

Winton's Mathematical Methods and Calculation Policy

Year 3 and 4

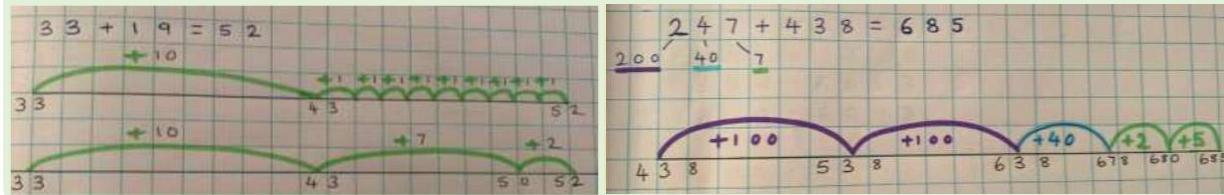


Addition

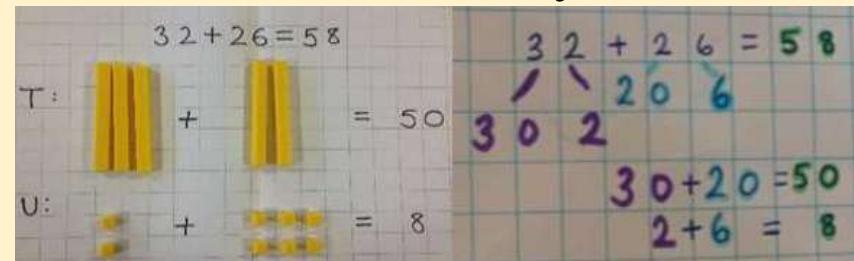
Vocabulary

add
 addend
 total
 increase
 more
 plus
 make
 sum
 altogether
 estimate
 number bonds

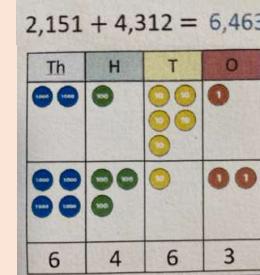
1. Number line (bridging 10s and 100s)



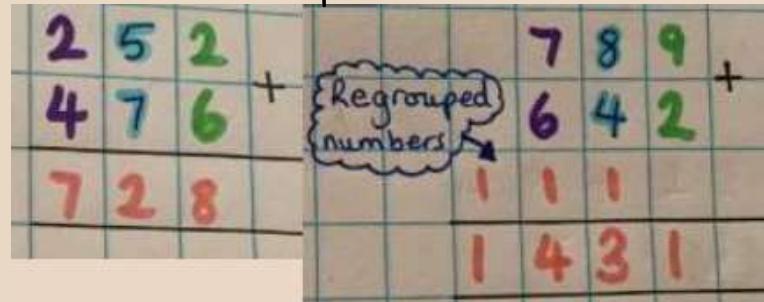
2. Partitioning



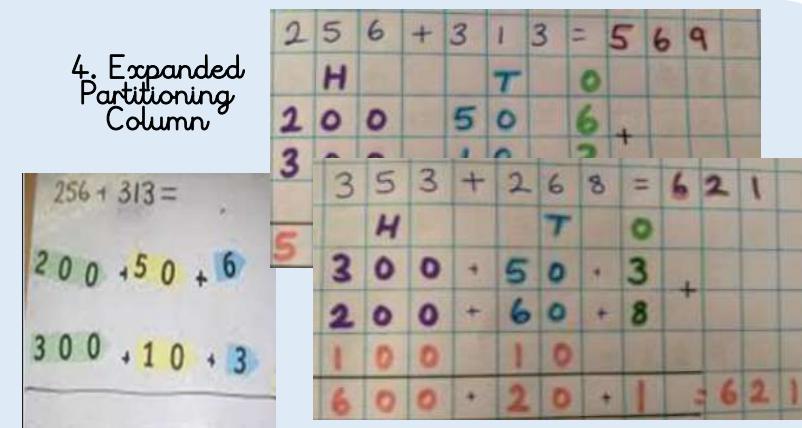
3. Expanded partitioning column with counters



5. Compact column



4. Expanded Partitioning Column

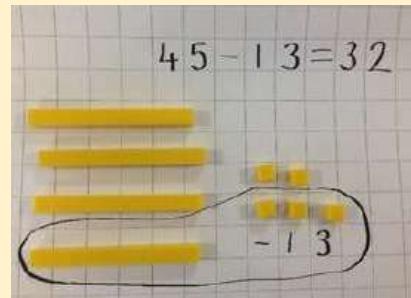


Subtraction

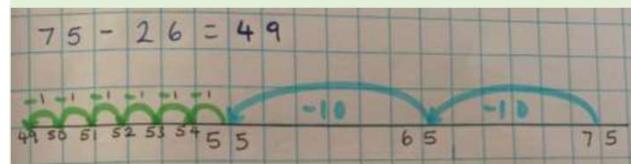
Vocabulary

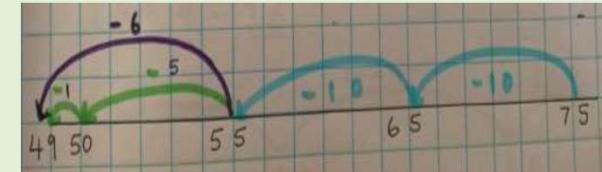
subtract
subtraction
total
decrease
less
minus
amount
estimate
difference
number bonds

2. Partitioning

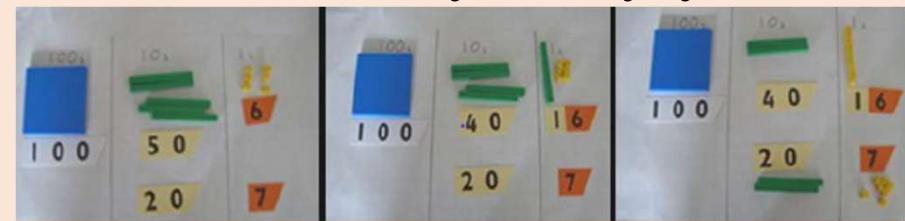
$$45 - 13 = 32$$


1. Number line (bridging 10)

$$75 - 26 = 49$$


$$75 - 6 = 69$$


3. Expanded Partitioning Column with dienes/ counters (including exchanging)



4. Expanded Partitioning Column

$$\begin{array}{r} 156 - 27 = 129 \\ H \quad T \quad O \\ 100 \quad 50 \quad 6 \\ - \quad 20 \quad 7 \\ \hline 100 + 20 + 9 = 129 \end{array}$$

5. Compact column

$$\begin{array}{r} 89137 \\ - 452 \\ \hline 485 \end{array}$$

Multiplication

Vocabulary

multiply
 multiplier
 product
 lots of
 inverse
 factors
 multiples
 square numbers



2. Grid Method

$$\begin{array}{r}
 3.2 \times 2.4 = 7.68 \\
 \times 2.0 \quad 4 \\
 3.60 \quad 12 \quad 60 \\
 0.2 \quad 4 \quad 0.8 \\
 \hline
 7.68
 \end{array}$$

$$\begin{array}{r}
 \times \quad 40 \quad | \quad 2 \\
 4 \quad | \quad 160 \quad | \quad 8 \\
 \hline
 42 \times 4 = 168 \\
 160 + 8 = 168
 \end{array}$$

x	0	1	2	3	4	5	6	7	8	9	10	11	12	13	100
3											30				300

1. Number line using known facts

$$\begin{array}{r}
 23 \times 4 = 92 \\
 \hline
 10 \times 4 \quad 10 \times 4 \quad 3 \times 4 \\
 0 \quad 40 \quad 80 \quad 92 \\
 10 \times 4 = 40 \\
 10 \times 4 = 40 \\
 3 \times 4 = 12
 \end{array}$$

3. Counters in a column

Tens	Ones
10 10 10	1 1 1 1
10 10 10	1 1 1 1

$$34 \times 2$$

5. Expanded column

$$\begin{array}{r}
 40 \quad 2 \\
 \times \quad 4 \\
 \hline
 8 \quad (4 \times 2) \\
 160 \quad (4 \times 40) \\
 \hline
 168
 \end{array}$$

4. Counters in a column (bridging)

H	T	O
100 100	10	1 1 1
100 100	10	1 1 1
100 100	10	1 1 1

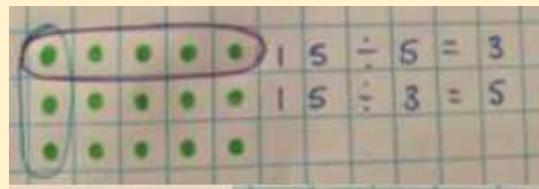
Sometimes with column method shown next to chart

Division \div

Vocabulary

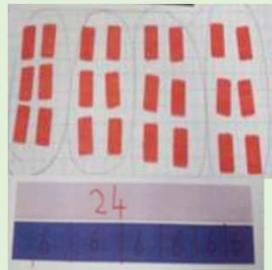
divisor
dividend
quotient
share
equal
groups of
inverse
multiples

2. Arrays to show commutative

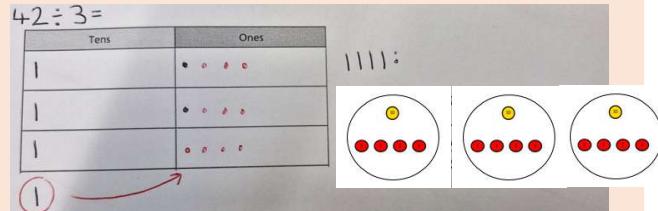


1. Sharing and arrays recap

$$8 \div 2 = 4$$



3. Divide as grouping (w/ remainders)



4. Subtracting using known number facts

$$20 \div 4 = 5$$

$$76 \div 4 = 19$$

Subtraction steps: 20 - 4 = 16, 16 - 4 = 12, 12 - 4 = 8, 8 - 4 = 4, 4 - 4 = 0. Multiplication facts: 2 \times 4 = 8, 7 \times 4 = 28, 10 \times 4 = 40.

6. Bus stop for short division (moving onto remainders)

$$27 \div 4 = 6 \text{ R } 3$$

Divisor: 4, Quotient: 6, Remainder: 3, Dividend: 27.

$$179 \div 5 = 35 \text{ R } 4$$

$$39 \div 5 = 7 \text{ R } 4$$

$$45 \div 5 = 9$$

5. Bus stop for short division (with place value counters)

$$4 \overline{)8} \quad \begin{array}{r} 2 \\ 8 \\ \hline 4 \end{array}$$

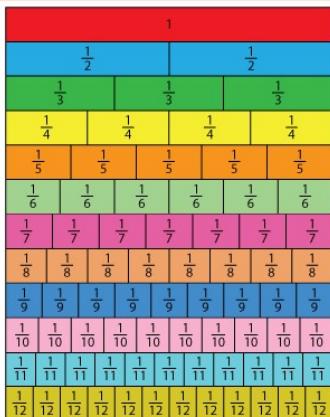
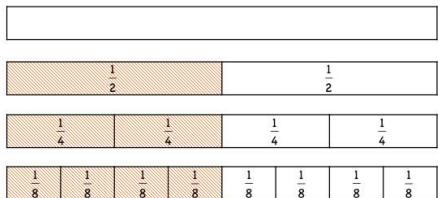
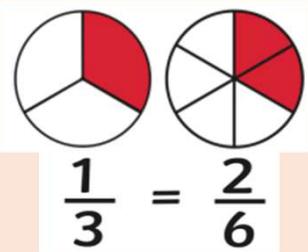
Place value counters: 2 tens, 8 ones, 4 tens.

Fractions

Vocabulary

numerator
denominator
unit fraction
non-unit fraction
equivalent
tenths
hundredths

Recognise and show, using diagrams, families of common equivalent fractions



Add and subtract fractions with the same denominators

$$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$$

$$\frac{6}{7} - \frac{2}{7}$$

Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.

$$\frac{1}{5} \text{ of } 30 = 6$$

$$30 \div 5 = 6$$

$$6 \times 1 = 6$$

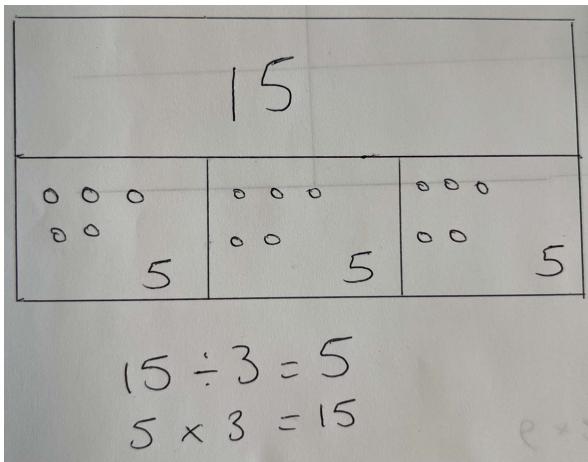
$$\frac{2}{5} \text{ of } 30 = 12$$

$$30 \div 5 = 6$$

$$6 \times 2 = 12$$

Number Facts

Use inverse operations to check answers to a calculation.



Multiplying and Dividing by 10, 100

1000	100	10	1		$\frac{1}{10}$	$\frac{1}{100}$
						

Multiplying

x 10

digits move LEFT 1 space
digits move LEFT 2 spaces

Dividing

÷ 10

digits move **RIGHT 1 space**
digits move **RIGHT 2 spaces**



Measure Facts

$$1\text{ km} = 1000\text{ m}$$



Im = 100cm

$$1000g = 1kg$$

$$1000\text{g} = 1\text{kg}$$

$$10\text{cm} = \frac{1}{10} \text{m} = 0.1\text{m} = 100\text{mm}$$

$$1\text{cm} = \frac{1}{100} \text{m} = 0.01\text{m} = 10 \text{ mm}$$

$$100 \text{ g} = \frac{1}{10} \text{ kg} = 0.1 \text{ kg}$$

$$1.1 \text{ kg} = 1\text{kg } 100\text{g} = 1\text{kg} + \frac{1}{10} \text{ kg}$$

Additional areas

Time

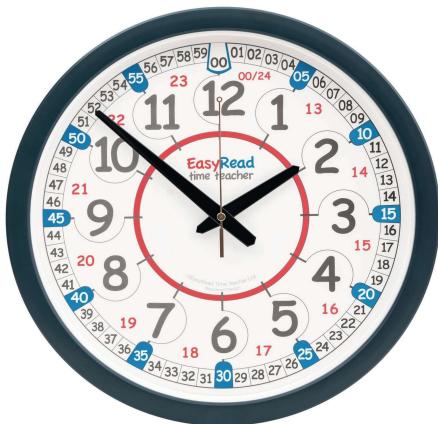
24 hours - 1 day

48 hours - 2 days

60 minutes - 1 hour

120 minutes - 2 hours

90 minutes - $1\frac{1}{2}$ hours



Money Facts

$$\text{£}5.00 \times 2 = \text{£}10.00$$

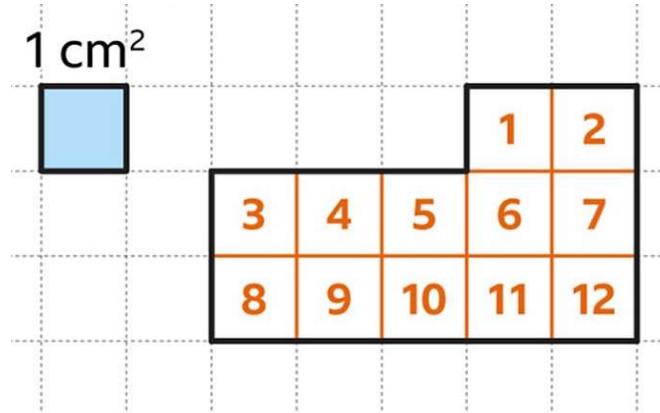
$$\text{£}500 \times 2 = \text{£}1000$$

$$\text{£}2.50 \times 4 = \text{£}10.00$$

$$\text{£}250 \times 4 = \text{£}1000$$

$$\text{£}2.00 \times 5 = \text{£}10.00$$

$$\text{£}200 \times 5 = \text{£}1000$$



$$\text{Area} = 12\text{cm}^2$$

$$\text{Perimeter} = 20\text{cm}$$

$$4+6 = 10$$

$$4+2+2+2 = 10$$

