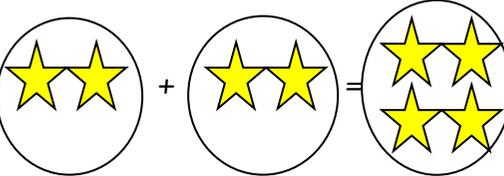
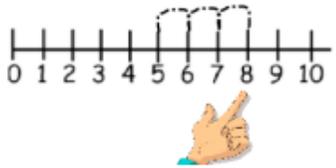
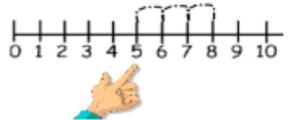


Foundation Stage

Count reliably with numbers from one to 20.

ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
<ul style="list-style-type: none"> Find which number is <i>one more or one less</i> than a given number. *Make sure children are secure about the order of numbers before asking what comes after or before each number* Using <i>quantities</i> and <i>objects</i>, add and subtract two single digit numbers and <i>count on or back</i> to find the answer. 		<ul style="list-style-type: none"> <i>Solve problems</i>, including <i>doubling, halving and sharing</i>. 	
<p>Begin to relate addition to combining two groups of objects.</p>  <p>Use fingers to find one more than a number to 9.</p>  <p align="center">$5 + 1 = 6$</p> <p>Count forwards along the number line/hundred square.</p> <p>$5 + 3 = 8$</p>  <p>Use abacus/beads to add (combining two groups)</p> 	<p>Begin to relate subtraction to 'taking away' and counting how many objects are left.</p>  <p align="center">$5 - 1 = 4$</p> <p>Use fingers to find one less than 10.</p>  <p align="center">$5 - 1 = 4$</p> <p>Count backwards along a number line/hundred square.</p> <p>$8 - 3 = 5$</p>  <p>Use abacus/beads to 'take away'.</p>	<p>Real life contexts and use of practical equipment to count in repeated groups of the same size:</p> <ul style="list-style-type: none"> Count in <i>twos</i>; <i>fives</i>; <i>tens</i> (Use related vocabulary) 	<p>Share objects into equal groups (Use related vocabulary)</p> <p>Activities might include:</p> <ul style="list-style-type: none"> Sharing toys/equipment Cooking. Separate a given number of objects into small groups. <p>For example 'I have 6 raisins. How many will you get each' (2 children).</p>
<ul style="list-style-type: none"> Make a record in pictures, words or symbols of addition and subtraction activities. Construct number sentences with practical activities. 			
<ul style="list-style-type: none"> Use of rhymes, songs, stories and games involving counting on and back in ones, twos, fives and tens. 			

Year 1

- Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.
- Count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s.

ADDITION

SUBTRACTION

MULTIPLICATION

DIVISION

- Read, write and interpret maths statements including +, -, =.
- Represent and use number facts **within 20**.
- Add and subtract one and two-digit **numbers to 20 including 0**.
- Solve **one step problems** that involve addition and subtraction using **concrete objects** and **pictorial representations**, and **missing number problems**.
- Use the vocabulary related to addition and subtraction and symbols to describe and record addition and subtraction number sentences.

- Double and halve numbers to 20
- Solve **one step problems** involving multiplication and division, calculating the answer using **concrete objects**, **pictorial representations** and **arrays** with the support of the teacher.

+ = signs and missing numbers

(Missing numbers placed in all possible places).

$$13 + 4 = \square \qquad \square = 13 + 4$$

$$3 + \square = 17 \qquad 17 = \square + 4$$

$$\square + 4 = 17 \qquad 7 = 13 + \square$$

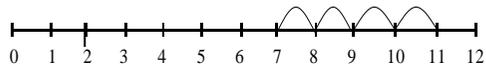
$$\square + \nabla = 17 \qquad 17 = \square + \nabla$$

Children need to understand the concept of equality before using the = sign. Calculations should be written either side of the equality sign so that the sign is not just interpreted as 'the answer'.

Number lines (numbered to 20)

Use a numbered line to count on in ones.

7 + 4



Children record by drawing jumps on prepared & constructed lines.

(Teachers model using empty number lines & jottings appropriate for larger numbers).

For problem solving refer to DfES Madels & Images

- = signs and missing numbers

$$17 - 3 = \square \qquad \square = 17 - 3$$

$$17 - \square = 4 \qquad 4 = \square - 3$$

$$\square - 13 = 4 \qquad 4 = 17 - \square$$

$$\square - \nabla = 4 \qquad 4 = \square - \nabla$$

Children should understand subtraction as 'take away' using pictures/marks and counting back on a number line.

Pictures / marks

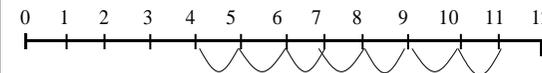
Sam spent 8p. What was his change from 20p?



Number lines (numbered to 20)

11 - 7

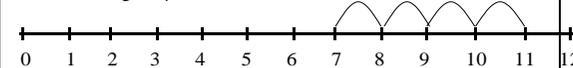
(Counting back)



Children should find a 'difference' by counting up:

The difference between 7 and 11

(Counting up)



Children record by drawing jumps on prepared & constructed lines.

(Teachers model using empty number lines & jottings appropriate for larger numbers).

Multiplication is related to doubling and counting groups of the same size using concrete objects, pictorial representations and arrays (with the support of the teacher).

Counting using a variety of practical resources

Counting in 2s e.g. counting socks, shoes, animal's legs...

Counting in 5s e.g. counting fingers, fingers in gloves, toes...

Counting in 10s e.g. fingers, toes...

For problem solving refer to DfES Madels & Images

Through grouping and sharing small quantities, children begin to understand division. Finding simple fractions of objects, numbers and quantities.

Pictures / marks

12 children get into teams of 4 to play a game. How many teams are there?



Year 2

- Count in steps of 2, 3 and 5 from 0 and in tens from any number forwards and backwards.
 - Recognise the place value of each digit in a 2 digit number.
 - Recall and use multiplication and division facts for 2s, 5s and 10.

ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
<ul style="list-style-type: none"> • Solve problems with addition and subtraction using concrete objects, pictorial representations, including those involving numbers, quantities and measures. • Recall and use addition and subtraction facts to 20 fluently and derive and use related facts to 100. • Add and subtract numbers using equipment and pictures and mentally including: 2 digit number and ones ($18 + 3$); 2 digit number and tens ($18 + 10$); Two 2 digit numbers ($18 + 13$); Adding three 1 digit numbers ($5+6+7$). • Show addition can be done in any order but subtraction cannot. • Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. 		<ul style="list-style-type: none"> • Recall and use \times and \div facts for 2, 5 and 10 tables including recognising odd and even numbers. • Calculate mathematical statements for \times and \div within the multiplication tables and write them using the \times, \div and $=$ signs. • Show multiplication can be done in any order (commutative) and division cannot. • Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and \times and \div facts including problems in context. • Connect the $\times 10$ times table to place value. 	

+ = signs and missing numbers

Continue using a range of equations as in Year 1 but with appropriate, larger numbers.

Extend to

$14 + 5 = 10 + \square$

and adding three numbers

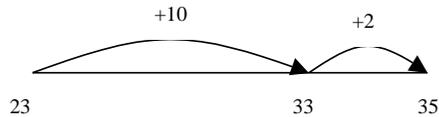
$32 + \square + \square = 100$ $35 = 1 + \square + 5$

Partition into tens and ones and recombine

$12 + 23 = 10 + 2 + 20 + 3$
 $= 30 + 5$
 $= 35$

Refine to partitioning the second number only:

$23 + 12 = 23 + 10 + 2$
 $= 33 + 2$
 $= 35$



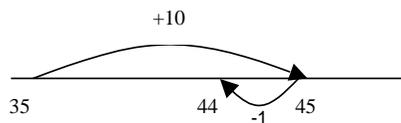
The steps in addition often bridge through a multiple of 10. Children should be able to partition a number accordingly to bridge through the multiple of 10.

Once secure begin expanded columnar method

$20 + 3$
 $10 + 2$
 $30 + 5$

Add 9 or 11 by adding 10 and adjusting by 1

$35 + 9 = 44$



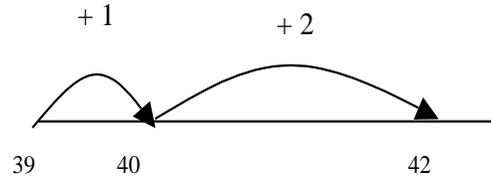
- = signs and missing numbers

Continue using a range of equations as in Year 1 but with appropriate numbers.

Extend to $14 + 5 = 20 - \square$

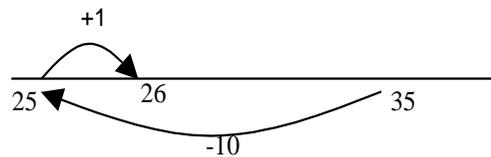
Find a small difference by counting up

$42 - 39 = 3$



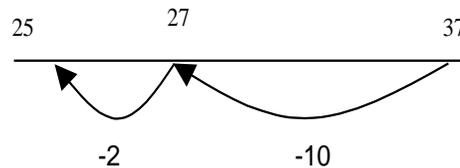
Subtract 9 or 11. Begin to add/subtract 19 or 21

$35 - 9 = 26$



Use known number facts and place value to subtract (partition second number only).

$37 - 12 = 37 - 10 - 2$
 $= 27 - 2$
 $= 25$



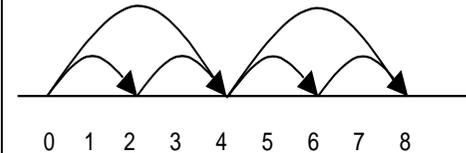
Bridge through 10 where necessary.

x = signs and missing numbers

$7 \times 2 = \square$ $\square = 2 \times 7$
 $7 \times \square = 14$ $14 = \square \times 7$
 $\square \times 2 = 14$ $14 = 2 \times \square$
 $\square \times \nabla = 14$ $14 = \square \times \nabla$

Arrays and repeated addition

4×2 or $4 + 4$
 2×4 or $2 + 2 + 2 + 2$



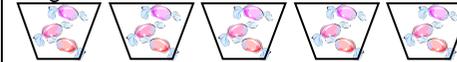
Doubling multiples of 5 up to 50

$15 \times 2 = 30$

Solve problems using materials, arrays and repeated addition:

There are 3 sweets in one bag.

How many sweets are there in 5 bags?



(Recording on a number line modelled by the teacher)

Use of bead strings to model groups of.



÷ = signs and missing numbers

$6 \div 2 = \square$ $\square = 6 \div 2$
 $6 \div \square = 3$ $3 = 6 \div \square$
 $\square \div 2 = 3$ $3 = \square \div 2$
 $\square \div \nabla = 3$ $3 = \square \div \nabla$

Understand division as sharing and grouping

Sharing - 6 sweets are shared between 2 people. How many do they have each?



Grouping - There are 6 sweets. How many people can have 2 each? (How many 2's make 6?)

Find fractions

$\frac{1}{3}$ $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$

Of a length, shape, set of objects or quantity.

For pictorial images refer to DfES Models & Images

Year 3

- Count from 0 in multiples of 3, 4, 8, 50 and 100.
- Read and write numbers up to 1000 in numerals and in words.
 - Count up and down in tenths.

ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
<ul style="list-style-type: none"> • Add and subtract numbers <i>mentally</i>, including: <ul style="list-style-type: none"> A 3 digit number and ones A 3 digit number and tens A 3 digit number and 100s • Add and subtract numbers with up to 3 digits, using <i>formal written methods of columnar addition and subtraction</i>. • <i>Estimate</i> the answer to a calculation and use <i>inverse operations</i> to check answers • <i>Solve problems</i>, including missing number problems, using <i>number facts, place value, and more complex addition and subtraction</i>. • Add and subtract fractions with the <i>same denominator within one whole</i>. • Add and subtract amounts of money to give change, using both £ and p in <i>practical contexts</i>. 		<ul style="list-style-type: none"> • Pupils continue to practise their <i>mental recall of multiplication tables</i> when they are calculating mathematical statements in order to improve fluency. Through doubling, they <i>connect the 2, 4 and 8 multiplication tables</i>. • Pupils <i>develop efficient mental methods</i>, for example, using <i>commutativity and associativity</i> (for example, $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) and <i>multiplication and division facts</i> (for example, using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 = 6 \div 3$) to <i>derive related facts</i> (for example, $30 \times 2 = 60$, $60 \div 3 = 20$ and $20 = 60 \div 3$). • Pupils <i>develop reliable written methods for multiplication and division</i>, starting with calculations of two-digit numbers by one-digit numbers and <i>progressing to the formal written methods of short multiplication and division</i> (Non Statutory) • Recognise that tenths arise from dividing an object into 10 equal parts and in <i>dividing one digit numbers or quantities by 10</i>. 	
<ul style="list-style-type: none"> • Pupils <i>solve simple problems</i> (one and two step) in contexts, <i>deciding which of the four operations to use and why</i>. These include <i>measuring and scaling contexts</i>, (for example, four times as high, eight times as long etc.) and correspondence problems in which m objects are connected to n objects. <ul style="list-style-type: none"> • <i>Solve problems that involve fractions</i>. 			

+ = signs and missing numbers

Continue using a range of equations with appropriate, larger numbers.

Add a near multiple of 10 to a two-digit & three digit number

Continue as in Year 2 but with appropriate numbers

e.g. $35 + 19$ is the same as $35 + 20 - 1$.

Partition into hundreds, tens and ones and recombine

Partition both numbers and recombine.

Refine to partitioning the second number only e.g.

$$\begin{aligned} 136 + 53 &= 100 + 50 + 30 + 6 + 3 \\ &= 100 + 80 + 9 \\ &= 189 \end{aligned}$$

Pencil and paper procedures

Column addition (expanded progressing to compacted)

Horizontal expansion or vertical expansion.

$$183 + 42 = 225$$

$$100 + 80 + 3$$

$$+ 40 + 2$$

$$100 + 120 + 5 = 225$$

$$183$$

$$\begin{array}{r} + 42 \\ \hline 5 \end{array}$$

$$120$$

$$\begin{array}{r} \underline{100} \\ 225 \end{array}$$

$$225$$

Compacted

$$183$$

$$+ 42$$

$$\hline 225$$

$$|$$

Adding fractions with the same denominator

$$\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$$

$$\frac{7}{7} = 1$$

For problem solving refer to DfES Models & Images

- = signs and missing numbers

Continue using a range of equations with appropriate numbers.

Find a small difference by counting up

Continue as in Year 2 but with appropriate numbers e.g. $102 - 97 = 5$

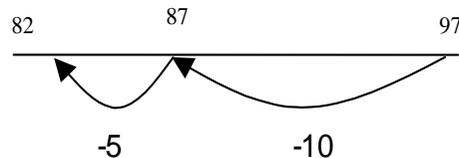
Subtract mentally a 'near multiple of 10' to or from a two-digit & three digit number

Continue as in Year 2 but with appropriate numbers e.g. $78 - 49$ is the same as $78 - 50 + 1$

Use known number facts and place value to subtract

Continue as in Year 2 but with appropriate numbers e.g.

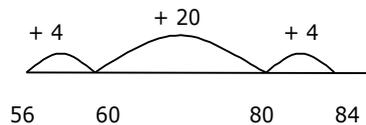
$$97 - 15 = 72$$



Pencil and paper procedures

Complementary addition

$$84 - 56 = 28$$



Column subtractions (expanded progressing to compacting) refer to column addition examples.

Subtracting fractions with the same denominator (see addition example).

x = signs and missing numbers

Continue using a range of equations with appropriate numbers.

Partitioning: Grid Method progressing to short multiplication.

Use known facts and place value to carry out simple multiplications e.g. $32 \times 3 = 96$

$$\begin{array}{r|l} \times & 30 & 2 \\ \hline 3 & 90 & 6 \end{array}$$

Short multiplication (Non Statutory)

$$\begin{array}{r} 24 \\ \times 6 \\ \hline 144 \\ 2 \end{array}$$

÷ = signs and missing numbers

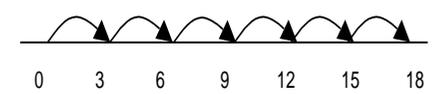
Continue using a range of equations with appropriate numbers.

Understand division as sharing and grouping

$18 \div 3$ can be modelled as:

Sharing - 18 shared between 3 (see Year 2 diagram)

Grouping - How many 3's make 18?



$$63 \div 3 = 21$$

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Progress to chunking & short division (Non Statutory)

$98 \div 7$ becomes

$$\begin{array}{r} 14 \\ 7 \overline{) 98} \end{array}$$

Year 4

- Count in multiples of 6, 7, 9, 25 and 1000
- Count backwards to include negative numbers and fractions.
 - Read and write 4 digit numbers.
 - Read roman numerals to 100.
- Count up and down in hundredths.

Addition

Subtraction

Multiplication

Division

- Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.
- Estimate and use inverse operations to check answers to a calculation.
- Solve addition and subtraction two step problems in contexts, deciding which operations and methods to use and why.
- Add and subtract fractions with the same denominator.

- Recall multiplication and division facts for multiplication tables up to 12×12 .
- Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers.
- Recognise and use factor pairs and commutativity in mental calculations.
- Multiply 2 digit and 3 digit numbers by a 1 digit number using formal written layout.
- Solve problems involving multiplying and adding, using the distributive law to multiply 2 digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.
- Divide a one or two-digit number by 10 and 100, identifying the value of digits in the answer as ones, tenths and hundredths.

- Solve number and practical problems (two step) involving 4 digit numbers.
- Solve simple measure and money problems (two step) involving fractions and decimals to two decimal places.

+ = signs and missing numbers

Continue using a range of equations as in Year 3 but with appropriate larger numbers (4 digits).

Pencil and paper procedure
Column addition (expanded and compacted)

Expanded example see Year 3.

$$\begin{array}{r}
 7 \ 8 \ 9 \\
 + \ 6 \ 4 \ 2 \\
 \hline
 1 \ 4 \ 3 \ 1 \\
 1 \ 1
 \end{array}$$

Answer: 1431

Extend to decimals in the context of money (vertically).

£ 2.50 + £ 1.75 = £ 4.25

$$\begin{array}{r}
 \pounds \ 2.50 \\
 + \ \pounds \ 1.75 \\
 \hline
 \pounds \ 4.25 \\
 |
 \end{array}$$

(Revert to expanded methods if the children experience any difficulty).

- = signs and missing numbers

Continue using a range of equations as in Year 3 but with appropriate larger numbers (4 digits).

Pencil and paper procedures
Column subtraction (expanded and compacted)

Expanded example see Year 3.

$ \begin{array}{r} 8 \ 7 \ 4 \\ - \ 5 \ 2 \ 3 \\ \hline 3 \ 5 \ 1 \end{array} $	$ \begin{array}{r} \ 12 \ 1 \\ \ 9 \ 3 \ 2 \\ - \ 4 \ 5 \ 7 \\ \hline 4 \ 7 \ 5 \end{array} $
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Answer: 351

Answer: 475

Extend to decimals in the context of money (vertically).

x = signs and missing numbers

Continue using a range of equations as in Year 3 but with appropriate numbers

Multiply two and three digit numbers by a one digit using formal written layout:

Pencil and paper procedures

Short Multiplication

24 x 6 becomes

$$\begin{array}{r}
 2 \ 4 \\
 \times \ 6 \\
 \hline
 1 \ 4 \ 4 \\
 2
 \end{array}$$

Answer: 144

342 x 7 becomes

$$\begin{array}{r}
 3 \ 4 \ 2 \\
 \times \ 7 \\
 \hline
 2 \ 3 \ 9 \ 4 \\
 2 \ 1
 \end{array}$$

Answer: 2394

(Revert to grid method if the children experience any difficulty).

÷ = signs and missing numbers

Continue using a range of equations as in Year 3 but with appropriate numbers.

Focus upon mental division using place value, know and derived facts.

For example:

42 ÷ 6 = 7

420 ÷ 6 = 70

420 ÷ 60 = 7

Pencil and paper procedures

Chunking

977 ÷ 36 is approximately 1000 ÷

40 = 25

$$\begin{array}{r}
 977 \\
 - \ 720 \quad (20 \text{ groups}) \\
 \hline
 257
 \end{array}$$

$$\begin{array}{r}
 257 \\
 - \ 180 \quad (5 \text{ groups}) \\
 \hline
 77
 \end{array}$$

$$\begin{array}{r}
 77 \\
 - \ 72 \quad (2 \text{ groups}) \\
 \hline
 5
 \end{array}$$

Answer: 27 r 5

Practise to become fluent in the formal written methods of short division with exact amounts:

Short division (Non Statutory)

98 ÷ 7 becomes

$$\begin{array}{r}
 1 \ 4 \\
 7 \overline{) 9 \ 8} \\
 \ 2
 \end{array}$$

Answer: 14

Solve scaling problems e.g. distances on maps and ingredients in cooking.

Year 5

- Read, write, order and compare numbers to **at least 1,000,000** and determine the value of each digit.
- Count forwards or backwards in **steps of powers of 10 for any given number up to 1,000,000**.
- Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers including through zero.

ADDITION

SUBTRACTION

MULTIPLICATION

DIVISION

- Add and subtract numbers with more than 4 digits using formal written methods.
- Add and subtract numbers mentally with increasingly large numbers.
- Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.
- Solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why.
- Add and subtract fractions of the same denominator and denominators that are multiples of the same number.

- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.
- Know and use the vocabulary of prime numbers, prime factors and composite (non- prime) numbers.
- Establish whether a number up to 100 is prime and recall prime numbers up to 19.
- Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.
- Multiply and divide numbers mentally drawing upon known facts.
- Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.
- Multiply proper fractions and mixed numbers by whole numbers supported by materials and diagrams
- Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

- Solve problems involving number up to three decimal places
- Solve problems which require knowing percentage and decimal equivalents of $1, \frac{1}{2}, \frac{1}{4}, \frac{2}{5}, \frac{4}{5}$ and those with a denominator of a multiple of 10 or 25.
- Use all four operations to solve involving measure.

+ = signs and missing numbers

Continue using a range of equations as in Year 4 but with appropriate numbers.

Pencil and paper procedures

Continue as in Year 4 with numbers up to 1,000,000

With all calculations ensure children use their knowledge of number to create a sensible estimate and use this as a method of checking.

Extend to numbers with any number of digits and decimals with any number of decimal places.

124.9 + 117.25 = 242.15

$$\begin{array}{r}
 124.90 \\
 + 117.25 \\
 \hline
 242.15 \\
 \hline
 \end{array}$$

Extend to decimals with different decimal places

Add and subtract fractions with the same denominator (using as many visual resources as possible-

chocolate/pizzas) *adjust fractions*

1/3 + 1/3 = 2/3

3/8 + 1/8 = 4/8

1/4 + 3/8 = 2/8 + 3/8 = 5/8

3/5 + 1/10 = 6/10 + 1/10 = 7/10

4/7 - 3/7 = 1/7

3/8 - 1/4 = 3/8 - 2/8 = 1/8

- = signs and missing numbers

Continue using a range of equations as in Year 4 but with appropriate numbers.

Pencil and paper procedures

Continue as in Year 4 with numbers up to 1,000,000

With all calculations ensure children use their knowledge of number to create a sensible estimate and use this as a method of checking

Column method using decomposition

932 - 457 becomes

$$\begin{array}{r}
 8 12 1 \\
 9 3 2 \\
 - 4 5 7 \\
 \hline
 4 7 5 \\
 \hline
 \end{array}$$

Answer: 475

(Extend this method to include decimals)

x = signs and missing numbers

Continue using a range of equations as in Year 4 but with appropriate numbers

Pencil and paper procedures

Short Multiplication

342 x 7 becomes

$$\begin{array}{r}
 342 \\
 \times 7 \\
 \hline
 2394 \\
 \hline
 \end{array}$$

Answer: 2394

Long Multiplication:

$$\begin{array}{r}
 24 \\
 \times 18 \\
 \hline
 192 \\
 240 \\
 \hline
 432 \\
 \hline
 \end{array}$$

Extend to decimals with up to two decimal places: eg. 12.5 x 2.5 - 2 dp in question so 2 dp will be in answer. Remove dp and x then add dp back in answer

$$\begin{array}{r}
 125 \\
 \times 25 \\
 \hline
 625 \\
 2500 \\
 \hline
 3125 \\
 \hline
 \end{array}$$

so 12.5 x 2.5 = 31.25

+ = signs and missing numbers

Continue using a range of equations as in Year 5 but with appropriate numbers.

Pencil and paper procedures

Short Division (Bus stop method)

98 ÷ 7 becomes

$$\begin{array}{r}
 14 \\
 7 \overline{) 98} \\
 \underline{7} \\
 28 \\
 \underline{28} \\
 0
 \end{array}$$

Answer: 14

Word problems to interpret remainders:

432 pens need to be packed into boxes of 5. How many full boxes will there be and how many pens are left over?

432 ÷ 5 becomes

$$\begin{array}{r}
 86 \text{ r}2 \\
 5 \overline{) 432} \\
 \underline{40} \\
 32 \\
 \underline{30} \\
 2
 \end{array}$$

7

Answer: 86 remainder 2

So there are 86 boxes and 2 pens left over.

Or: 432 children need to go on a school trip.

They can travel in cars which seat 5. How many cars will we need to get all of the children there?

Answer: 86 full cars, 2 children need another car, so 87 cars in total.

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Year 6			
Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.			
ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
<ul style="list-style-type: none"> Solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why. Solve problems involving addition and subtraction. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. 		<ul style="list-style-type: none"> Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication. Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context. Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. Perform mental calculations, including with mixed operations and large numbers Identify common factors, common multiples and prime numbers. Solve problems involving multiplication and division. Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. Multiply simple pairs of proper fractions, writing the answer in its simplest form. <ul style="list-style-type: none"> Divide proper fractions by whole numbers. Multiply one-digit numbers with up to two decimal places by whole numbers. Use written division methods in cases where the answer has up to two decimal places. 	

- Use their knowledge of the order of operations to carry out calculations involving the four operations (BIDMAS).

- Solve problems which require answers to be rounded to specific degrees of accuracy.
- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
 - Solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison.
 - Solve problems involving similar shapes where the scale factor is known or can be found.
 - Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
- Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate.
 - Calculate the area of parallelograms and triangles.
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [for example, mm^3 and km^3].
 - Calculate and interpret the mean as an average.

+ = signs and missing numbers

Continue using a range of equations as in Year 5 but with appropriate numbers.

Pencil and paper procedures

Column Addition

Continue as in Year 4 with numbers up to 10 000 000.

With

Extend to numbers with any number of digits and decimals with any number of places (See Year 5 example).

Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Add and subtract fractions with different denominators and mixed numbers using equivalent fractions

$$\begin{array}{r} 4 + 3 \\ 6 \quad 8 \end{array} \quad \begin{array}{r} 16+9 \\ 24 \quad 24 \end{array} = \begin{array}{r} 25 \\ 24 \end{array} = 1 \frac{1}{24}$$

- = signs and missing numbers

Continue using a range of equations as in Year 5 but with appropriate numbers.

Pencil and paper procedures

Column method using decomposition

See Year 5 example.

(Extended to include decimals).

x = signs and missing numbers

Continue using a range of equations as in Year 5 but with appropriate numbers.

Pencil and paper procedures

Long & Short Multiplication

Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication (and short multiplication where appropriate).

See Year 5 example.

Multiply one digit numbers with up to 2 decimal places by whole numbers (using short multiplication).

Multiply simple pairs of proper fractions.

$$\begin{array}{r} 1 \\ 4 \end{array} \times \begin{array}{r} 1 \\ 2 \end{array} = \begin{array}{r} 1 \\ 8 \end{array}$$

(Simplify answer).

÷ = signs and missing numbers

Continue using a range of equations as in Year 5 but with appropriate numbers.

Pencil and paper procedures

Divide numbers up to 4 digits by a two-digit number using the formal written method of long division and short division (where appropriate).

Long Division

432 ÷ 15 becomes

$$\begin{array}{r} 28 \text{ r}12 \\ 15 \overline{)432} \\ \underline{300} \\ 132 \\ \underline{120} \\ 12 \end{array}$$

(Interpret remainders as whole numbers).

Extend to interpret remainders as fractions and decimals (Non Statutory).

Divide proper fractions by whole numbers

$$\begin{array}{r} 1 \\ 3 \end{array} \div \begin{array}{r} 2 \\ 6 \end{array} = \begin{array}{r} 1 \\ 6 \end{array}$$