Year 6

Number – addition and subtraction

perform mental calculations, including with mixed operations and large numbers *(and decimals)*

Partition both numbers into hundreds, tens, ones and decimal fractions and recombine

35.8 + 7.3 = 30 + 5 + 0.8 + 7 + 0.3
= 30 + 12 + 1.1
= 42 + 1.1
= 43.1

Partition second number only into hundreds, tens, ones and decimal fractions and recombine

35.8 + 7.3 = 35.8 + 7 + 0.3
= 42.8 + 0.3
= 43.1

Add the nearest whole number then adjust

52 + 11.9 = 52 + 12 – 0.1
= 64 – 0.1
= 63.9

practise addition for larger numbers, using the formal written methods of columnar addition (see Appendix 1)

Extend the use of compact column method to adding several numbers with mixed decimals.

```
  23.361
   9.080
+ 59.770
   1.300
  2 1 2
  93.511
```

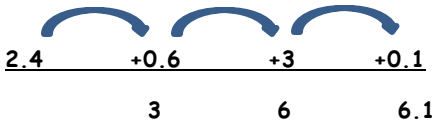
Children should be reminded of the importance of aligning the columns accurately.

Where there is an 'empty' space in a decimal column, pupils could insert a zero to show the value.

perform mental calculations, including with mixed operations and large numbers *(and decimals)*

Use known number facts and place value to subtract

6.1 – 2.4 = 3.7

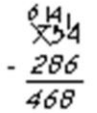


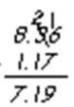
Subtract the nearest whole number then adjust

52 - 11.9 = 52 - 12 + 0.1
= 40 + 0.1
= 40.1

practise subtraction for larger numbers, using the formal written methods of columnar subtraction (see Appendix 1)

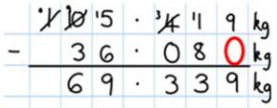
Column Subtraction with decomposition





Including decimals

Revision of formal compact column method extending to more complex integers and applying to problem solving using money and measures, including decimals with different numbers of decimal places. Align the decimal point when setting out calculations.
Use *'place holders'* to aid understanding of the value in that column.



Number – multiplication and division

perform mental calculations, including with mixed operations and large numbers *(and decimals)*

Partitioning

4.7 x 6 = (4 x 6) + (0.7 x 6)
= (24) + (4.2)
= 28.2

multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of short and long multiplication (*Appendix 1*)

Short multiplication and Long multiplication as in Year 5, but apply to numbers with decimals.

```
  3.19
x    8
  1 7
 25.52
```

Pupils may need reminding that single digits belong in the ones (units) column.
A sound understanding of place value and the

formal method itself are required before progressing to decimal multiplication.

perform mental calculations, including with mixed operations and large numbers *(and decimals)*

Partitioning

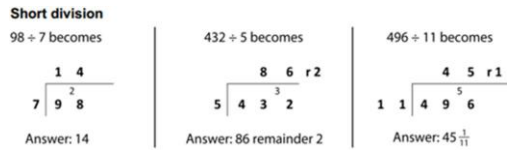
7.2 ÷ 3 = (6 ÷ 3) = (1.2 ÷ 3)
= 2 + 0.4
= 2.4

identify common factors, common multiples and prime numbers

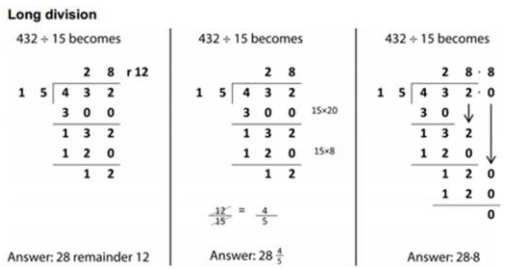
Use a variety of resources (including a calculator) to investigate common factors, common multiples and prime numbers. Make models and images to display facts. Investigate the patterns within the numbers.

divide numbers up to 4 digits by a two-digit whole number using the formal written method of short and long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context (*Appendix 1*)

Short division



Long division (for dividing by 2 digits)



Remainders
Quotients expressed as fractions or decimal fractions
61 ÷ 4 = 15 ¼ or 15.25

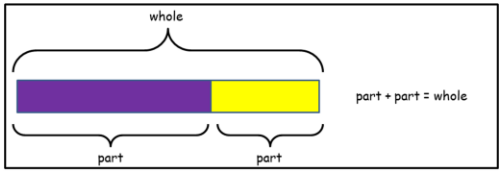
Year 6

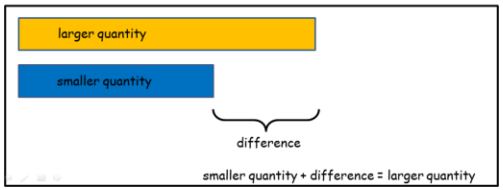
Number – addition and subtraction

solve addition multi-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





round answers to a specified degree of accuracy,
e.g. to the nearest 10, 20, 50 etc., but not to a specified number of significant figures

Use knowledge of rounding (see fraction Policy) to create estimates.

use their knowledge of the order of operations to carry out calculations involving the four operations
explore the order of operations using brackets; for example, 2 + 1 x 3 = 5 and (2 + 1) x 3 = 9

Review and investigate the effect of carrying out operations in different orders. Explore the effect.
Introduce and use BODMAS to solve calculations.

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

Estimate answers before solving any calculation.
Check against estimate after calculating (and use inverse check).

use a variety of language to describe subtraction

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

= equals, sign, is the same as

solve subtraction multi-step problems in contexts, deciding which
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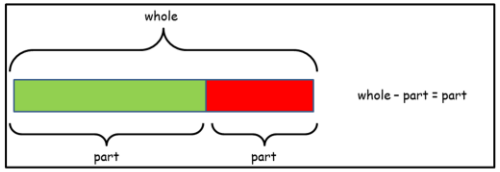

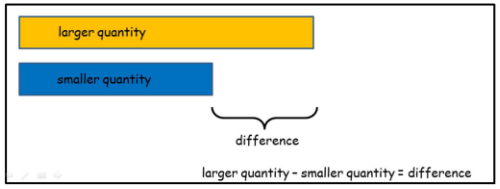

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use a variety of language to describe subtraction

- 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, units boundary, tenths boundary, inverse

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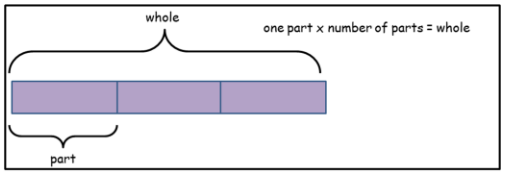
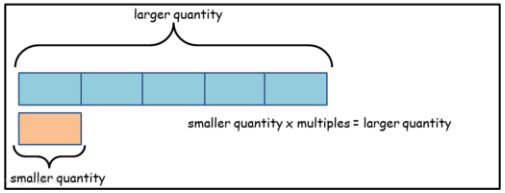
Number – multiplication and division

solve problems involving multiplication

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

Singapore Bar Method





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use a variety of language to describe subtraction

x lots of, groups of, 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 problems involving division

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

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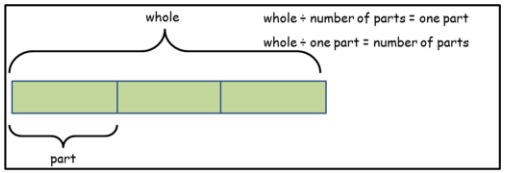

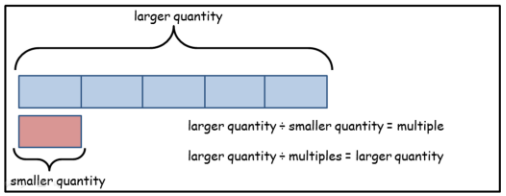

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Check against estimate after calculating (and use inverse check).

use a variety of language to describe subtraction

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