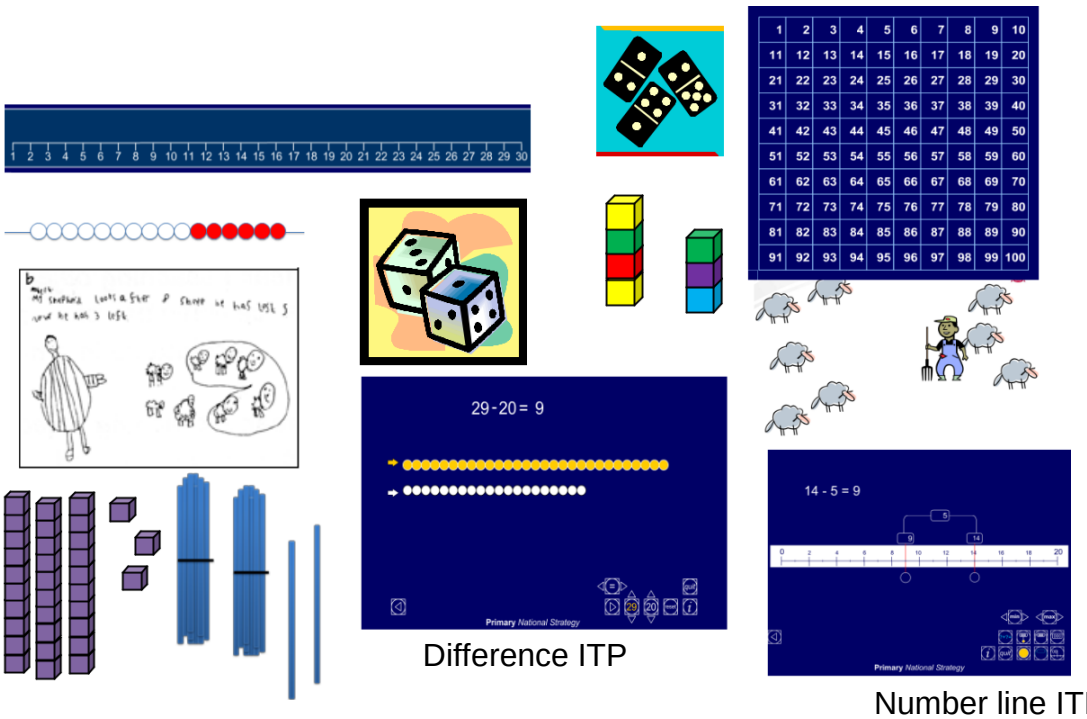
Year 5 – Progression in Mental Calculation Skills / Strategies for Subtraction

Children understand that:

- subtraction is the removing or taking away a quantity from another;
- subtraction is the inverse of addition;
- subtraction is **not** commutative unlike addition i.e.

  3 + 5 = 5 + 3 but 5 – 3 ≠ 3 – 5

Practical equipment, models and images to support children with mental subtraction



Difference ITP

Number line ITP

Vocabulary

subtract, subtraction, take (away), minus, leave, how many are left / left over?

How many have gone? One less, two less, ten less, one hundred less, how many fewer is...than...? Difference between, decrease, inverse,

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Subtract a pair of two-digit numbers or three-digit multiples of 10	620 - 380	• Partition three-digit numbers into hundreds and tens • Understand place value in two and three- digit numbers • Use knowledge of place value to relate 62 - 38 to 620 - 380
Subtract a near multiple of 10 or 100 from any two-digit or three-digit number	326 – 99 £5.00 - £1.99	• Subtract a multiple of 10 from any number • Subtract a multiple of 100 from any number • Round numbers to the nearest 10 and 100
Subtract any pair of decimal fractions each with ones (units) and tenths	6.3 - 4.8	• Partition ones (units) and tenths • Count on and back in tenths including bridging through 1
Find the difference between near multiples of 100 or of 1000	607 - 588 6070 - 3992	• Know number bonds to 100 and related facts (to 1000) • Counting on / back in hundreds, tens and , thousands

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

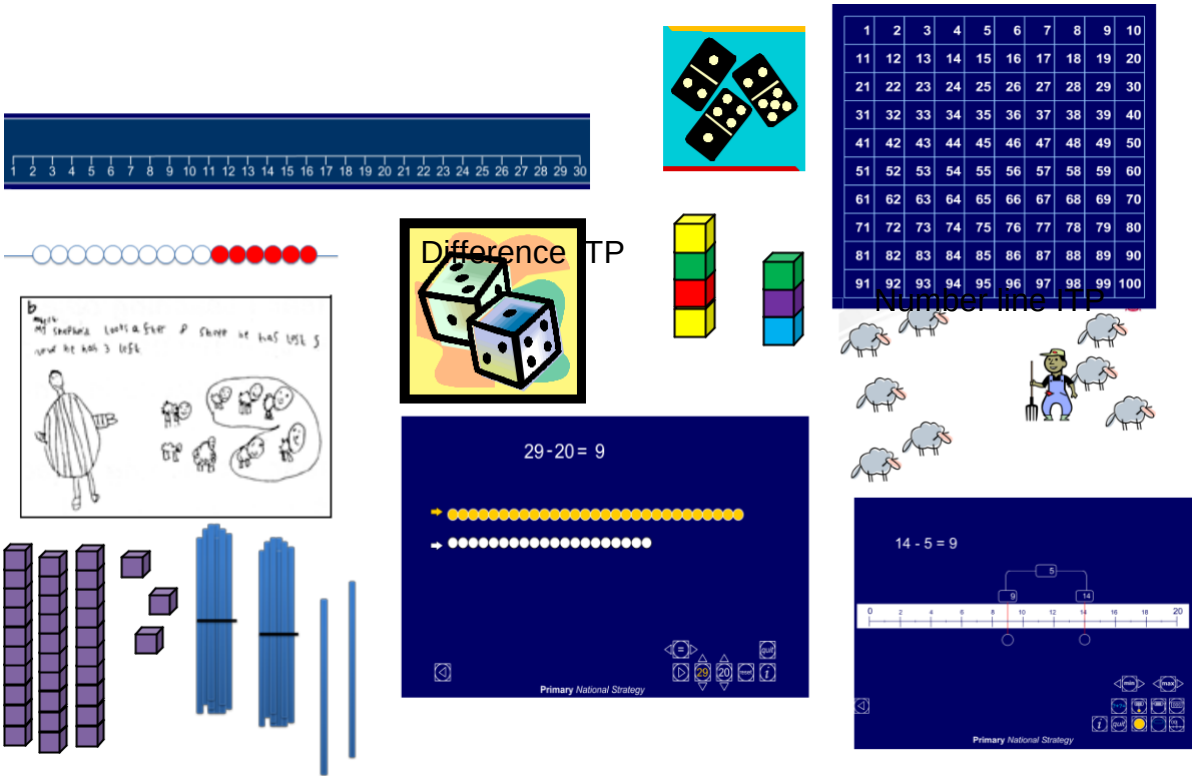
Year 6 – Progression in Mental Calculation Skills / Strategies for Subtraction

Children understand that:

- subtraction is the removing or taking away a quantity from another;
- subtraction is the inverse of addition;
- subtraction is **not** commutative unlike addition i.e.

  $3 + 5 = 5 + 3$ but $5 – 3 \neq 3 – 5$

Practical equipment, models and images to support children with mental subtraction



Vocabulary

subtract, subtraction, take (away), minus, leave, how many are left / left over? How many have gone? One less, two less, ten less, one hundred less, how many fewer is...than...? Difference between, decrease, inverse,

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Subtract pairs of decimals with ones (units), tenths or hundredths	5.6-3.38	• Partition ones (units), tenths and hundredths • Understand place value of tenths and hundredths • Recombine ones (units), tenths and hundredths
Subtract a decimal with ones (units) and tenths, that is nearly a whole number	6.5-3.8	• Understand place value of tenths and hundredths • Be able to round to the nearest whole number • Subtract a whole number from any decimal number

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

Multiplication

EYFS – Progression in Mental Calculation Skills / Strategies for Multiplication

Children understand that:

- Multiplication is repeated addition;
-

Practical equipment, models and images to support children with mental multiplication

Vocabulary

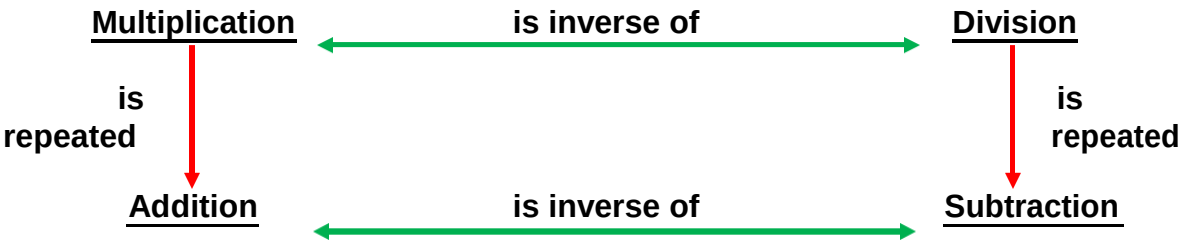
count, pattern, ones, , zero, odd, even, double

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Count on from zero in ones,	Count on in ones from 0 to beyond 20.	• Know the number names up to 20 in order, in ~~symbols (using numerals) and~~ words (spoken) • Recognise number patterns, in numeric symbols and spoken words • Cross tens boundaries when counting in ones by understanding the base 10 number system

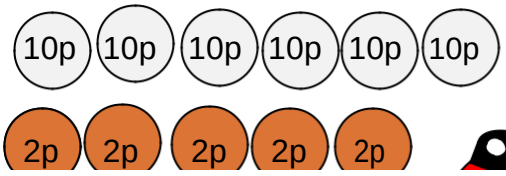
Y1 – Progression in Mental Calculation Skills / Strategies for Multiplication

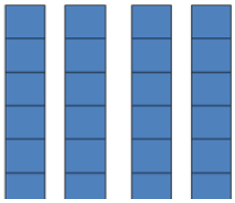
Children understand that:

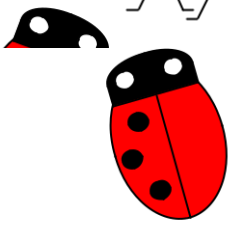
- Multiplication is repeated addition;
- Multiplication is the inverse of division;
- Multiplication is commutative i.e. that 3 x 5 = 15 and 5 x 3 = 15

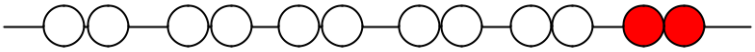


Practical equipment, models and images to support children with mental multiplication

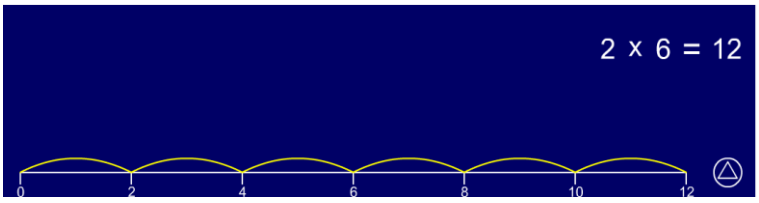








Number grid ITP



Multiplication facts ITP

Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, double

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Count on from zero in ones, twos, fives or tens	Count on in ones from 0 to 13. If you count in twos from 0, what will be the first six numbers?	• Know the number names up to 100 in order, in symbols (using numerals) and words (spoken)

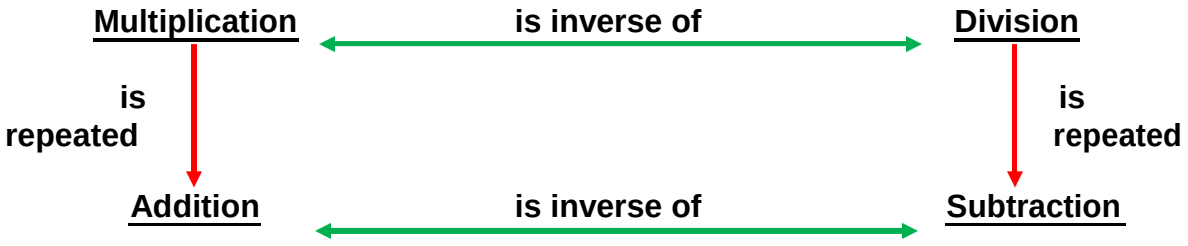
	I'm putting 10p coins into this piggy bank. Count in tens to check how much money is going in. Count the number of eyes in this class.	• Recognise number patterns, in numeric symbols and spoken words • Cross tens boundaries when counting in ones and twos by understanding the base 10 number system

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

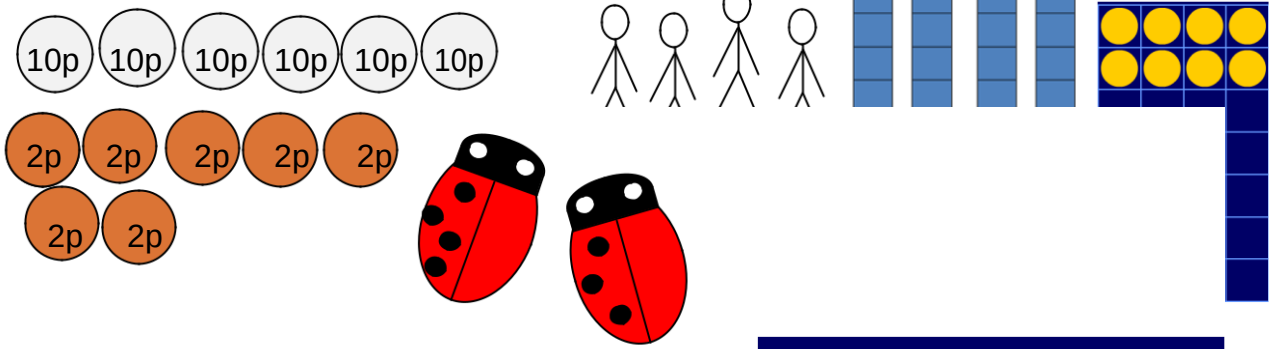
Year 2 – Progression in Mental Calculation Skills / Strategies for Multiplication

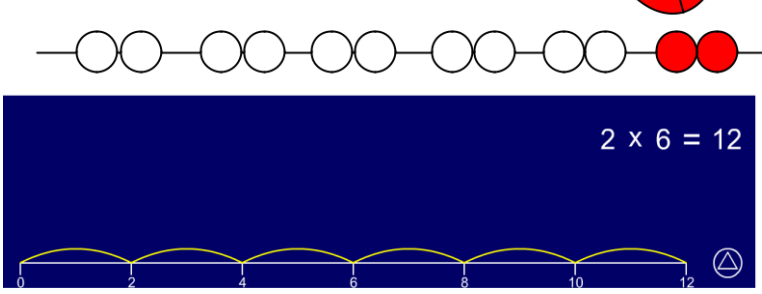
Children understand that:

- Multiplication is repeated addition;
- Multiplication is the inverse of division;
- Multiplication is commutative i.e. that 3 x 5 = 15 and 5 x 3 = 15



Practical equipment, models and images to support children with mental multiplication





Number grid ITP

Multiplication facts ITP

Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, double, lots of, groups of, times, multiply, multiplied by, multiple of, once, twice, three times...as (big, long, wide etc.), repeated addition, array, row, column

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Double any multiple of 5 up to 50	Double 15 30 + 30 = Explain how you could work out double 45. Twice 25 is... 40 multiplied by 2 equals...	• Double single digit numbers • Double multiples of 10 • Partition two-digit numbers into T and U and recombine T and U (by adding components) • Understand that doubling is adding the same number to itself • Understand that doubling is multiplying by 2
Find the total number of objects when they are organised in groups of 2, 5 or 10	What is the total of six groups of 5? How many fingers do these 4 children have? How did you work it out? What is the total of this tally? IIII IIII IIII IIII IIII IIII IIII How else could you write 10 + 10 + 10 + 10 ?	• Count on from zero in twos, fives and tens • Relate 'groups of' to repeated addition • Understand that the last number said in the count is the total of the group

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

Year 3 – Progression in Mental Calculation Skills / Strategies for Multiplication

Children understand that:

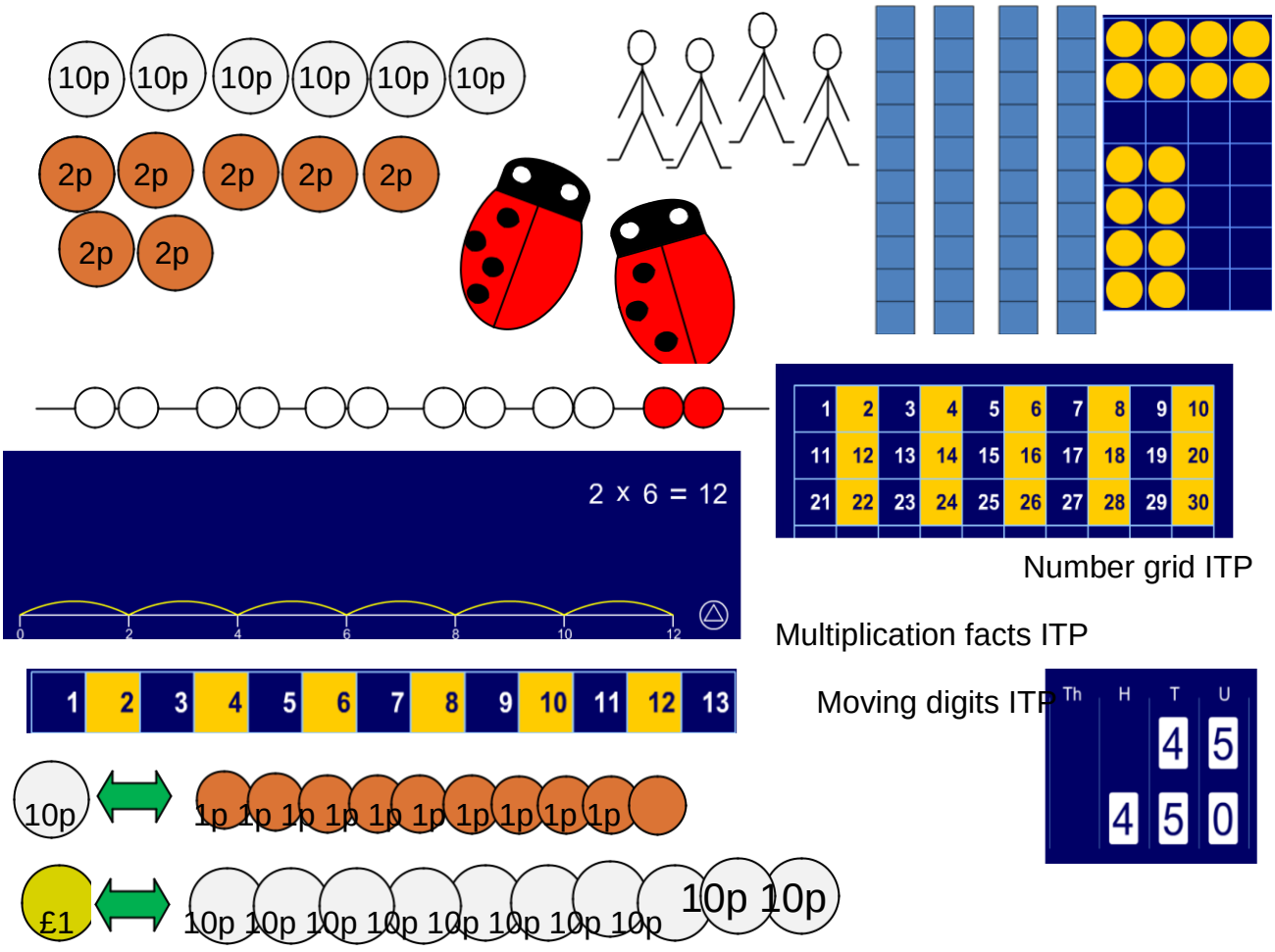
- Multiplication is repeated addition;
- Multiplication is the inverse of division;
- Multiplication is commutative i.e. that 3 x 5 = 15 and 5 x 3 = 15

Multiplication **is inverse of** **Division**

is repeated **is repeated**

Addition **is inverse of** **Subtraction**

Practical equipment, models and images to support children with mental multiplication



Number grid ITP

Multiplication facts ITP

Moving digits ITP

Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, double, lots of, groups of, times, multiply, multiplied by, multiple of, once, twice, three times...as (big, long, wide etc.), repeated addition, array, row, column, product

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Double any multiple of 5 up to 100	Double 55 30 + 30 = Explain how you could work out double 65. Twice 70 is... 40 multiplied by 2 equals...	• Double single digit numbers • Double multiples of 10 • Partition two-digit numbers into T and U and recombine T

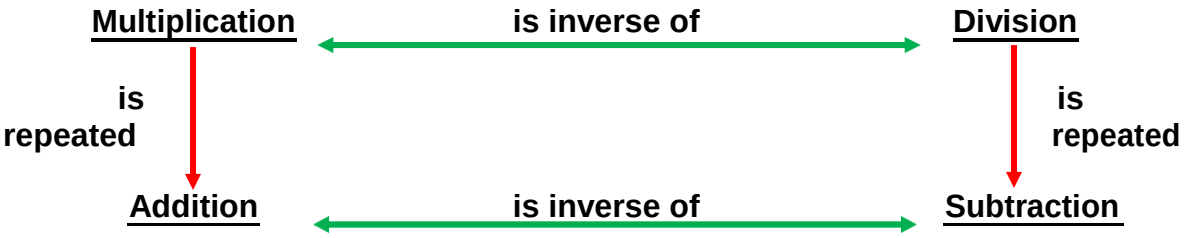
		and U (by adding components) • Understand that doubling is adding the same number to itself • Understand that doubling is multiplying by 2
Multiply one-digit and two-digit numbers by 10 or 100	13 x10 = 7 x 100 = Balloons are sold in packs of 10. How many balloons are in 24 packs?	• Understand base 10 number system i.e. 10 ones / ones (units) = 1 ten and vice versa and 10 tens = 1 hundred and vice versa • Understand that zero can be used as a place holder

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

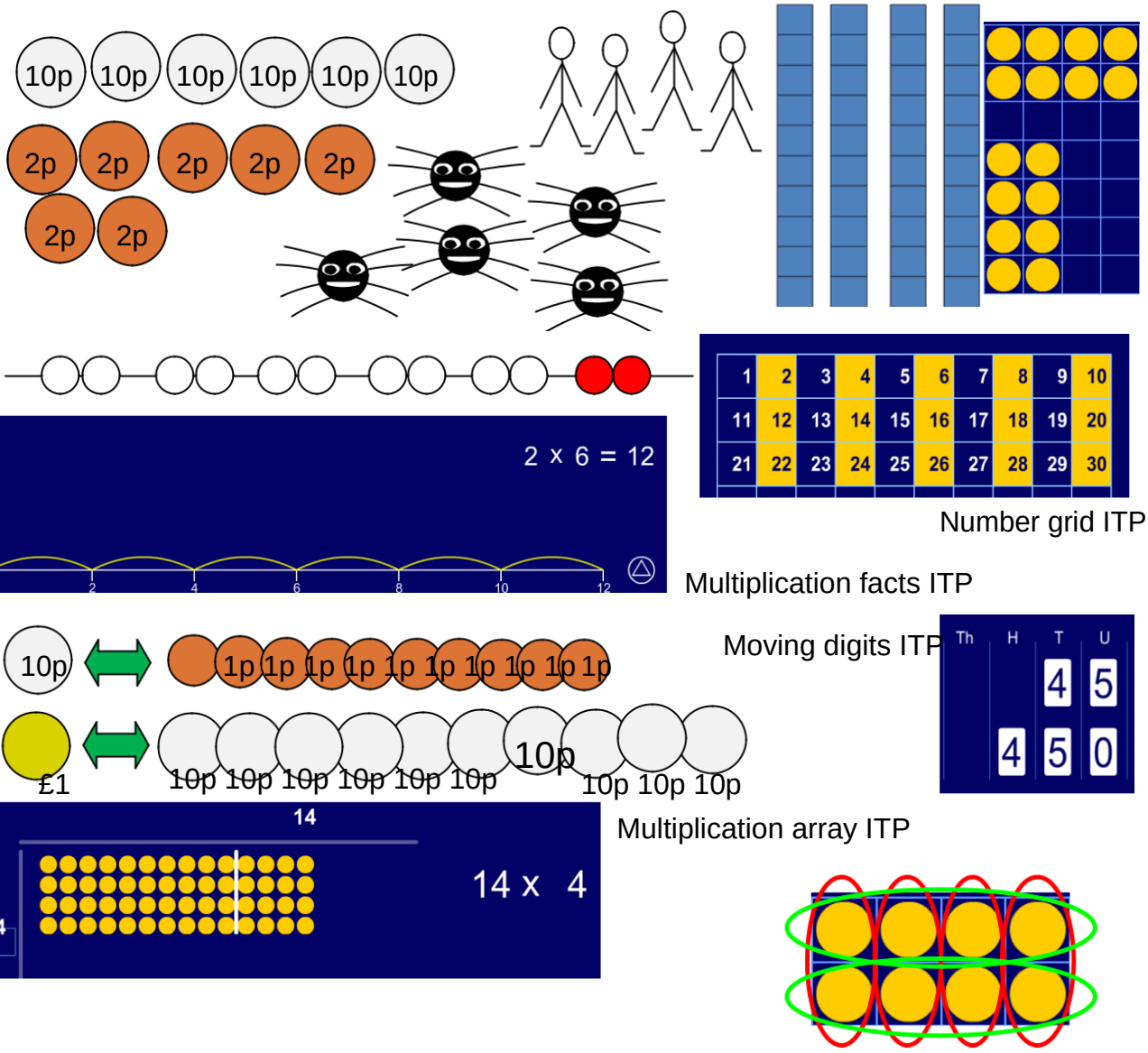
Year 4 – Progression in Mental Calculation Skills / Strategies for Multiplication

Children understand that:

- Multiplication is repeated addition;
- Multiplication is the inverse of division;
- Multiplication is commutative i.e. that 3 x 5 = 15 and 5 x 3 = 15



Practical equipment, models and images to support children with mental multiplication



Number grid ITP

Multiplication facts ITP

Moving digits ITP

Multiplication array ITP

Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, double, lots of, groups of, times, multiply, multiplied by, multiple of, once, twice, three times...as (big, long, wide etc.), repeated addition, array, row, column, product, inverse

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Double any multiple of 10 or 100	Double 80	• Double single digit numbers • Understand and use knowledge of base 10 number system to relate 4 x 2 to 40 x 2
Double any two-digit number	Double 78 Double ?? and double ? is the same as doubling 36	• As above • Partition two-digit numbers into T and U and recombine (by adding components)

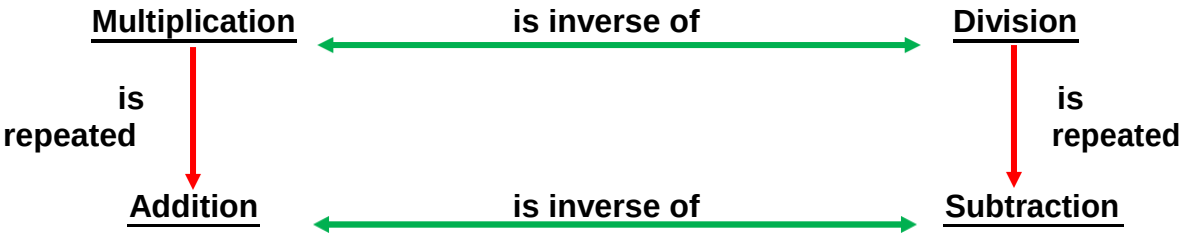
Multiply numbers to 1000 by 10 and then 100	268 x 10 407 x 100	• Understand base 10 number system i.e. 10 ones / ones (units) = 1 ten and vice versa and 10 tens = 1 hundred and vice versa • Understand that zero can be used as a place holder
Multiply a multiple of 10 up to 100 by a single-digit number	30 x 6 How would you work out 60 x 8?	• Know multiplication facts to 10 x 10 • Understand and use knowledge of base 10 number system to relate 3 x 4 to 3 x 40
Multiply numbers to 20 by a single-digit	14 x 8 16 x 3 = (10 x 3) + (? x 3)	• Know multiplication facts to 10 x 10 • Partition two-digit numbers into T and U and recombine (by adding components)
Enhanced Strategies		
Give the factor pair associated with a multiplication fact	The factor pairs of 24 are 24 and 1, 12 and 2, ? and 3, ? and ? If 14 x 3 = 42, give a factor pair for 42.	• Understand that some numbers can be represented as an array • Know multiplication facts to 10 x 10

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

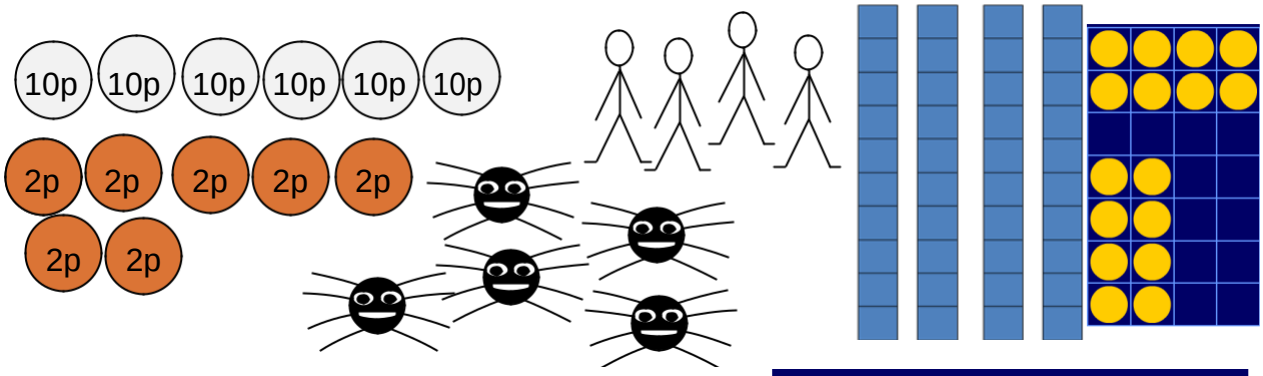
Year 5 – Progression in Mental Calculation Skills / Strategies for Multiplication

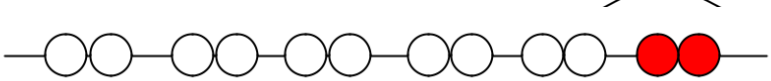
Children understand that:

- Multiplication is repeated addition;
- Multiplication is the inverse of division;
- Multiplication is commutative i.e. that 3 x 5 = 15 and 5 x 3 = 15

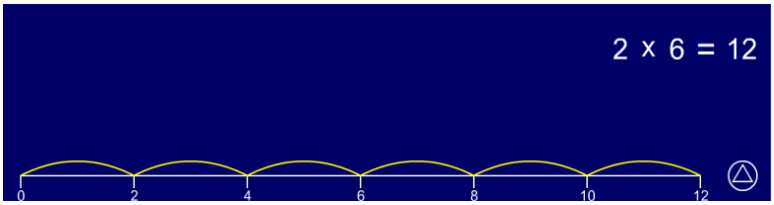


Practical equipment, models and images to support children with mental multiplication



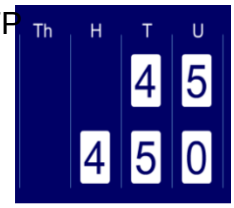


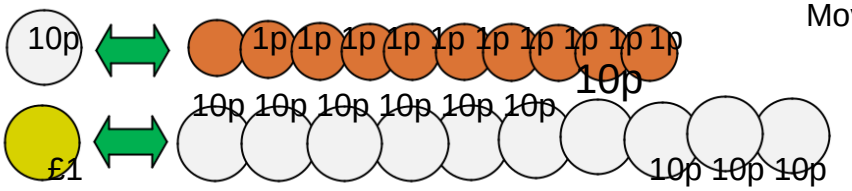
Number grid ITP

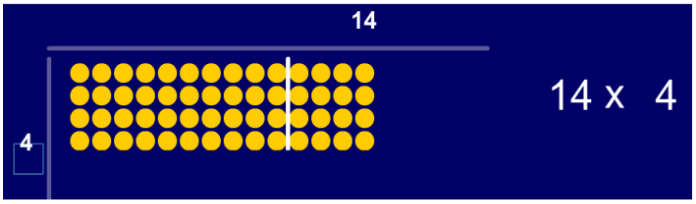


Multiplication facts ITP

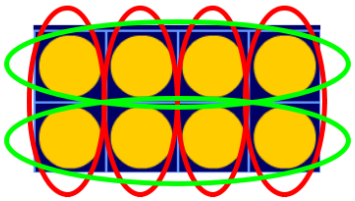
Moving digits ITP







Multiplication array ITP



Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, double, lots of, groups of, times, multiply, multiplied by, multiple of, once, twice, three times...as (big, long, wide etc.), repeated addition, array, row, column, product, inverse, factor, square number

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Double three-digit multiples of 10 to 500	Double 460	• Double single digit numbers • Understand and use knowledge of base 10 number system to relate 4 x 2 to 40 x 2 to 400 x 2

		• Partition three-digit numbers into H, T and U and recombine (by adding components)
Multiply whole numbers and decimals by 10, 100 or 1000	1.7 x 100	• Understand base 10 number system i.e. 10 ones / ones (units) = 1 ten and vice versa and 10 tens = 1 hundred and vice versa and • 10 tenths = 1 unit / one and vice versa • Understand that zero can be used as a place holder
Multiply pairs of multiples of 10	20 x 30	• Know multiplication facts to 10 x 10 • Understand and use knowledge of base 10 number system to relate 3 x 4 = 12 • to 3 x 40 = 120 to 30 x 40 = 1200
Multiply two-digit numbers by 5 or 20	17 x 5 38 x 5 74 x 20	• Multiply two-digit numbers by 10 • Double two-digit and three-digit numbers • Halve two-digit and three digit numbers • Understand that (x10x2) is the same as x20 and that (x10÷2) is the same as x5
Enhanced Strategies		
Multiply numbers by 4 or 8	16 x 4	• Double two-digit and three-digit numbers • Understand the relationship between x2, x4 and x8
Multiply numbers by 4 or 8	14 x 25	• Multiply two-digit and three-digit numbers by 100 • Halve numbers • Understand why halving and halving again is the same as finding a quarter
Find factor pairs for numbers to 100	Factors of 42	• Understand that some numbers can

		be represented as an array • Know multiplication facts to 10 x 10

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

Year 6 – Progression in Mental Calculation Skills / Strategies for Multiplication

Children understand that:

- Multiplication is repeated addition;
- Multiplication is the inverse of division;
- Multiplication is commutative i.e. that 3 x 5 = 15 and 5 x 3 = 15

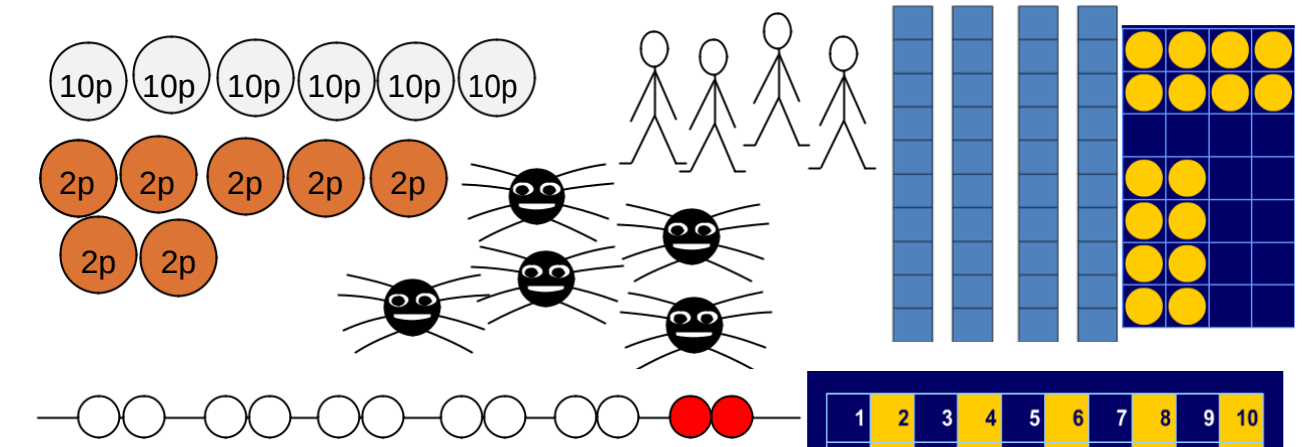
Multiplication is inverse of **Division**

Multiplication is repeated → **Addition**

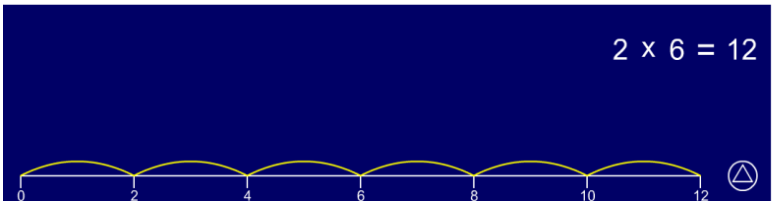
Division is repeated → **Subtraction**

Addition is inverse of **Subtraction**

Practical equipment, models and images to support children with mental multiplication

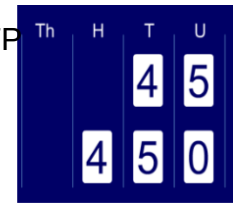


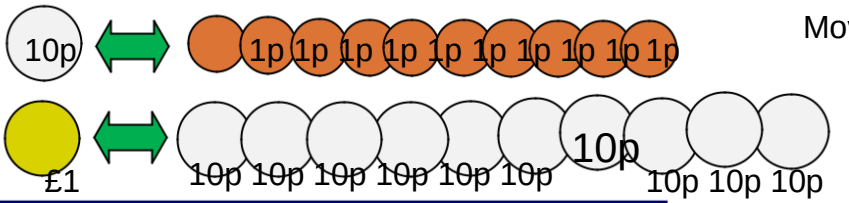
Number grid ITP

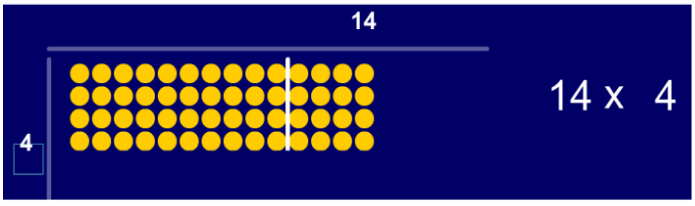


Multiplication facts ITP

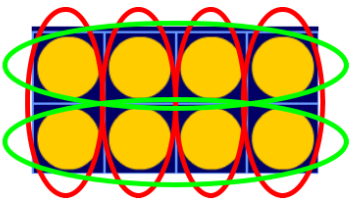
Moving digits ITP







Multiplication array ITP



Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, double, lots of, groups of, times, multiply, multiplied by, multiple of, once, twice, three times...as (big, long, wide etc.), repeated addition, array, row, column, product, inverse, factor, square number, prime, prime factor

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Multiply pairs of two-digit and single-digit numbers	28 x 3	• Know multiplication facts to 10 x 10 • Partition two-digit numbers into T and U and recombine (by adding components) • Understand and use knowledge of base 10 number system to relate 3 x 4 = 12 • to 3 x 40 = 120
Double decimals with ones (units) and tenths	Double 7.6	• Double single digit numbers • Partition decimal numbers into U and tenths and recombine (by adding components) • Understand and use knowledge of base 10 number system to relate double 4 to double 0.4
Multiply pairs of multiples of 10 and 100	50 x 30 600 x 20	• Know multiplication facts to 10 x 10 • Understand and use knowledge of base 10 number system to relate 3 x 4 = 12 to 3 x 40 = 120 to 30 x 40 = 1200
Multiply two-digit decimals	0.8 x 7 5.6 x 9	• Know multiplication facts to 10 x10 • Understand and use knowledge of base 10 number system to relate 8 x 7 = 56 to 0.8 x 7 = 5.6
Enhanced Strategies		
Scale up or down using known facts	Given that three oranges cost 24p, find the cost of four oranges	• Know multiplication facts to 10 x 10,

		including related division facts
Identify numbers with an odd number of factors and no factor pairs other than 1 and themselves	What are the factors of 25? Is it always true, sometimes true or never true that square numbers have an odd number of factors? How many different sized rectangular arrays can you make using 12 counters? 17 counters? 13 counters? 16 counters?	• Understand that some numbers can be represented as an array • Understand that some numbers can be represented as a square array which is why they are called square numbers • Know multiplication facts to 10 x 10

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

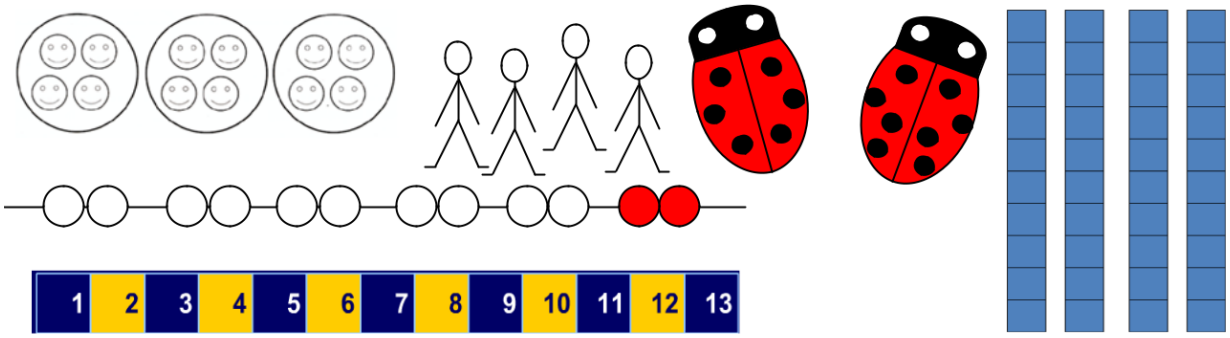
Division

EYFS – Progression in Mental Calculation Skills / Strategies for Division

Children understand that:

- Division is sharing or grouping

Practical equipment, models and images to support children with mental division



Vocabulary

count, pattern, ones, zero, odd, even, half, halve, share

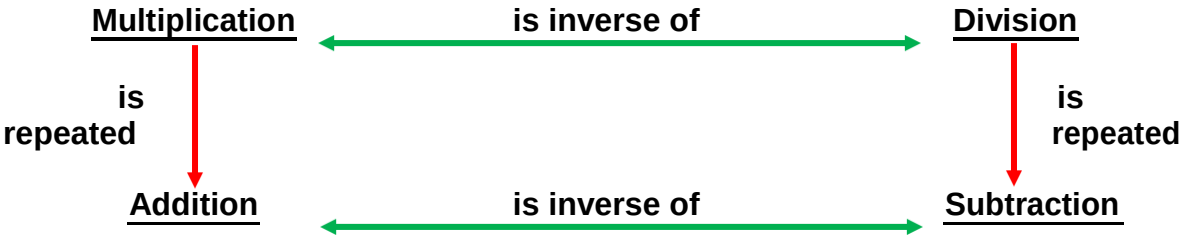
Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Explore and represent patterns within numbers up to 10, including how quantities can be distributed equally.	Share objects into equal parts using numbers to 10 Halve an even number to 10 using practical equipment.	Understand that sharing is splitting an amount into equal parts. Understand halving.

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

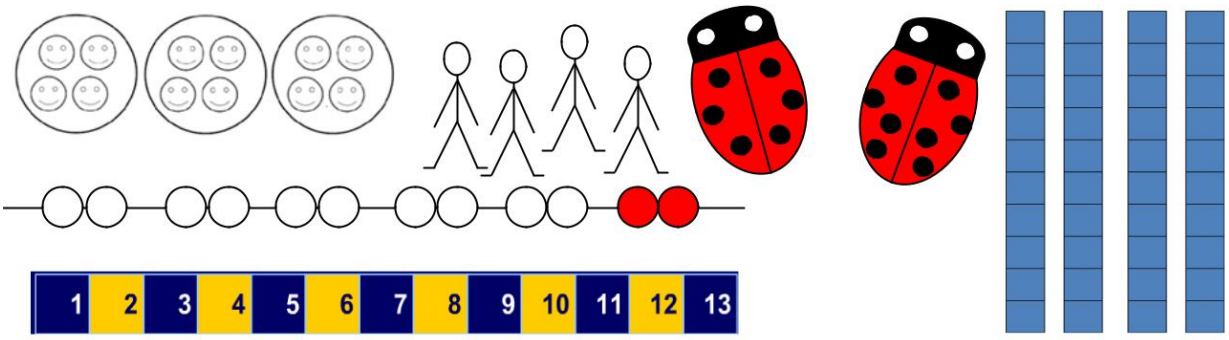
Year 1 – Progression in Mental Calculation Skills / Strategies for Division

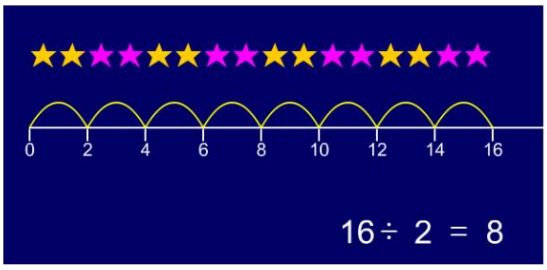
Children understand that:

- Division is sharing or grouping (repeated subtraction); Division is the inverse of
- multiplication;
- Division is **not** commutative unlike multiplication i.e 3 x 5 = 5 x 3 but 15 ÷ 3 ≠ 3 ÷ 15



Practical equipment, models and images to support children with mental division





Grouping ITP

Number grid ITP

Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Count back to zero in ones, twos, fives or tens	Count back in ones from 14 to 0. Now try counting back in twos from 14 to 0. How many numbers did you say?	• Count on from 0 in ones, twos, fives and tens • Cross tens boundaries when counting in ones and

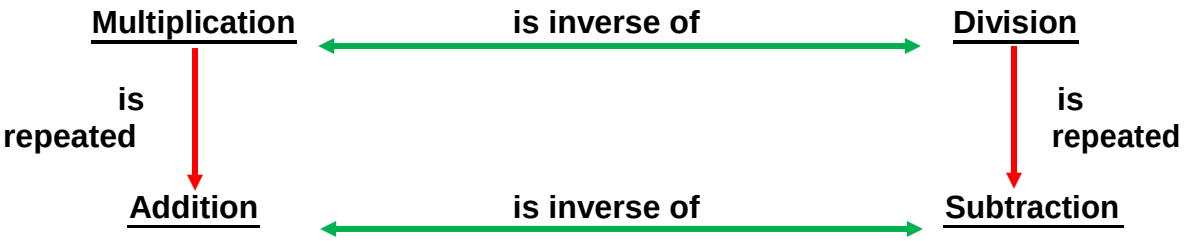
	Count back in tens from 90 to 0.	twos by understanding the base 10 number system • Know the number names up to 100 in order, in symbols (using numerals) and words (spoken) • Understand the amounts the symbols and words represent • Place value – understand what each digit represents in a two-digit number • Recognise number patterns, in numeric symbols and spoken words

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

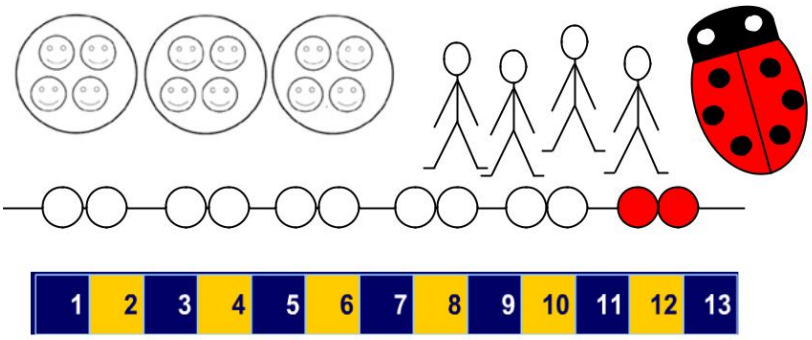
Year 2 – Progression in Mental Calculation Skills / Strategies for Division

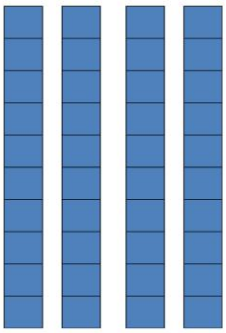
Children understand that:

- Division is sharing or grouping (repeated subtraction); Division is the inverse of
- multiplication;
- Division is **not** commutative unlike multiplication i.e 3 x 5 = 5 x 3 but 15 ÷ 3 ≠ 3 ÷ 15

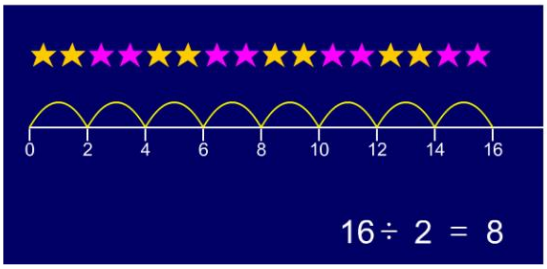


Practical equipment, models and images to support children with mental division

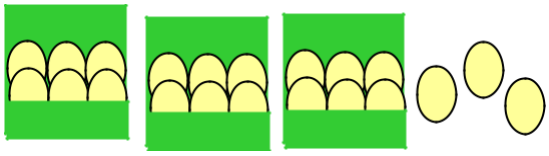




Number grid ITP



Grouping ITP



Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, divided by, divided into, equal parts, remainder, one half, two halves, one quarter, two quarters, three quarters, four quarters, one whole

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Halve any multiple of 10 up to 100	40 ÷ 2 Use these bundles of straws to help you halve 90	• Know multiples of 10 • Partition multiples of 10 into pairs of multiples of 10 e.g. 90 = 80 + 10 • Halve even numbers to 20 • Understand that halving is dividing by 2 and half as one of two equal parts • Understand and use knowledge of base 10 number system to relate 8 ÷ 2 to 80 ÷ 2
Find half of even numbers to 40	Halve 24	As above plus

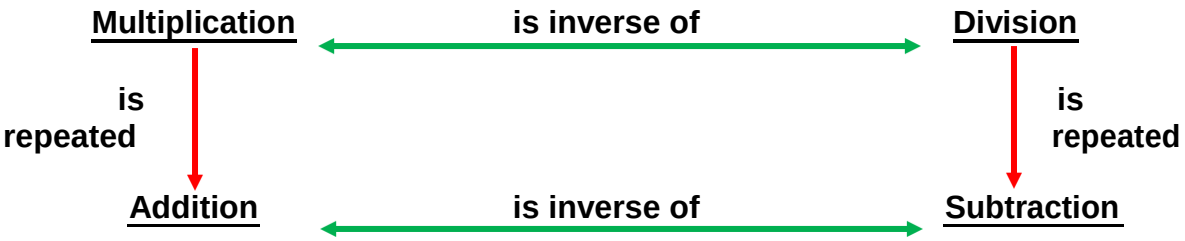
	32 ÷ 2 ?? x 2 = 20 28 = ?? x 2	• Know even numbers • Partition numbers in different ways e.g. when finding half of 36 partitioning 36 into 20 + 16

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

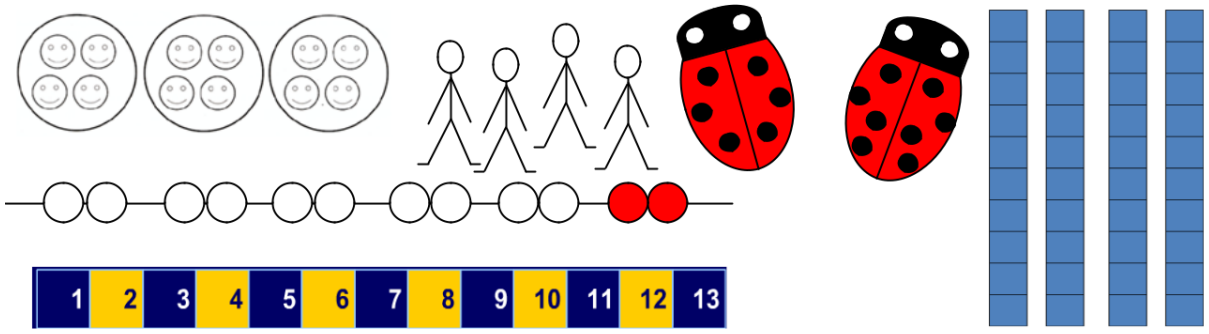
Year 3 – Progression in Mental Calculation Skills / Strategies for Division

Children understand that:

- Division is sharing or grouping (repeated subtraction); Division is the inverse of
- multiplication;
- Division is **not** commutative unlike multiplication i.e 3 x 5 = 5 x 3 but 15 ÷ 3 ≠ 3 ÷ 15

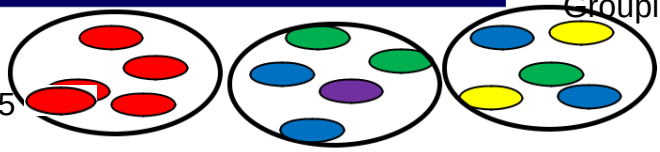


Practical equipment, models and images to support children with mental division

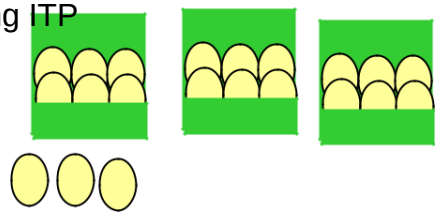


Number grid ITP

Grouping ITP



$\frac{1}{3}$ of 15 is 5



Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, divided by, divided into, equal parts, remainder, one third, two thirds, one tenth

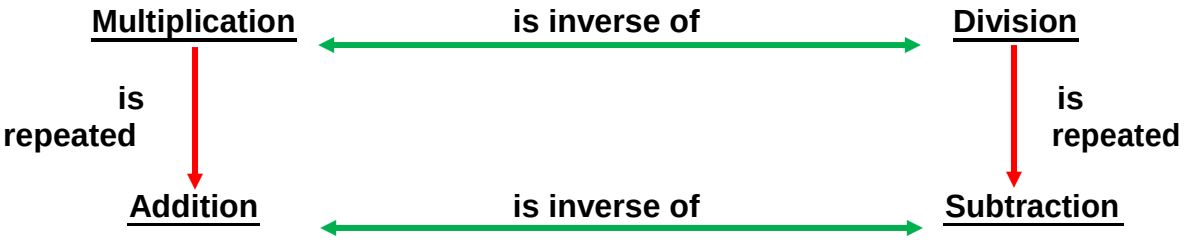
Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Halve any multiple of 10 up to 200	Halve 170 150 ÷ 2 ?? x 2 = 140 1 30 = 2 x ?? ½ of 110	• Know multiples of 10 up to 200 • Partition multiples of 10 into pairs of multiples of 10 e.g. 170 = 160 + 10 • Halve even numbers to 20 • Understand that halving is dividing by 2 and half as one of two equal parts • Understand and use knowledge of base 10 number system to relate 8 ÷ 2 to 80 ÷ 2
Find unit fractions of numbers and quantities involving halves, thirds, quarters, fifths and tenths	Find ¼ of 24 One third of a number is 5. What is the number? What is a fifth of 20ml?	• Understand fractions as equal parts of a whole • Understand what the numerator and denominator represent in fractions • Understand that finding a fraction of an amount is related to sharing equally (division) • Know multiplication facts and related division facts for 2, 3, 4, 5 and 10x tables • Counting in equal steps (groups) • Understand fractions of shapes

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

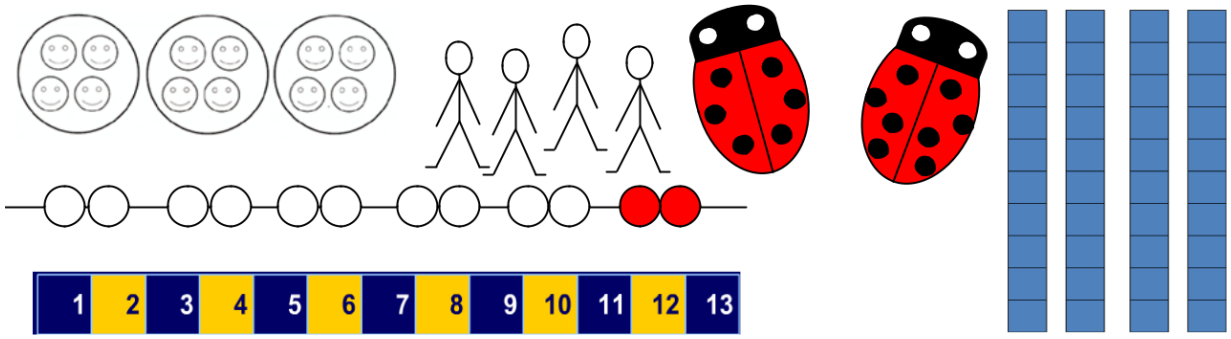
Year 4 – Progression in Mental Calculation Skills / Strategies for Division

Children understand that:

- Division is sharing or grouping (repeated subtraction); Division is the inverse of
- multiplication;
- Division is **not** commutative unlike multiplication i.e. 3 x 5 = 5 x 3 but 15 ÷ 3 ≠ 3 ÷ 15

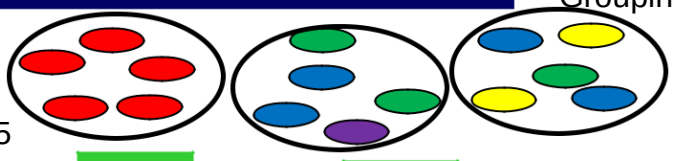


Practical equipment, models and images to support children with mental division

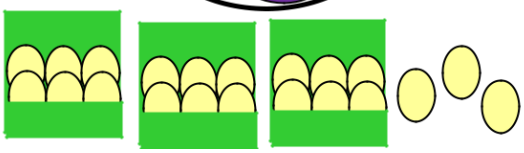


Number grid ITP

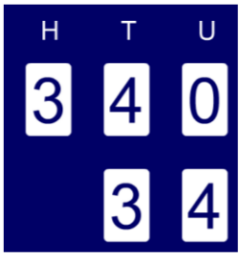
Grouping ITP



$\frac{1}{3}$ of 15 is 5



21 ÷ 6 =
3 r3



Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, divided by, divided into, equal parts, remainder, one third, two thirds, one tenth, sixth, eighth, fifth, twentieth, inverse, divisible by, factor, quotient

Essential core learning

Mental calculation skills:	Examples:	Requisite prior knowledge:
Halve any multiple of 10 and 100	½ of 500 Halve 470 □□x 2 = 240 360 = □□x 2	• Know multiples of 10 up to 200 • Partition multiples of 10 into pairs of multiples of 10 e.g. 170 = 160 + 10 • Partition multiples of 100 into pairs of multiples of 100 e.g. 700 = 600 + 100 • Halve even numbers to 20 • Understand that halving is dividing by 2 and half as one of two equal parts • Understand and use knowledge of base 10 number system to relate 8 ÷ 2 to 80 ÷ 2 to 800 ÷ 2
Halve any multiple of 10 and 100	½ of 146 Halve 108	As above plus • Partition three-digit numbers into H T and U • Recognise odd and even numbers
Halve any multiple of 10 and 100	Find 3/8 of 24 Find a quarter of 28 cm	• Know multiplication facts to 10 x 10 and related division facts • Understand fractions of shapes • Understand fractions as equal parts of a whole • Understand what the numerator and denominator represent in fractions • Counting in equal steps (groups) • Understand that finding a fraction of an amount is related to sharing equally (division) • Find simple unit fractions of numbers
Divide numbers to 1000 by 10 and then 100 (whole number answers)	340 ÷ 10 = □□x 100 = 440	• Understand base 10 number system i.e. 10 ones / ones (units) = 1 ten and vice versa and 10

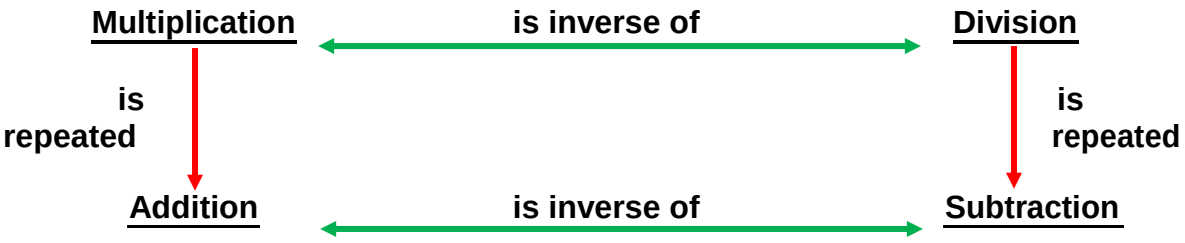
	How many metres are in 900 cm?	tens = 1 hundred and vice versa • Understand that zero can be used as a place holder
Identify the remainder when dividing by 2, 5 or 10	26 ÷ 5 = 17 ÷ 2 = How many teams of 5 can be made from 28 children? How many children will be left over?	• Know multiplication and related division facts for 2, 5 and 10x tables • Count in equal steps of 2, 5 and 10 from non-multiples of those tables

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

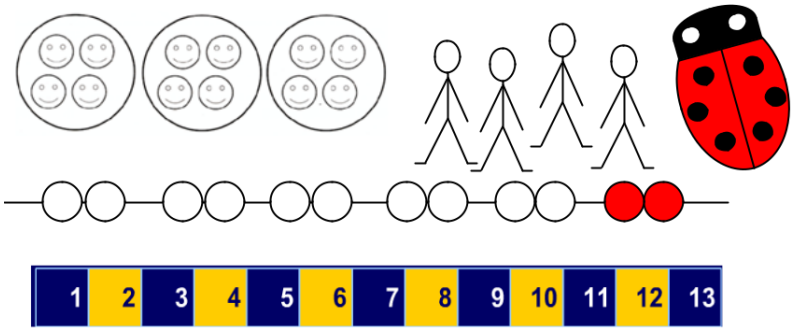
Year 5 – Progression in Mental Calculation Skills / Strategies for Division

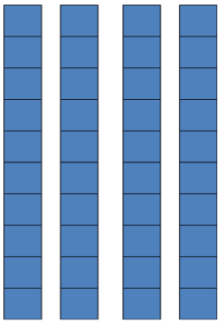
Children understand that:

- Division is sharing or grouping (repeated subtraction); Division is the inverse of
- multiplication;
- Division is **not** commutative unlike multiplication i.e. 3 x 5 = 5 x 3 but 15 ÷ 3 ≠ 3 ÷ 15



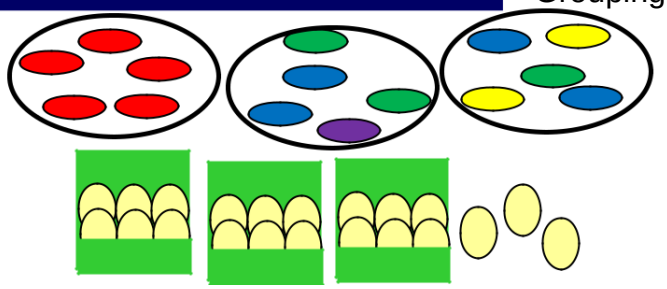
Practical equipment, models and images to support children with mental division



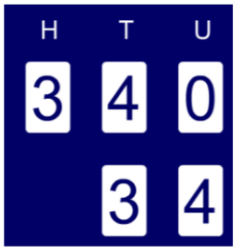


Number grid ITP

Grouping ITP



$\frac{1}{3}$ of 15 is 5



21 ÷ 6 =
3 r3

Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, divided by, divided into, equal parts, remainder, one third, two thirds, one tenth, sixth, eighth, fifth, twentieth, inverse, divisible by, factor, quotient, ninth, twelfth, hundredth, divisibility, percent, %

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Halve three-digit multiples of 10 to 1000	760 ÷ 2 Halve 770 Find of 440 □□x 2 = 290	• Know multiples of 10 up to 1000 • Partition multiples of 10 into pairs of multiples of 10 e.g. 170 = 160 + 10 • Partition multiples of 100 into pairs of multiples of 100 e.g. 700 = 600 + 100 • Halve even numbers to 100 • Understand that halving is dividing by

		2 and half as one of two equal parts • Understand and use knowledge of base 10 number system to relate 8 ÷ 2 to 80 ÷ 2 to 800 ÷ 2
Find the remainder after dividing a two-digit number by a single-digit number	27 ÷ 4	• Know multiplication facts to 10 x 10 and related division facts • Count in equal steps of 2, 3, 4, 5, 6, 7, 8, 9 and 10 from non-multiples of those numbers e.g. count back in sixes from 43
Divide whole numbers by 10, 100 or 1000, where answers involve decimals	25 ÷ 10 673 ÷ 100 74 ÷ 100 How many metres are there in 456cm?	• Understand base 10 number system i.e. 10 ones / ones (units) = 1 ten and vice versa and 10 tens = 1 hundred and vice versa • Understand base 10 decimal number system i.e. 1 unit = 10 tenths, 1 tenth = 10 hundredths • Understand that zero can be used as a place holder
Divide a multiple of 10 by a single-digit number (whole number answers)	80 ÷ 4 270 ÷ 3	• Know multiplication facts to 10 x 10 and related division facts • Understand and use knowledge of base 10 number system to relate 8 ÷ 4 to 80 ÷ 4 to 800 ÷ 4
Find fractions of whole numbers or quantities	2/3 of 27 4/5 of 70 kg	• Know multiplication facts to 10 x 10 and related division facts • Understand fractions of shapes • Understand fractions as equal parts of a whole • Understand what the numerator and denominator represent in fractions • Counting in equal steps (groups) • Understand that finding a fraction of an amount is related

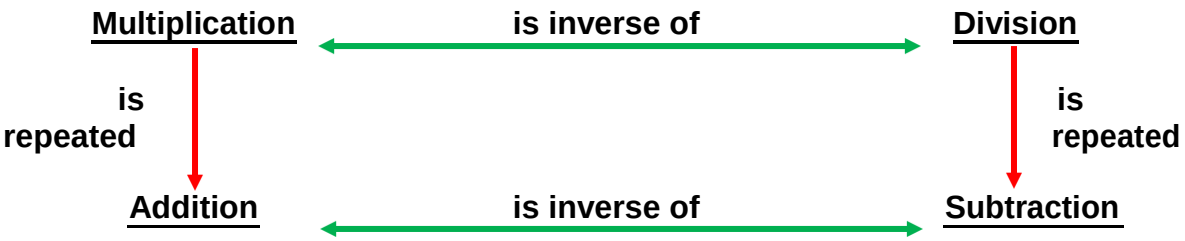
		to sharing equally (division) • Find simple unit fractions of numbers
Find 50%, 25% or 10% of whole numbers or quantities	25% of 20 kg 10% of £80	As above plus • Know percentage equivalences for 1/2, 1/4 and 1/10 and vice versa
Enhanced Strategies		
Divide two-digit numbers by 4 or 8	72 ÷ 4 96 ÷ 8	• Understand the relationship between ÷2, ÷4 and ÷8 • Halve two-digit numbers

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

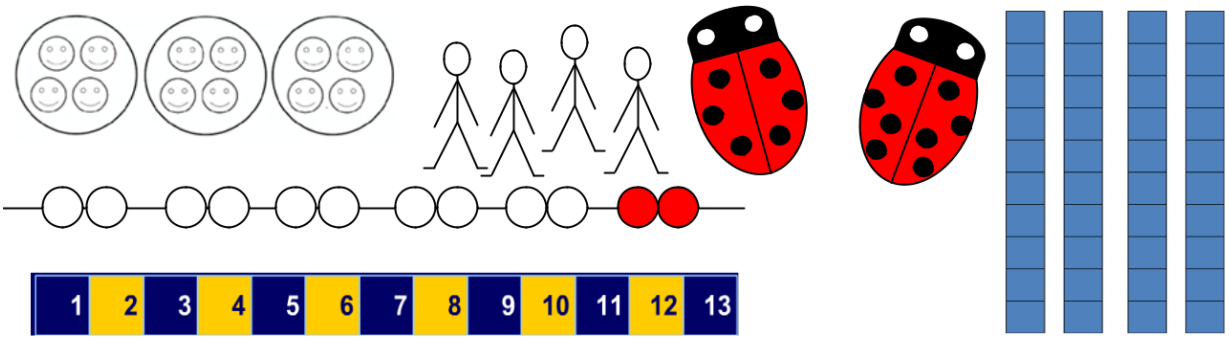
Year 6 – Progression in Mental Calculation Skills / Strategies for Division

Children understand that:

- Division is sharing or grouping (repeated subtraction); Division is the inverse of
- multiplication;
- Division is **not** commutative unlike multiplication i.e. 3 x 5 = 5 x 3 but 15 ÷ 3 ≠ 3 ÷ 15

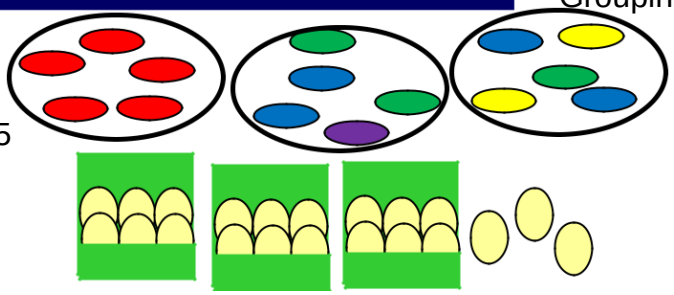


Practical equipment, models and images to support children with mental division

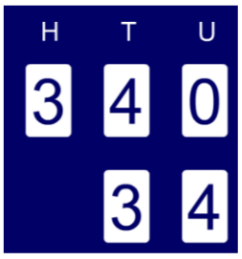


Number grid ITP

Grouping ITP



$\frac{1}{3}$ of 15 is 5



21 ÷ 6 =
3 r3

Vocabulary

count, equal steps, pattern, ones, twos, fives, tens, zero, every other, odd, even, half, halve, share, share equally, one each, two each, three each..., group in pairs, threes... tens, equal groups of, divide, divided by, divided into, equal parts, remainder, one third, two thirds, one tenth, sixth, eighth, fifth, twentieth, inverse, divisible by, factor, quotient, ninth, twelfth, hundredth, divisibility, percent, %, simplify, reduce

Essential core learning		
Mental calculation skills:	Examples:	Requisite prior knowledge:
Divide a two-digit number by a single-digit number	88 ÷ 3 68 ÷ 4	• Know multiplication facts to 10 x 10 and related division facts • Partition numbers in different ways e.g. when finding 84 ÷ 7, recognising 84 as 70 + 14
Halve decimals with tens, ones (units) and tenths	Halve 72.7 Find ½ of 15.2 13.1kg ÷ 2	• Halve whole numbers to 100 • Understand that halving is dividing by

		2 and half as one of two equal parts • Understand base 10 decimal number system i.e. 1 unit = 10 tenths, 1 tenth = 10 hundredths • Understand and use knowledge of base 10 number system to relate 8 ÷ 2 to 80 ÷ 2 and 0.8 ÷ 2
Divide multiples of 100 by a multiple of 10 or 100 (whole number answers)	400 ÷ 20 4000 ÷ 200 How many 20p coins in £20?	• Know multiplication facts to 10 x 10 and related division facts • Understand base 10 number system i.e. 10 ones / ones (units) = 1 ten and vice versa and 10 tens = 1 hundred and vice versa • Understand and use knowledge of base 10 number system to relate 8 ÷ 4 to 80 ÷ 40 to 800 ÷ 40 to 800 ÷ 400
Divide two-digit decimals	4.8 ÷ 6	• Know multiplication facts to 10 x 10 and related division facts • Understand and use knowledge of base 10 number system to relate 18 ÷ 6 to 180 ÷ 6 and 1.8 ÷ 6
Find 10% or multiples of 10% of whole numbers or quantities	Find 30% of 50ml What is 70% of 200g? How much would you pay for an item worth £30 with 40% off?	• Know multiplication facts to 10 x 10 and related division facts • Know equivalence between 1/10and 10% and related fractions e.g.3/10 = 30%, 9/10 = 90% • Divide whole numbers or quantities by 10
Enhanced Strategies		

Simplify fractions by cancelling	What is 14/35 in its simplest form? Reduce 56/100 to its simplest form.	• Know multiplication facts to 10 x 10 and related division facts • Identify all factors of numbers to 100
Scale up or down using known facts	Given that 3 oranges cost 24p, find the cost of 4 oranges.	• Know multiplication facts to 10 x 10, including related division facts
Divide by 25 or 50	480 ÷ 25 3200 ÷ 50	• Divide numbers by 100 • Double numbers

Italics denote desirable rather than essential skills and therefore may be taught to and encouraged to be used by certain children or groups when they are ready

Mathematics Vocabulary Progression

Number – Number and Place Value						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
count	sort	count in steps	ascending	negative numbers	thousandths	order of operations
subitise	represent	count in multiples	descending	ten thousands	millions	
order	multiples	place value	thousands	hundredths	powers of	
compare	partition	estimate	roman numerals		integer	
forwards	ones	compare	tenths			
backwards	tens	hundreds	consecutive			
digit	ordinal	round				
(one) more	numerals					
(one) less						
equal to						
more than						
less than						
fewer						

Number – Addition and Subtraction						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
add	addition	sum	column addition	operations		
plus	subtraction	x-digit number	column subtraction	methods		
altogether	difference	commutative				
total	equals	estimate				
take away/minus	facts	exchange				
number bonds	problems					
part	missing number problems					
whole	2-digit number					
digit	inverse					

Number – Multiplication and Division						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
double	multiplication	multiplication tables	exchange	factor pairs	prime numbers	long division
half	division	commutative	derived facts	formal written layout	cube numbers	
equal	arrays	repeated addition	remainders	square numbers	short division	
unequal	twice as many	repeated subtraction	multiples	product	quotient	
share			factors	dividend		
group				divisor		
odd						
even						

Number – Fractions, decimals, percentages						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	whole	third	tenths	decimal equivalence	thousandths	
	half	equivalent	multiple	hundredths	integer	
	quarter	unit/non-unit fractions	factor	convert	percent	
	equal parts	numerator		proper fractions	complements	
		denominator		improper fractions	percentages	
		wholes		mixed numbers		
				decimal point		

Number – Ratio and proportion						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
						relative size
						missing values
						integer multiplication
						scale factor
						unequal sharing and grouping

Number – Algebra						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	missing numbers	balancing (using the = sign)				formulae
						linear number sequences
						algebraically
						equation
						unknown
						combinations
						variable

Measurement – length and height						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
measure	compare	estimate	millimetre	rectilinear	metric units	conversion
wide(r)		order	perimeter	dimensions	imperial units	formulae
narrow (r)		record results	area		compound shape	
compare		centimetre	kilometer		miles	
longer (er/est)		metre	square cm		inches	
short (er/est)			square m		feet	
tall (er/est)						

Measurement – weight and capacity						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
weight	mass	kilogram	square cm		cubic cm/m	
heavy (/ier)	volume	litres	square m		gallons	
light (er)	gram	Celsius			pounds	
big (er/est)	millilitre	temperature			pints	
full	capacity				stones	
nearly full					ounces	
empty						
nearly empty						
more than						
less than						
half/half full						

Measurement - time						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
time	chronological order	intervals of time	analogue	convert		
quick(er)	*days of the week*	quarter past/to	digital			
slow(er)	*months of the year*	duration	roman numerals (to 12)			
before	month		12-hour clock			
after	year		24-hour clock			
first	o'clock		am/pm			
next	half past		noon			
today	second		midnight			
tomorrow	evening		leap year			
yesterday	early (er)		fortnight			
morning	later(r)					
afternoon						
day						
week						
hour						
minutes						

Measurement - money						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	money	value				
	coins	change				
	notes					
	pounds (£)					
	pence (p)					

Geometry – properties of shape						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
2d shapes	cuboid	pentagon	right angle	isosceles	regular/irregular polygon	radius
rectangle	cone	hexagon	heptagon	equilateral	angles on a straight line	diameter
square	sides	line of symmetry	octagon	scalene	angles around a point	circumference
circle	corners	properties	polygon	trapezium	adjacent	dimensions
triangle	properties	cylinder	properties	rhombus	opposite	
3d shapes	pyramids	edges	prism	parallelogram	bisect	
cube	faces	vertices	orientations	kite		
sphere		vertex	angles	geometric shapes		
curved		dimensions	acute	quadrilaterals		
straight			obtuse			
flat			reflex			
repeat			turn			
patterns			horizontal			
			vertical			
			perpendicular			
			parallel			
			degrees			

Geometry – position and direction						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
over	position	clockwise	axis	co-ordinates	reflection	four quadrants
under	direction	anti-clockwise		first quadrant		co-ordinate plane
between	movement	straight line		grid		
through	whole turn (half, quarter)	rotation		translation		
on	beneath	arrange		plot		
in	around	sequence				
next to						
behind						
in front						
above						

Statistics						
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
sorting	compare	pictogram	horizontal	time graph	timetable	pie chart
		tally	vertical	discrete data	two-way table	mean
		block diagram	table	continuous data		average
		category	bar chart	line graph		
				comparison		
				calculate		
				interpret		