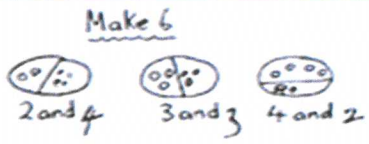
Wendover CE JS Calculation Policy: Addition +

Stage 1

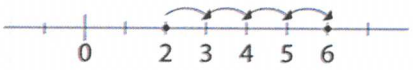
- Practical activities and discussion to relate addition to combining two groups of objects together.
- Order & Count numbers between 1 – 20
- Horizontal recordings with pictorial jottings

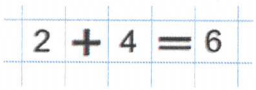


Vocabulary: Add, more, and, make, sum, total, altogether, score, plus, equals, how many more make…

Stage 2

- Understand addition can be in any order (commutativity)
- Adding a one-digit number or a multiple of 10 to a one-digit or two-digit number
- Learn to add 10 to any given number
- Understand doubling as addition e.g. 7+7 = 14
- Use a given number line or 100 square and count on
- Know quick recall number bonds to and within 10, 20, 50, 100
- Begin to partition (TU)
- Understand that subtraction is the inverse of addition , e.g. 6+4=10, so 10-4=6

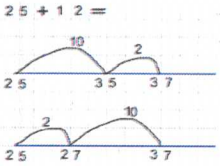


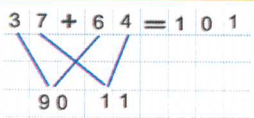


Vocabulary: + Add, addition, sum, inverse, plus, how many, equals, total, partition, altogether, how much more is…?

Stage 3

- Partition numbers (HTU)
- Use hundred square to count on & begin to take shortcuts eg. 25 + 12 (add 10 then add 2 or add 2 then 10)
- Pupils begin to use own empty number line
- Horizontal recording of partitioned calculation

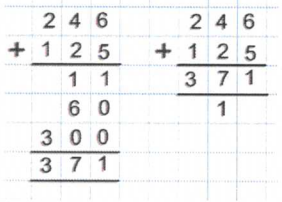




Vocabulary: Add, plus, altogether, how many, total, place value, columns, partition, total, hundreds, tens, units, ones, counting up/on, rounding, integers, carrying tens.

Stage 4

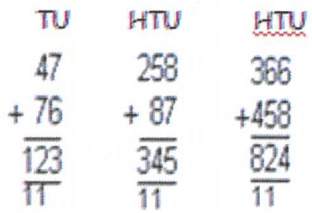
- Expanded method used.
- Pupils develop onto condensed column addition as an efficient written method to add two-digit and three-digit integers, carrying tens only
- Use Dienes equipment to model



Vocabulary: Place value, columns, partition, total, hundreds, tens, units, ones, counting up/on, rounding, integers, carrying tens.

Stage 5

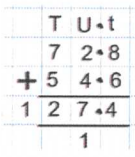
- Refine efficient written methods to add two-digit and three-digit whole numbers.
- Use of HTU above numbers is essential
- 'carrying' under the line
- Addition involving different units of measurement i.e. £, cm, etc.



Vocabulary: Carrying hundreds

Stage 6

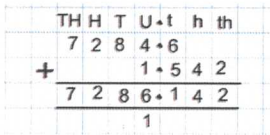
- Use efficient column addition to add decimals to integers
- Use of place value indicators numbers (column headings) is essential



Vocabulary: Decimal, tenths, hundredths

Stage 7

- Condensed method adding whole numbers, numbers with different numbers of digits, adding more than two numbers and decimals with up to three decimal places.
- Use of place value headings



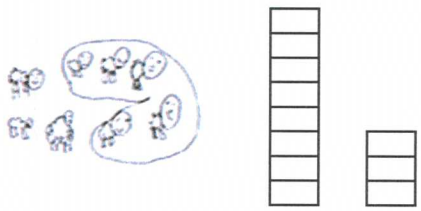
Vocabulary: Mixed numbers, decimal, tenths, hundredths,

A good mathematician is one who understands the problem and then chooses the appropriate method to solve it!

Wendover CE JS Calculation Policy: Subtraction -

Stage 1

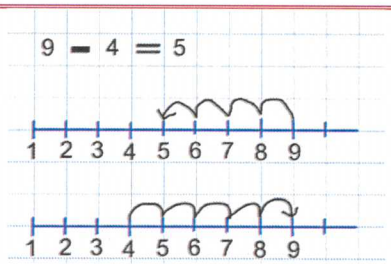
- Subtraction taught through physical action
- 'Taking away' and 'how many are left' solved through physical activities
- 'Take away' results in less than the original number
- Horizontal reading of numerals with pictures, eg. 8 take away 5 leaves 3
- Number line or track used to take numbers away
- Some informal recording



Vocabulary: Take away, leave. How many are left over? How many have gone? One less, two less, ten less. How many fewer is...than...?

Stage 2

- Start with single digits
- Subtraction understood firstly as 'taking away'
- 'Finding the difference' or 'distance' then taught.
- Vocabulary and symbols used to describe actions and to record number sentences
- Practical methods & informal written methods used to subtract simple numbers
- Given number lines and hundred square used to find the difference (counting on/up and back)

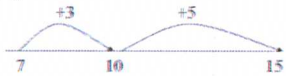


Vocabulary: - subtract, minus. How much less is...than...? =, equals, the difference between, forwards, backwards, count up, count back, count on

Stage 3

- Use of hundred square to take away, 10, 20, 30...
- Use of hundred square to take away (partition the number into tens and units)
- Use of numbered or empty number line to solve
- 'Find the difference' problems by counting on or back
  15 – 7 = 8 = 3+5

37-12 = 37 – 2 – 10 = 37- 10 -2

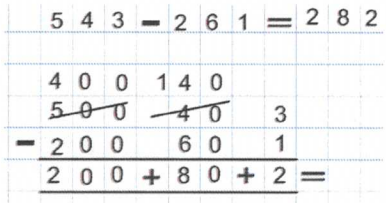


1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Vocabulary: One hundred less, crossing the tens boundary

Stage 4

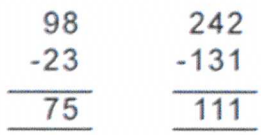
- Use previous strategies to solve problems using larger numbers (HTU), including multi-step problems
- Horizontal recording of number sentences
- Expanded subtraction method used with partitioning (subtract the units, subtract the tens, then subtract the hundreds)
- Exchanging (moving) between columns



Vocabulary: Exchange, crossing the hundreds boundary, hundreds, tens, units

Stage 5

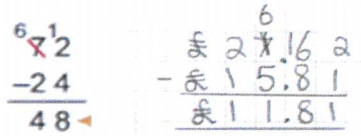
- Use of vertical subtraction (unpartitioned numbers, and no exchanging)
- Understand & use inverse operation to check



Vocabulary: Decrease, inverse

Stage 6

- Subtraction using more complex numbers with the need for exchanging (moving)
- Link back to exchanging in Stage 4
- Subtraction of decimals and numbers with different units of measure
- Use Dienes materials to model



Vocabulary: Exchange, 'take from the next column' and unit of measurement

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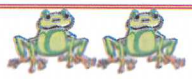
Wendover CE JS Calculation Policy: Multiplication X

Stage 1

- Double a number (use objects)
- Counting in tens
- Dienes blocks and cubes
- Bundles of tens



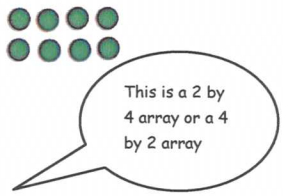
Vocabulary:
Equal
Double
Groups of, lots of

Stage 2

- Introduction of sign x and understand multiplication as repeated addition, e.g. 2+2+2+2=8
- Counting in 2s, 5s, 10s
- 'Groups of' jottings are recorded pictorially
- A more formal array is recorded
- Calculations involve 2s/5s/10s times tables
- Commutativity (3 x 4 = 4 x 3)

$2 \times 4 = 8$

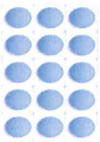
$4 \times 2 = 8$

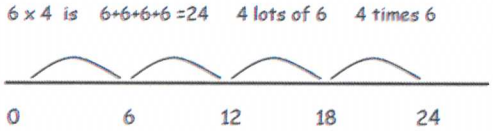


Vocabulary:
Multiply
Multiplication
Multiplied by
Array
Groups of, lots of
Product

Stage 3

- Number sentences recorded 3x5=15
- Further use of pictorial arrays
- Number line/beadstring using repeated addition





Vocabulary:

Once, twice, three times…
Repeated addition
Row
Column
Product

Stage 4

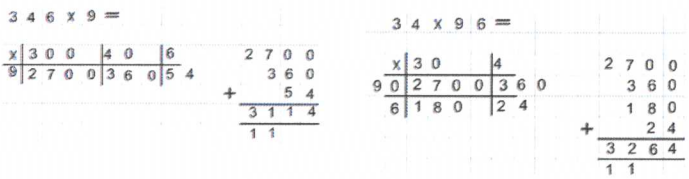
- Begin to use partitioning and record simple multiplication as a number sentence eg 25x4 = (20x4)/(5x4)
- Use grid method to calculate TU x U
- Dienes materials to model

X	2	0	5
4	8	0	2 0

Vocabulary:
Associated number facts
Product

Stage 5

- Grid method HTU x U and TU x TU
- Calculations involve times tables up to 12 x 12
- Column method for two digit numbers, chunking in columns, carrying

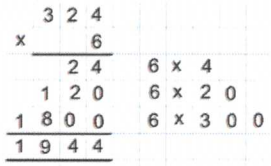


Vocabulary:

Associated number facts
Product

Stage 6

- Expanded short multiplication
- Unit x Unit, Unit x Tens, Unit x Hundreds
- Tens x Units, Tens x Tens, Tens x Hundreds

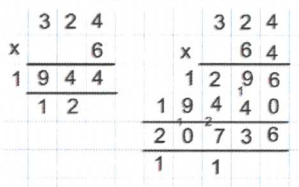


Vocabulary:

2 digit x 1 digit
2 digit x 2 digit
3 digit x 2 digit

Stage 7

- This stage will only be taught when a good understanding of the expanded method is shown.
- Formal short multiplication method begins HTU x T



Vocabulary:

2 digit x 1 digit
2 digit x 2 digit
3 digit x 2 digit

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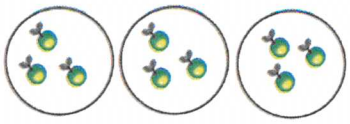
Wendover CE JS Calculation Policy: Division ÷

Stage 1

- Objects are shared out equally and objects within the groups are counted
- Objects are shared out through practical activities
- Informal recording will include jottings of pictorial groups
- Simple numbers are used (no remainder)
- Understand the difference between grouping and sharing

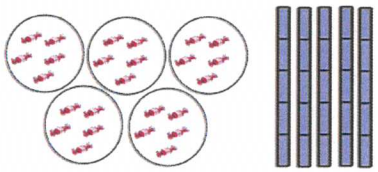


Vocabulary:

Half, halve, share, equal

Stage 2

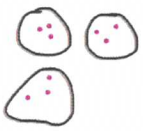
- The division sign is introduced ÷
- Objects / numbers are divided into equal groups using multiplication facts
- Arrays are used to understand number
- Informal written methods are used to record



Vocabulary: Division, divide, group, shared equally

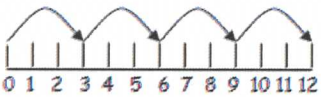
Stage 3

- Sharing/grouping taught as two aspects of division. Grouping is taught on a number line but sharing is taught using jottings.
- Division (repeated subtraction) seen as the inverse of multiplication (repeated addition)
- Left over numbers identified as remainders
- Use of numbered number line or track or beadstrings
- Link between sharing and grouping is taught so that children can use repeated subtraction



I share 12 sweets between 3 friends. How many do they get each? (SHARING)

$12 \div 3 = 4$



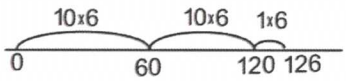
I have 12p. Sweets cost 3p each. How many can I buy? (GROUPING)

Vocabulary: Inverse, share equally, one each, two each..., pairs, threes, fours..., divide, divided by, divided into, left over, quotient, lots of, groups of, jumps

Stage 4

- Use of known strategies to divide three digit numbers by numbers up to 10
- Knowledge of factors (times tables) used to make larger jumps
- Remainders can be expressed (as r*n* where r is the remainder and *n* the number)
-

126 ÷ 6 =



Vocabulary: Factor, times-tables, remainder

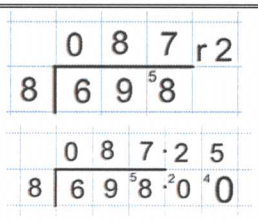
Stage 5

- Use of short division (bus stop) introduced
- Numbers with no remainders (where all digits are divisible by the divisor)
- Numbers with remainders, where there is a remainder in the units digit

Vocabulary: Divisible by

Stage 6

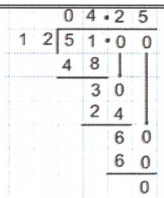
- 0 used as a place holder within the quotient where the digits are not divisible by the divisor
- Numbers are then introduced which have a remainder (expressed as r*n* where r is the remainder and *n* the number)
- Later on, remainders can be expressed as decimals/fractions



Vocabulary:
Divisor: The number that divides the dividend e.g. 18 ÷ 3 = 6. The divisor is 3.
Dividend: The number that is being divided in a division problem (see above, the dividend is 18).

Stage 7

- Use of long division introduced
- 2 digit divisors



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