Year 6

Number – addition and subtraction | Number – multiplication and division

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
$$52 + 11.9 = 52 + 12 - 0.1$$
$$= 64 - 0.1$$
$$= 63.9$$

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

Use known number facts and place value to subtract
$$6.1 - 2.4 = 3.7$$

3.7   4.1   6.1
-0.4   -2

Subtract the nearest whole number then adjust
$$52 - 11.9 = 52 - 12 + 0.1$$
$$= 40 + 0.1$$
$$= 40.1$$

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

Partitioning
$$4.7 \times 6 = (4 \times 6) + (0.7 \times 6)$$
$$= (24) + (4.2)$$
$$= 28.2$$

Double and halve
$$4.25 \times 32 = 8.5 \times 16$$
$$= 17 \times 8$$
$$= 34 \times 4$$
$$= 68 \times 2$$
$$= 136$$

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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.

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

Partitioning
$$7.2 \div 3 = (6 \div 3) = (1.2 \div 3)$$
$$= 2 + 0.4$$
$$= 2.4$$

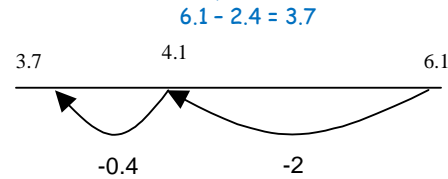identify common factors, common multiples and prime numbers

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.

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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.

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.

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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.

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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.

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.

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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

Short division

$98 \div 7$ becomes	$432 \div 5$ becomes	$496 \div 11$ becomes
Answer: 14	Answer: 86 remainder 2	Answer: $45\frac{1}{11}$

Long division (for dividing by 2 digits)

Long division

$432 \div 15$ becomes	$432 \div 15$ becomes	$432 \div 15$ becomes
Answer: 28 remainder 12	Answer: $28\frac{4}{5}$	Answer: 28·8

Remainders
Quotients expressed as fractions or decimal fractions
$$61 \div 4 = 15\frac{1}{4} \text{ or } 15.25$$

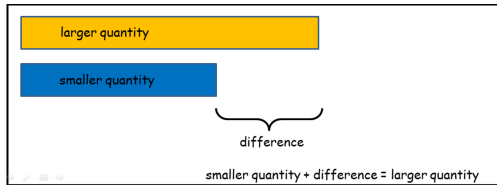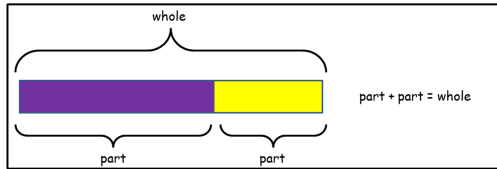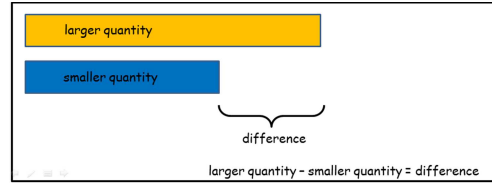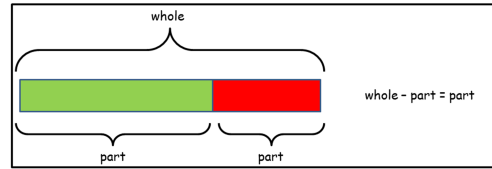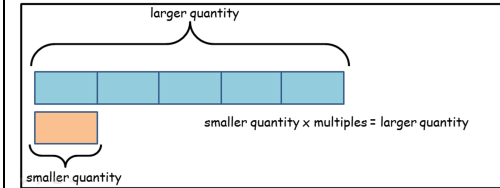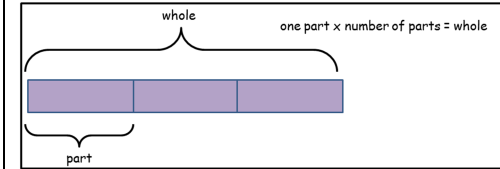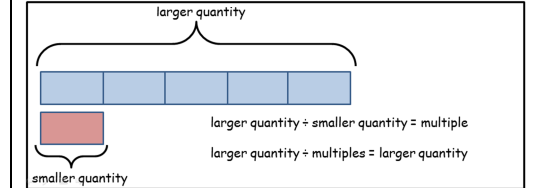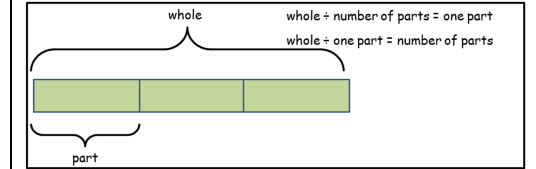| Number – addition and subtraction		Number – multiplication and division	
solve addition multi-step problems in contexts, deciding which operations and methods to use and why Use all the models and images mentioned above. Discuss which is most effective and why. Singapore Bar Method *whole* *part + part = whole* *part* *part* *larger quantity* *smaller quantity* *difference* *smaller quantity + difference = larger quantity*	solve subtraction 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 *whole* *whole – part = part* *part* *part* *larger quantity* *smaller quantity* *difference* *larger quantity – smaller quantity = difference*	solve problems involving multiplication Use all the models and images mentioned above. Discuss which is most effective and why. Singapore Bar Method *whole* *one part x number of parts = whole* *part* *larger quantity* *smaller quantity x multiples = larger quantity* *smaller quantity*	solve problems involving division Use all the models and images mentioned above. Discuss which is most effective and why. Singapore Bar Method *whole* *whole ÷ number of parts = one part* *whole ÷ one part = number of parts* *part* *larger quantity* *larger quantity ÷ smaller quantity = multiple* *larger quantity ÷ multiples = larger quantity* *smaller quantity*
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.	*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.	*round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc., (not to specified number of significant figures)* Use knowledge of rounding (see fraction Policy) to create estimates.	*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 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 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 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 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 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 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	*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 = equals, sign, is the same as	*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	*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