Year 4

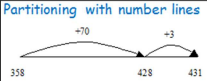
Number – addition and subtraction

add numbers mentally, including:

- *a four-digit number and ones*
- *a four-digit number and tens*
- *a four-digit number and hundreds*
- *a four-digit number and thousands*

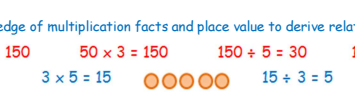
Counting on 3115 + 2 "Put 3115 in your head, 3116, 3117."	Adding near numbers and adjusting 7433 + 90 = 7433 + 100 – 10 = 7533 – 10 = 7523
Partition number and recombine 5127 + 2000 = 5000 + 100 + 20 + 7 + 2000 = 7000 + 100 + 20 + 7 = 7127	Count on by splitting units to make next multiple of ten/hundred 2360 + 500 = 2360 + 400 + 40 + 60 = 2400 + 400 + 60 = 2860

- *three and two-digit numbers*

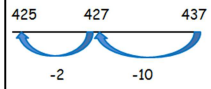
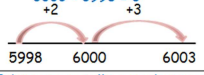
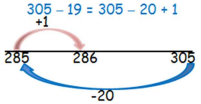
Partition both numbers into hundreds, tens and ones and recombine 358 + 73 = 300 + 50 + 8 + 70 + 3 = 300 + 120 + 11 = 420 + 11 = 431	Partition second number only into hundreds, tens and ones and recombine 358 + 73 = 358 + 70 + 3 = 428 + 3 = 431
Partitioning with number lines  	Add the nearest multiple of 10 or 100, then adjust 458 + 79 = 458 + 80 - 1

subtract numbers mentally, including:

- *a four-digit number and ones*
- *a four-digit number and tens*
- *a four-digit number and hundreds*
- *a four-digit number and thousands*

Counting back: 5263 - 5 "Put 5263 in your head, 5262, 5261, 5260, 5259, 5258."	Use unprepared numbered lines to subtract, by counting back: 1516 – 400 = 1116 
Subtract mentally a 'near multiple of 10' to or from a two-digit number: 3678 – 90 = 3678 – 100 + 10	

- *three and two-digit numbers*

Use known number facts and place value to subtract (partition second number only) 437 – 12 = 437 – 10 – 2 = 427 – 2 = 425  	Find a small difference by counting up 6003 - 5998 = 5  Subtract mentally a number near 10 to or from a two-digit number 305 – 19 = 305 – 20 + 1 

add numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate *(see Appendix 1)*

Column addition

```
 2358
+ 373
 2731
  11
```

To ensure conceptual understanding, it is essential that place value is reinforced by frequently.
Discussing the actual value of each digit, e.g. the 5 digit represents 5 hundreds.

Use base 10 (Diennes) or place value counters to support understanding of carrying and to ensure conceptual understanding of place value (see year 2 and 3 for how to use these manipulatives).

Including decimals

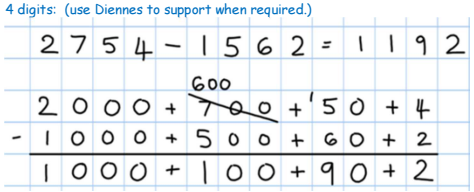
```
 72.8
+ 54.6
 127.4
   1
```

To ensure conceptual understanding, it is essential that place value is reinforced by frequently discussing the actual value of each digit, e.g. the 2 digit represents 2 tens.

Use money to support understanding.

subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate *(see Appendix 1)*

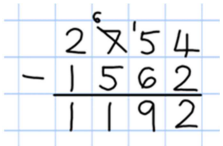
Revision of partitioned column method from Year 3. Moving on to numbers with 4 digits: (use Diennes to support when required.)



Column Subtraction without decomposition

```
 458
- 232
 226
```

Column Subtraction with decomposition
Once pupils are confident in exchanging and have a clear understanding of place value, move towards the formal compact column method: (use Diennes to support when required.)



Number – multiplication and division

recall multiplication facts for multiplication tables up to 12 × 12

Play games, chant, test etc to increase speed of recalling facts.
Make models and images to display facts.
Investigate patterns within tables.

use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers
practise and extend mental methods to three-digit numbers to derive facts, (for example 600 ÷ 3 = 200 can be derived from 2 x 3 = 6)

Use knowledge of multiplication facts and place value to derive related facts.

Partition

```
18 x 9  = (10 x 9) + (8 x 9)
        = 90 + 72
        = 162
```

recognise and use commutativity in mental calculations
write statements about the equality of expressions (for example, use the distributive law 39 × 7 = 30 × 7 + 9 × 7 and associative law (2 × 3) × 4 = 2 × (3 × 4))

Use a variety of resources (including a calculator) to investigate order of multiplication. Make models and images to display facts.

multiply two-digit and three-digit numbers by a one-digit number using formal written layout (*see Appendix 1*)

Grid method
231 x 7 is approximately 200 x 10 = 2000

231 x 7 = 1617

x	7	
200	1400	
30	210	+
1	7	
	1617	

move onto formal method of short multiplication when proficient

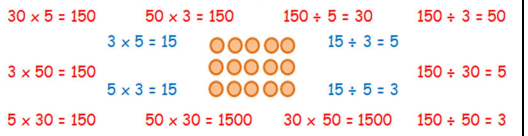
```
  452
X   3
 1356
  1
```

recall division facts for multiplication tables up to 12 × 12

Play games, chant, test etc to increase speed of recalling facts.
Make models and images to display facts.
Investigate patterns within tables.

use place value, known and derived facts to divide mentally, including: dividing by 1
practise and extend mental methods to three-digit numbers to derive facts, (for example 600 ÷ 3 = 200 can be derived from 2 x 3 = 6)

Use knowledge of multiplication facts and place value to derive related facts.



Partitioning/Chunking

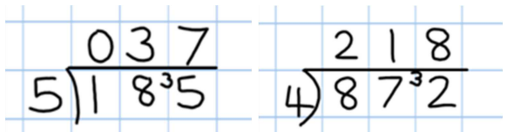
```
77 ÷ 5  = (50 ÷ 5) + (25 ÷ 5) + (remainder 2)
        = 10 + 5 + (remainder 2)
        = 15 remainder 2
```

recognise and use factor pairs in mental calculations

Use a variety of resources (including a calculator) to investigate factor pairs. Make models and images to display facts.

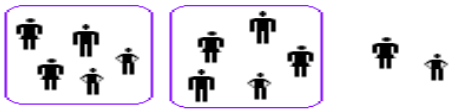
divide numbers up to 3 digit by a one-digit number using the formal written method of short division and begin to interpret remainders.

Short division with no remainders in the final answer, use place value counters/Diennes where support is required.



Remainders
Begin to interpret remainders by looking at word problems to give context and small numbers to start with.

Cars carry 5 people. 12 people are going on a trip. How many cars will they need?



12 ÷ 5 = 2 r 2 So they would need 3 cars.

5 buttons are packed in a bag. How many full bags would there be if there were 12 buttons?

12 ÷ 5 = 2 r 2. So there are 2 full bags.

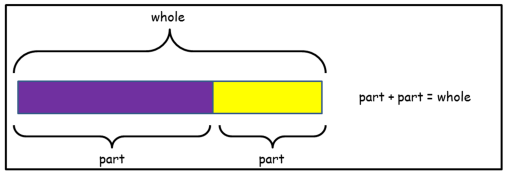
Year 4

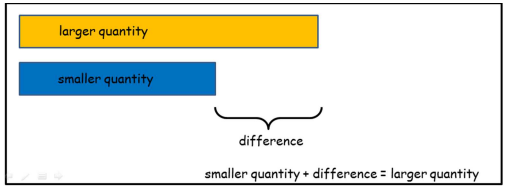
Number – addition and subtraction

solve addition two-step problems in contexts, deciding which operations and methods to use and why

Use all the models and images mentioned above. Discuss which is most effective and why.

Singapore Bar Method





estimate and use inverse operations to check answers to a calculation

Estimate answers before solving any calculation.
Once inverse operation has been learnt use as a method for checking.

use a variety of language to describe addition

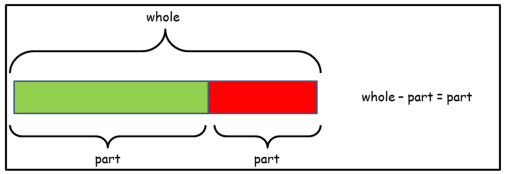
+ add, addition, more, plus, increase, sum, total, altogether, score, double, near double, how many more to make…? tens boundary, hundreds boundary, inverse

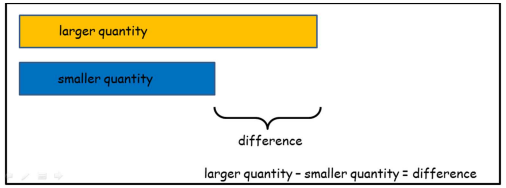
= equals, sign, is the same as

solve subtraction two-step problems in contexts, deciding which operations and methods to use and why

Use all the models and images mentioned above. Discuss which is most effective and why.

Singapore Bar Method





estimate and use inverse operations to check answers to a calculation

Estimate answers before solving any calculation.
Once inverse operation has been learnt use as a method for checking.

use a variety of language to describe subtraction

- subtract, subtraction, take (away), minus, decrease, leave, how many are left/left over? difference between, half, halve, how many more/fewer is… than…? how much more/less is…? tens boundary, hundreds boundary, inverse

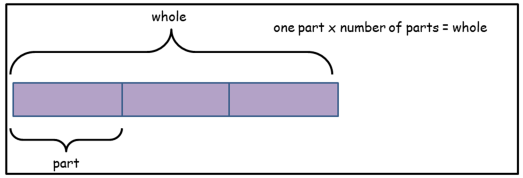
= equals, sign, is the same as

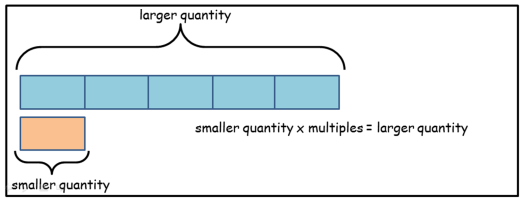
Number – multiplication and division

solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects
solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers

Use all the models and images mentioned above. Discuss which is most effective and why.

Singapore Bar Method





estimate and use inverse operations to check answers to a calculation

Estimate answers before solving any calculation.
Once inverse operation has been learnt use as a method for checking.

use a variety of language to describe multiplication

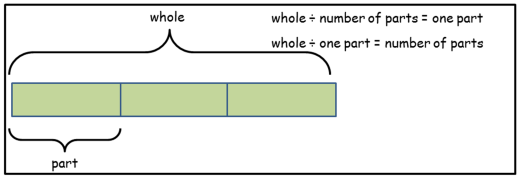
times, multiply, multiplication, multiplied by, multiple of, product
once, twice, three times… ten times… times as (big, long, wide… and so on)
repeated addition array, row, column, double, inverse

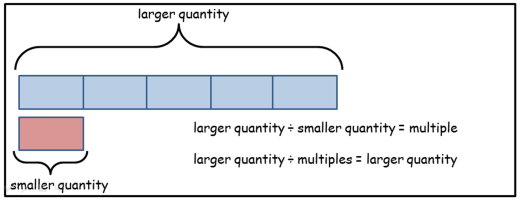
= equals, sign, is the same as

solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers

Use all the models and images mentioned above. Discuss which is most effective and why.

Singapore Bar Method





estimate and use inverse operations to check answers to a calculation

Estimate answers before solving any calculation.
Once inverse operation has been learnt use as a method for checking.

use a variety of language to describe division

Array, row, column, halve, share, share equally, one each, two each, three each… group in pairs, threes… tens. equal groups of, divide, division, divided by, divided into, remainder, factor, quotient, divisible by, inverse

= equals, sign, is the same as