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Theme	Half term	Objectives. Pupils should be taught to….	Notes
NUMBER SENSE	**Year 1 Autumn 1st half**	**Number, place value and rounding** ● count to and across 100, forwards and backwards, beginning with 0 or 1 ● count, read and write numbers to 100 in numerals ● given a number, identify one more and one less ● identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least **Measurement** ● compare, describe and solve practical problems for: - lengths and heights [for example, long / short, longer / shorter, tall / short, double / half] - mass or weight [for example, heavy / light, heavier than, lighter than] - capacity / volume [for example, full / empty, more than, less than, half, half full, quarter] ● recognise and use language relating to dates, including days of the week, weeks, months and years.	*Problem Solving and Reasoning 1*, pp 44–5, 1 'Missing numbers' *Problem Solving and Reasoning 1*, pp 60–1, 9 'If this equals 2 …'
ADDITIVE REASONING		**Number and place value** ● *given a number, identify one more and one less* **Addition and subtraction** ● represent and use number bonds and related subtraction facts within 20 ● solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as such as 7 = ☐ –9 **Measurement** ● sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] ● *recognise and use language relating to dates, including days of the week, weeks, months and years.*	*Problem Solving and Reasoning 1*, pp 70–1, 14 'Sorting numbers' *Problem Solving and Reasoning 1*, pp 50–1, 4 'Domino dilemma'
GEOMETRIC REASONING	**Autumn 2nd half**	**Geometry: properties of shapes** ● recognise and name common 2-D and 3-D shapes, including: - 2-D shapes [for example, rectangles (including squares), circles and triangles] - 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]	
NUMBER SENSE		**Geometry: position and direction** ● describe position, direction and movement. **Number and place value** ● *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* ● *given a number, identify one more and one less* ● *identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least* **Measurement** ● *compare, describe and solve practical problems for:* *- lengths and heights [for example, long/short, longer/ shorter, tall/short, double/half]* *- mass or weight [for example, heavy/light, heavier than, lighter than]* *- capacity/volume [for example, full/empty, more than, less than, half, half full, quarter]* *- time [for example, quicker, slower, earlier, later]* *recognise and use language relating to dates, including days of the week, weeks, months and years.* **Number and place value**	*Problem Solving and Reasoning 1*, pp 48–9, 3 'Shape school' *Problem Solving and Reasoning 1*, pp 64–5, 11 'Minibus mix-up' *Problem Solving and Reasoning 1*, pp 68–9, 13 'One more, one less … bingo!'

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ADDITIVE REASONING		● *count to and across 100, forwards and backwards,* ● *beginning with 0 or 1, or from any given number* ● *given a number, identify one more and one less* **Addition and subtraction** ● *represent and use number bonds and related subtraction facts within 20* *solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ☐–9.*	*Problem Solving and Reasoning 1*, pp 78–9, 18 'Three card trick'
NUMBER SENSE	**Spring 1st half**	**Number and place value** ● *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;* <u>count in multiples of twos and tens</u> ● *given a number, identify one more and one less* ● *identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least* **Measurement** ● <u>recognise and know the value of different denominations of coins and notes.</u>	*Problem Solving and Reasoning 1*, pp 46–7, *Problem Solving and Reasoning 1*, pp 54–5, 6 'Mr Penny's fruit shop'
MULTIPLICATIVE REASONING		**Number and place value** ● *count, read and write numbers to 100 in numerals; count in multiples of twos and tens* **Multiplication and division** ● <u>solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher</u> **Measurement** *recognise and know the value of different denominations of coins and notes.*	*Problem Solving and Reasoning 1*, pp 58–9, 8 'Hooray for array' *Problem Solving and Reasoning 1*, pp 52–3, 5 'The story of 10'
NUMBER SENSE	**Spring 2nd half**	**Number and place value** ● *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 twos and tens* ● *given a number, identify one more and one less* ● *identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least* **Measurement** ● <u>measure and begin to record the following:</u> <u>– lengths and heights</u> <u>– mass/weight</u> <u>– capacity and volume</u> ● *recognise and know the value of different denominations of coins and notes.*	*Problem Solving and Reasoning 1*, pp 56–7, 7 'Measurement muddle'
ADDITIVE REASONING		**Number and place value** ● *count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number* ● *given a number, identify one more and one less* **Addition and subtraction**	*Problem Solving and Reasoning 1*, pp 54–5, 6 'Mr Penny's fruit shop'

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GEOMETRIC REASONING	**Summer term 1st half**	● read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs ● *represent and use number bonds and related subtraction facts within 20* ● add and subtract one-digit and two-digit numbers to 20, including zero ● *solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ☐ –9* **Measurement** ● *sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]* *recognise and use language relating to dates, including days of the week, weeks, months and years* **Geometry: properties of shapes** ● *recognise and name common 2-D and 3-D shapes, including:* – *2-D shapes [for example, rectangles (including squares), circles and triangles]* – *3-D shapes [for example, cuboids (including cubes), pyramids and spheres]* **Geometry: position and direction** ● *describe position, direction and movement.*	*Problem Solving and Reasoning 1*, pp 72–3, 15 'What comes next?'
NUMBER SENSE		**Number and place value** ● *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 twos, fives and tens* ● *given a number, identify one more and one less* ● *identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least* ● read and write numbers from 1 to 20 in numerals and words **Measurement** ● *measure and begin to record the following:* – *lengths and heights* – *mass/weight* – *capacity and volume* – time (hours, minutes, seconds) ● *recognise and know the value of different denominations of coins and notes*	*Problem Solving and Reasoning 1*, pp 74–5, 16 'What's the problem?'
ADDITIVE REASONING		**Number and place value** ● *count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number* ● *given a number, identify one more and one less* **Addition and subtraction** ● *read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs* ● *represent and use number bonds and related subtraction facts within 20*	*Problem Solving and Reasoning 1*, pp 78–9, 18 'Three card trick'

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MULTIPLICATIVE REASONING **GEOMETRIC REASONING**	**Summer term 2nd half**	• *add and subtract one-digit and two-digit numbers to 20, including zero* • *solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ☐ –9* **Number and place value** • *count, read and write numbers to 100 in numerals, count in multiples of twos, fives and tens* **Multiplication and division** • *solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher* **Fractions** • recognise, find and name a half as one of two equal parts of an object, shape or quantity • recognise, find and name a quarter as one of four equal parts of an object, shape or quantity **Measurement** • *recognise and know the value of different denominations of coins and notes* • tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. **Fractions** • *recognise, find and name a half as one of two equal parts of an object, shape or quantity* • *recognise, find and name a quarter as one of four equal parts of an object, shape or quantity* **Geometry: properties of shapes** • *recognise and name common 2-D and 3-D shapes, including:* – *2-D shapes [for example, rectangles (including squares), circles and triangles]* – *3-D shapes [for example, cuboids (including cubes), pyramids and spheres]* **Geometry: position and direction** • describe position, direction and movement, *including whole, half, quarter and three-quarter turns*	*Problem Solving and Reasoning 1*, pp 62–3, 10 'Halves and quarters' *Problem Solving and Reasoning 1*, pp 66–7, 12 'What did you do next …?' *Problem Solving and Reasoning 1*, pp 76–7, 17 'Tell me about …'
	Year 2		

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	Autumn 1st half		
NUMBER SENSE		**Number, place value and rounding** ● count in steps of 2 and 5 from 0 and in tens from any number, forward and backward ● recognise the place value of each digit in a two-digit number (tens, ones) ● identify, represent and estimate numbers using different representations, including the number line ● compare and order numbers from 0 up to 100 ● read and write numbers to at least 100 in numerals ● use place value and number facts to solve problems **Measurement** ● compare and order lengths, mass, volume / capacity ● compare and sequence intervals of time **Statistics** ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity	*Problem Solving and Reasoning 2*, pp54–5, 6 'Put it in the right place!'
ADDITIVE REASONING		**Number and place value** ● *count in tens from any number, forward and backward* ● *recognise the place value of each digit in a two-digit number (tens, ones)* ● *use place value and number facts to solve problems* **Addition and subtraction** ● solve problems with addition and subtraction: – using concrete objects and pictorial representations, including those involving numbers, quantities and measures – applying their increasing knowledge of mental methods ● recall and use addition and subtraction facts to 20 fluently ● add and subtract numbers using concrete objects, pictorial representations, and mentally, including: – a two-digit number and ones – a two-digit number and tens – adding three one-digit numbers **Measurement** ● solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change ● ask and answer questions about totalling and comparing categorical data	*Problem Solving and Reasoning 2*, pp 46–7, 2 'Many, many methods' 2.2 *Problem Solving and Reasoning 2*, pp 52–3, 5 'Calculation families'
	Autumn 2nd half		
GEOMETRIC REASONING		**Geometry: properties of shapes** ● identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line ● identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces ● identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] ● compare and sort common 2-D and 3-D shapes and everyday objects **Geometry: position and direction** ● order and arrange combinations of mathematical objects in patterns and sequences	*Problem Solving and Reasoning 2*, pp 44–5, 1 'Matchstick challenge!'
NUMBER		**Number and place value** ● *count in steps of 2 and 5 from 0 and in tens from any*	

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SENSE **ADDITIVE REASONING**	**Spring 1st half**	*number, forward and backward* ● *recognise the place value of each digit in a two-digit number (tens, ones)* ● *identify, represent and estimate numbers using different representations, including the number line* ● *compare and order numbers from 0 up to 100;* use <, > and = signs ● *read and write numbers to at least 100 in numerals* ● *use place value and number facts to solve problems* **Measurement** ● *compare and order lengths, mass, volume / capacity* and record the results using >, < and = ● *compare and sequence intervals of time* **Statistics** ● *ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity* **Number and place value** ● *count in tens from any number, forward and backward* ● *recognise the place value of each digit in a two-digit number (tens, ones)* ● *use place value and number facts to solve problems* **Addition and subtraction** ● *solve problems with addition and subtraction:* – *using concrete objects and pictorial representations, including those involving numbers, quantities and measures* – *applying their increasing knowledge of mental methods* ● *recall and use addition and subtraction facts to 20 fluently,* and derive and use related facts up to 100 ● *add and subtract numbers using concrete objects, pictorial representations, and mentally, including:* – *a two-digit number and ones* – *a two-digit number and tens* – *adding three one-digit numbers* ● show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot ● recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems **Measurement** ● recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value ● find different combinations of coins to equal the same amounts of money ● *solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change* **Statistics** *ask and answer questions about totalling and comparing categorical data* **Number and place value** ● *count in steps of 2, 3 and 5 from 0 and in tens from any*	*Problem Solving and Reasoning 2*, pp76–7, 17 'The fruit bowl challenge' *Problem Solving and Reasoning 2*, pp60–1, 9 'A difference of 5' *Problem Solving and Reasoning 2*, pp70–1, 14 'Total patterns'

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NUMBER SENSE **MULTIPLICATIVE REASONING** **NUMBER SENSE**	**Spring 2nd half**	*number, forward and backward* **Multiplication and division** ● recognise odd and even numbers **Statistics** ● interpret and construct simple pictograms, tally charts, block diagrams and simple tables ● ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. **Number and place value** ● *count in steps of 2, 3 and 5 from 0 and in tens from any number, forward and backward* **Multiplication and division** ● recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, *including recognising odd and even numbers* ● calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs ● show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot ● solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts **Measurement** ● *recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value* ● *find different combinations of coins to equal the same amounts of money* ● tell and write the time to five minutes *know the number of minutes in an hour and the number of hours in a day***Number and place value** ● *count in steps of 2, 3 and 5 from 0 and in tens from any number, forward and backward* **Multiplication and division** ● recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, *including recognising odd and even numbers* ● calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs ● show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot ● solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts **Measurement** ● *recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value* ● *find different combinations of coins to equal the same amounts of money* ● tell and write the time to five minutes know the number of minutes in an hour and the number of hours in a day **Number and place value** ● *count in steps of 2, 3 and 5 from 0 and in tens from any number, forward and backward* ● *recognise the place value of each digit in a two-digit number (tens, ones)* ● *identify, represent and estimate numbers using different representations, including the number line*	*Problem Solving and Reasoning 2*, pp 48–9, 'The story of 20' *Problem Solving and Reasoning 2*, pp 66–7, 12 'The lunchbox trolley' *Problem Solving and Reasoning 2*, pp58–9, 8 'Wheely puzzle

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ADDITIVE REASONING		• *compare and order numbers from 0 up to 100; use <, > and = signs* • *read and write numbers to at least 100 in numerals* • *use place value and number facts to solve problems* **Measurement** • choose and use appropriate standard units to estimate and measure length / height in any direction (m / cm); mass (kg / g); temperature (°C); capacity (litres / ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels • *compare and order lengths, mass, volume / capacity and record the results using >, < and =* *compare and sequence intervals of time* Number and place value • *count in tens from any number, forward and backward* • *recognise the place value of each digit in a two-digit number (tens, ones)* • *use place value and number facts to solve problems* Addition and subtraction • *solve problems with addition and subtraction:* – *using concrete objects and pictorial representations, including those involving numbers, quantities and measures* – *applying their increasing knowledge of mental methods* • *recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100* • *add and subtract numbers using concrete objects, pictorial representations, and mentally, including:* – *a two-digit number and ones* – *a two-digit number and tens* – *two two-digit numbers* – *adding three one-digit numbers* • *show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot* • *recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems* Measurement • *recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value* • *find different combinations of coins to equal the same amounts of money* • *solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change* Statistics • *ask and answer questions about totalling and comparing categorical data.*	*Problem Solving and Reasoning 2*, pp50–1, 4 'Double your robot' *Problem Solving and Reasoning 2*, pp62–3, 10 'Coin totals'
GEOMETRIC REASONING		**Geometry: properties of shape** • *identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line* • *identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces* • *identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]* • *compare and sort common 2-D and 3-D shapes and everyday objects* **Geometry: position and direction** • *order and arrange combinations of mathematical objects*	*Problem Solving and Reasoning 2*, pp64–5, 11 'Polyhedron Primary'

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	Summer 1st half	*in patterns and sequences* ● *use mathematical vocabulary to describe position, direction and movement.*	
NUMBER SENSE		**Number and place value** ● *count in steps of 2, 3 and 5 from 0 and in tens from any number, forward and backward* ● *recognise the place value of each digit in a two-digit number (tens, ones)* ● *identify, represent and estimate numbers using different representations, including the number line* ● *compare and order numbers from 0 up to 100; use <, > and = signs* ● *read and write numbers to at least 100 in numerals* and in words ● *use place value and number facts to solve problems* **Measurement** ● *choose and use appropriate standard units to estimate and measure length / height in any direction (m / cm); mass (kg / g); temperature (°C); capacity (litres / ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels* ● *compare and order lengths, mass, volume / capacity and record the results using >, < and =* ● *compare and sequence intervals of time* **Statistics** ● *interpret and construct simple pictograms, tally charts, block diagrams and simple tables* *ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity*	
ADDITIVE REASONING		**Number and place value** ● *count in tens from any number, forward and backward* ● *recognise the place value of each digit in a two-digit number (tens, ones)* ● *use place value and number facts to solve problems* **Addition and subtraction** ● *solve problems with addition and subtraction:* – *using concrete objects and pictorial representations, including those involving numbers, quantities and measures* – *applying their increasing knowledge of mental methods and written methods* ● *recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100* ● *add and subtract numbers using concrete objects, pictorial representations, and mentally, including:* – *a two-digit number and ones* – *a two-digit number and tens* – *two two-digit numbers* – *adding three one-digit numbers* ● *show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot* ● *recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems* **Statistics** ● *ask and answer questions about totalling and compare categorical data* **Number and place value** ● *count in steps of 2, 3 and 5 from 0 and in tens from any*	*Problem Solving and Reasoning 2*, pp78–9, 18 'Number square investigation' *Problem Solving and Reasoning 2*, pp68–9, 13 'Lunchtime fun'

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MULTIPLICATIVE REASONING **GEOMETRIC REASONING**	**Summer 2nd half**	*number, forward and backward* **Multiplication and division** ● *recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers* ● *calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs* ● *show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot* ● *solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts* **Fractions** ● recognise, find, name and write fractions ⅓, ¼, ²⁄₄ and ¾ of a length, shape, set of objects or quantity ● write simple fractions for example ½ of 6 = 3 and recognise the equivalence of ²⁄₄ and ½. **Measurement** ● *tell and write the time to five minutes*, including quarter past / to the hour and draw the hands on a clock face to show these times *know the number of minutes in an hour and the number of hours in a day* **Geometry: properties of shape** ● *identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line* ● *identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces* ● *identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]* ● *compare and sort common 2-D and 3-D shapes and everyday objects* **Geometry: position and direction** ● *order and arrange combinations of mathematical objects in patterns and sequences* ● *use mathematical vocabulary to describe position, direction and movement,* including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise) **Fractions** ● *recognise, find, name and write fractions ⅓, ¼, ²⁄₄ and ¾ of a length, shape, set of objects or quantity* *write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of ²⁄₄ and ½.*	*Problem Solving and Reasoning 2*, pp 72–3, 15 'The fraction family'
	Year 3		

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NUMBER SENSE	**Autumn 1st half**	**Number and place value** ● count from 0 in multiples of 100; find 10 or 100 more or less than a given number ● recognise the place value of each digit in a three-digit number (hundreds, tens, ones) ● compare and order numbers up to 1000 ● identify, represent and estimate numbers using different representations ● read and write numbers up to 1000 in numerals and in words ● solve number problems and practical problems involving these ideas	*Problem Solving and Reasoning 3*, pp 52–3, 5 'Number guess who'
ADDITIVE REASONING		**Addition and subtraction** ● add and subtract numbers mentally, including: – a three-digit number and ones – a three-digit number and tens – a three-digit number and hundreds ● add and subtract numbers with up to three digits ● estimate the answer to a calculation and use inverse operations to check answers ● solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction **Measurement** ● measure, compare, add and subtract: lengths (m / cm / mm); mass (kg / g); volume / capacity (l / ml) add and subtract amounts of money to give change, using both £ and p in practical contexts **Statistics** ● interpret and present data using bar charts, pictograms and tables ● solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	*Problem Solving and Reasoning 3*, pp 44–5, 1 'A brick in the wall …
MULTIPLICATIVE REASONING	**Autumn 2nd half**	**Number and place value** ● *count from 0 in multiples of 4, 8, 50 and 100* **Multiplication and division** ● recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables ● write and calculate mathematical statements for multiplication and division using the multiplication tables that they know ● solve problems, including missing number problems, involving multiplication and division including positive integer scaling problems and correspondence problems in which *n* objects are connected to *m* objects.	*Problem Solving and Reasoning 3*, pp 48–9, 3 'Threes and fives'
GEOMETRIC REASONING		**Geometry: properties of shapes** ● draw 2-D shapes, and make 3-D shapes using modeling materials; 3-D shapes in different orientations and describe them **Geometry: position and direction** ● recognise that angles are a property of shape or a description of a turn ● identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle	*Problem Solving and Reasoning 3*, pp 70–1, 14 'Mystery shapes'
NUMBER SENSE		**Number and place value** ● *count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number*	*Problem Solving and*

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		• *recognise the place value of each digit in a three-digit number (hundreds, tens, ones)* • *compare and order numbers up to 1000* • *identify, represent and estimate numbers using different representations* • *read and write numbers up to 1000 in numerals and in words* • *solve number problems and practical problems involving these ideas* **Measurement** • tell and write the time from an analogue clock, including using Roman numerals from I to XII and 12-hour and 24-hour clocks • *measure, compare, add and subtract: lengths (m / cm / mm); mass (kg / g); volume / capacity (l / ml)* **Fractions** count up and down in tenths, recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10	*Reasoning 3*, pp 50–1, 4 'Alien farm'
ADDITIVE REASONING	**Spring term 1st half**	**Addition and subtraction** • *add and subtract numbers mentally, including:* – *a three-digit number and ones* – *a three-digit number and tens* – *a three-digit number and hundreds* • *add and subtract numbers with up to three digits* • *estimate the answer to a calculation and use inverse operations to check answers* • *solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction* **Measurement** • *measure, compare, add and subtract: lengths (m / cm / mm); mass (kg / g); volume / capacity (l / ml)* • *add and subtract amounts of money to give change, using both £ and p in practical contexts*	*Problem Solving and Reasoning 3*, pp 54–5, 6 'Missing problems' *Problem Solving and Reasoning 3*, pp 66–7, 12 'Moneyboxes'
NUMBER SENSE		**Statistics** • *interpret and present data using bar charts, pictograms and tables* • *solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.* **Number and place value** • *identify, represent and estimate numbers using different representations* **Fractions** • *count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10* • recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators • add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$] • compare and order unit fractions and fractions with the same denominator • solve problems that involve all of the above.	
	Spring	**Number and place value**	

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MULTIPLICATIVE REASONING	**term 2nd half**	● *count from 0 in multiples of 4, 8, 50 and 100* **Multiplication and division** ● *recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables* ● *write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers* ● *solve problems, including missing number problems, involving multiplication and division including positive integer scaling problems and correspondence problems in which* n *objects are connected to* m *objects* **Fractions** ● *count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10* ● recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators ● solve problems that involve all of the above.	*Problem Solving and Reasoning 3*, pp 58–9, 8 'Fabulous 28'
GEOMETRIC REASONING		**Geometry: properties of shapes** ● *draw 2-D shapes, and make 3-D shapes using modeling materials; recognise 3-D shapes in different orientations and describe them* ● *recognise that angles are a property of shape or a description of a turn* ● *identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle* identify horizontal and vertical lines and pairs of perpendicular and parallel lines	*Problem Solving and Reasoning 3*, pp 72–3, 15 'Dotty squares' *Problem Solving and Reasoning 3*, pp 74–5, 16 'Cubed aliens'
NUMBER SENSE		**Number and place value** ● *count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number* ● *recognise the place value of each digit in a three-digit number (hundreds, tens, ones)* ● *compare and order numbers up to 1000* ● *identify, represent and estimate numbers using different representations* ● *read and write numbers up to 1000 in numerals and in words* ● *solve number problems and practical problems involving these ideas* **Measurement** ● *tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks* ● estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m. / p.m., morning, afternoon, noon and midnight ● know the number of seconds in a minute and the number of days in each month, year and leap year ● compare durations of events, [for example, to calculate the time taken by particular events or tasks] **Statistics** *interpret and present data using bar charts, pictograms and tables*	
	Summer	**Addition and subtraction**	

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ADDITIVE REASONING	**term 1st half**	● *add and subtract numbers mentally, including:* – *a three-digit number and ones* – *a three-digit number and tens* – *a three-digit number and hundreds* ● *add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction* ● *estimate the answer to a calculation and use inverse operations to check answers* ● *solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction* **Measurement** ● *measure, compare, add and subtract: lengths (m / cm / mm); mass (kg / g); volume / capacity (l / ml)* ● *add and subtract amounts of money to give change, using both £ and p in practical contexts* ● *record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m. / p.m., morning, afternoon, noon and midnight* ● *know the number of seconds in a minute and the number of days in each month, year and leap year* ● *compare durations of events, [for example, to calculate the time taken by particular events or tasks]* **Statistics** ● *interpret and present data using bar charts, pictograms and tables* ● *solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.*	*Problem Solving and Reasoning 3*, pp 68–9, 13 'School trip' *Problem Solving and Reasoning 3*, pp 78–9, 18 'Chocolate swap!'
NUMBER SENSE		**Number and place value** ● *identify, represent and estimate numbers using different representations* **Fractions** ● *count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and dividing one-digit numbers or quantities by 10* ● *recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators* ● *recognise and show, using diagrams, equivalent fractions with small denominators* ● *add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]* ● *compare and order unit fractions and fractions with the same denominator.* ● *solve problems that involve all of the above.*	*Problem Solving and Reasoning 3*, pp 64–5, 11 'Fraction pictures'
MULTIPLICATIVE REASONING	**Summer term 2nd half**	**Number and place value** ● *count from 0 in multiples of 4, 8, 50 and 100* **Multiplication and division** ● *recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables* ● *write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods* ● *solve problems, including missing number problems, involving multiplication and division; solve positive integer scaling problems and correspondence problems in which* n *objects are connected to* m *objects.* **Fractions**	*Problem Solving and Reasoning 3*, pp 60–1, 9 'Remainder, remainder'

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GEOMETRIC REASONING		• *count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10* • *recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators* • *solve problems that involve all of the above.* **Measurement** • *know the number of seconds in a minute and the number of days in each month, year and leap year.* **Geometry: properties of shape** • *recognise that angles are a property of shape or a description of a turn* • *identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle* • *identify horizontal and vertical lines and pairs of perpendicular and parallel lines* • <u>measure the perimeter of simple 2-D shapes.</u>	
NUMBER	**Year 4 Autumn term 1st**	**Number and place value** • <u>count in multiples of 1000</u> • <u>find 1000 more or less than a given number</u>	*Problem Solving and Reasoning 4*, pp 44–5, 1 'Make 100!'

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SENSE **ADDITIVE REASONING** **MULTIPLICATIVE REASONING** **GEOMETRIC REASONING** **NUMBER SENSE**	**half** **Autumn term 2nd half**	**Number and place value** ● recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) ● order and compare numbers beyond 1000 ● identify, represent and estimate numbers using different representations ● round any number to the nearest 10, 100 or 1000 ● solve number and practical problems that involve all of the above and with increasingly large positive numbers. **Addition and subtraction** ● 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 **Measurement** ● estimate, compare and calculate different measures, including money in pounds and pence **Statistics** ● interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs ● solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs **Number and place value** ● *count in multiples of* 6, 7, 9, 25 *and 1000* **Multiplication and divisions** ● 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 three numbers ● recognise and use factor pairs and commutativity in mental calculations ● solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling and harder correspondence problems such as *n* objects are connected to *m* objects. **Geometry: properties of shape** ● compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes ● identify acute and obtuse angles and compare and order angles up to two right angles by size ● identify lines of symmetry in 2-D shapes presented in different orientations. **Number and place value** ● *count in multiples of 1000* ● *find 1000 more or less than a given number* ● count backwards through zero to include negative numbers	*Problem Solving and Reasoning 4*, pp 46–7, 2 'A bit of magic!' *Problem Solving and Reasoning 4*, pp 48–9, 3 'What's my number?' *Problem Solving and Reasoning 4*, pp 54–5, 6 'Would you rather?' *Problem Solving and Reasoning 4*, pp 56–7, 7 'Tricky tangrams' *Problem Solving and*

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	Spring term 1st half	• *recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)* • *order and compare numbers beyond 1000* • *identify, represent and estimate numbers using different representations* • *round any number to the nearest 10, 100 or 1000* • *solve number and practical problems that involve all of the above and with increasingly large positive numbers* • read Roman numerals to 100 (I to C) and know that, over time, the numeral system changed to include the concept of zero and place value.	*Reasoning 4*, pp 74–5, 16 'Double double'
ADDITIVE REASONING		**Addition and subtraction** • *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*	*Problem Solving and Reasoning 4*, pp 60–1, 9 'Finding the difference' *Problem Solving and Reasoning 4*, pp 64–5, 11 'Disco drinks'
		Measurement • *estimate, compare and calculate different measures, including money in pounds and pence*	
		Statistics • *interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs* *solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.*	
NUMBER SENSE		**Fractions (including decimals)** • count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten • recognise and show, using diagrams, families of common equivalent fractions • add and subtract fractions with the same denominator • recognise and write decimal equivalents of any number of tenths or hundredths • recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ • find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths • round decimals with one decimal place to the nearest whole number • compare numbers with the same number of decimal places up to two decimal places	
		Measurement convert between different units of measure [for example, kilometre to metre].	
	Spring term 2nd half		
MULTIPLICATIVE REASONING		**Number and place value** • *count in multiples of 6, 7, 9, 25 and 1000*	
		Multiplication and division	

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GEOMETRIC REASONING **NUMBER SENSE**		● *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 three numbers* ● *recognise and use factor pairs and commutativity in mental calculations* ● *solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling and harder correspondence problems such as* n *objects are connected to* m *objects* **Fractions (including decimals)** ● 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 **Measurement** ● solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days. **Geometry: properties of shapes** ● *compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes* **Geometry: position and direction** ● describe positions on a 2-D grid as coordinates in the first quadrant ● describe movements between positions as translations of a given unit to the left / right and up / down ● plot specified points and draw sides to complete a given polygon. **Number and place value** ● *count in multiples of 1000* ● *find 1000 more or less than a given number* ● *count backwards through zero to include negative numbers* ● *recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)* ● *order and compare numbers beyond 1000* ● *identify, represent and estimate numbers using different representations* ● *round any number to the nearest 10, 100 or 1000* ● *solve number and practical problems that involve all of the above and with increasingly large positive numbers* **Measurement** ● *convert between different units of measure [for example, hour to minute]* ● read, write and convert time between analogue and digital 12- and 24-hour clocks ● *solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days* **Statistics** ● *solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.*	*Problem Solving and Reasoning 4*, pp 58–9, 8 'A dicey game' *Problem Solving and Reasoning 4*, pp 76–7, 17 'Fraction strips' *Problem Solving and Reasoning 4*, pp 50–1, 4 'How much time?' *Problem Solving and Reasoning 4*, pp 62–3, 10 'Highest and lowest'

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ADDITIVE REASONING	**Summer term 1st half**	**Addition and subtraction** ● *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* **Statistics** ● *interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs* ● *solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs* **Fractions (including decimals)** ● solve simple measure and money problems involving fractions and decimals to two decimal places **Measurement** ● *estimate, compare and calculate different measures, including money in pounds and pence*	*Problem Solving and Reasoning 4*, pp 66–7, 12 'Mystery numbers'
NUMBER SENSE		**Fractions (including decimals)** ● *count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten* ● *recognise and show, using diagrams, families of common equivalent fractions* ● *add and subtract fractions with the same denominator* ● *recognise and write decimal equivalents of any number of tenths or hundredths* ● *recognise and write decimal equivalents to ¼, ½, ¾.* ● *find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths* ● *round decimals with one decimal place to the nearest whole number* ● *compare numbers with the same number of decimal places up to two decimal places* **Measurement** ● *convert between different units of measure [for example, kilometre to metre).*	
MULTIPLICATIVE REASONING		**Number and place value** ● *count in multiples of 6, 7, 9, 25 and 1000* **Multiplication and division** ● *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 three numbers* ● *recognise and use factor pairs and commutativity in mental calculations* ● multiply two-digit and three-digit numbers by a one-digit number using formal written layout ● *solve problems involving multiplying and adding,*	*Problem Solving and Reasoning 4*, pp 72–3, 15 'Terrific thirty-six'

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GEOMETRIC REASONING		*including using the distributive law to multiply two digit numbers by one digit, integer scaling and harder correspondence problems such as* n *objects are connected to* m *objects.* **Fractions (including decimals)** ● *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* **Measurement** *solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days* **Geometry: properties of shapes** ● *compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes* ● *identify acute and obtuse angles and compare and order angles up to two right angles by size* ● *identify lines of symmetry in 2-D shapes presented in different orientations* ● complete a simple symmetric figure with respect to a specific line of symmetry **Measurement** ● measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres find the area of rectilinear shapes by counting squares	*Problem Solving and Reasoning 4*, pp 70–1, 14 'Symmetry squared' *Problem Solving and Reasoning 4*, pp 52–3, 5 'Moving and shaping'
NUMBER SENSE	**Year 5 Autumn term 1st half**	**Number and place value** ● 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 ● round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	*Problem Solving and Reasoning 5*, pp 68–9, 13 'How many chairs?'

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ADDITIVE REASONING	**Autumn term 2nd half**	• solve number problems and practical problems that involve all of the above **Multiplication and division** • multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 **Fractions (including decimals and percentages)** • read and write decimal numbers as fractions [for example, 0.71 = $^{71}/_{100}$] • recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • round decimals with two decimal places to the nearest whole number and to one decimal place • read, write, order and compare numbers with up to three decimal places • solve problems involving number up to three decimal places **Measurement** • convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) • solve problems involving converting between units of time. **Addition and subtraction** • add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) • 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 multi-step problems in contexts, deciding which operations and methods to use and why **Measurement** • use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling **Statistics** • solve comparison, sum and difference problems using information presented in a line graph • complete, read and interpret information in tables including timetables.	*Problem Solving and Reasoning 5*, pp 48–9, 3 'Chicken nuggets'
MULTIPLICATIVE REASONING		**Multiplication and division** • identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers • multiply numbers up to 4 digits by a one-digit number using a formal written method • 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* • solve problems involving multiplication and division including using their knowledge of factors and multiples • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign **Measurement** • *use all four operations to solve problems involving*	*Problem Solving and Reasoning 5*, pp 46–7, 2 'The maths factor'

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		measure [for example, length, mass, volume, money] using decimal notation including scaling.	
GEOMETRIC REASONING		**Geometry: properties of shapes** ● identify 3-D shapes, including cubes and other cuboids, from 2-D representations ● know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles ● draw given angles, and measure them in degrees (°) ● identify: – angles at a point and one whole turn (total 360°) – angles at a point on a straight line and ½ a turn (total 180°) – other multiples of 90° ● use the properties of rectangles to deduce related facts and find missing lengths and angles ● distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	*Problem Solving and Reasoning 5*, pp 66–7, 12 'Angles add up' *Problem Solving and Reasoning 5*, pp 76–7, 17 'Diagonally speaking'
NUMBER SENSE		**Number and place value** ● *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 ● *round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000* ● *solve number problems and practical problems that involve all of the above* ● read Roman numerals to 1000 (M) and recognise years written in Roman numerals	*Problem Solving and Reasoning 5*, pp 44–5, 1 'Stringy numbers'
		Multiplication and division ● *multiply and divide whole numbers and those involving decimals by 10, 100 and 1000* **Fractions (including decimals and percentages)** ● *read and write decimal numbers as fractions [for example, 0.71 = $^{71}/_{100}$]* ● *recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents* ● *round decimals with two decimal places to the nearest whole number and to one decimal place* ● *read, write, order and compare numbers with up to three decimal places* ● *solve problems involving number up to three decimal places* **Measurement** ● *convert between different units of measure (e.g. kilometre and metre; metre and centimetre; centimeter and millimetre; kilogram and gram; litre and millilitre)* ● *solve problems involving converting between units of time.*	*Problem Solving and Reasoning 5*, pp 50–1, 4 'Tricky triangles'
ADDITIVE REASONING	**Spring term 1st half**	**Addition and subtraction** ● *add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)* ● *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 multi-step problems in contexts, deciding*	*Problem Solving and Reasoning 5*, pp 60–1, 9 'Dinosaurs'

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NUMBER SENSE **MULTIPLICATIVE REASONING**	**Spring term 2nd half**	*which operations and methods to use and why* **Fractions (including decimals and percentages)** ● *solve problems involving number up to three decimal places* **Measurement** ● *use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling* ● *measure and calculate the perimeter* **Statistics** ● *solve comparison, sum and difference problems using information presented in a line graph* ● *complete, read and interpret information in tables, including timetables.* **Multiplication and division** ● *multiply and divide whole numbers and those involving decimals by 10, 100 and 1000* **Fractions (including decimals and percentages)** ● compare and order fractions whose denominators are all multiples of the same number ● recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$] ● *read and write decimal numbers as fractions [for example, 0.71 = $\frac{71}{100}$]* ● *recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents* ● recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100, and as a decimal ● identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths. **Multiplication and division** ● *identify multiples and factors, including finding all factor pairs* ● know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers ● *solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates* ● 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-digit number using a formal written method* ● *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* ● recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) ● *solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes* ● solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign **Fractions (including decimals and percentages)** ● solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those with a	*Problem Solving and Reasoning 5*, pp 62–3, 10 'Ice-cream!' *Problem Solving and Reasoning 5*, pp 70–1, 14 'Equivalence'

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		denominator of a multiple of 10 or 25 **Measurement** ● *use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling*	
GEOMETRIC REASONING		**Geometry: properties of shapes** ● *identify 3-D shapes, including cubes and other cuboids, from 2-D representations* ● *know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles* ● *draw given angles, and measure them in degrees (°)* ● *Identify:* – *angles at a point and one whole turn (total 360°)* – *angles at a point on a straight line and ½ a turn (total 180°)* – *other multiples of 90°* ● *use the properties of rectangles to deduce related facts and find missing lengths and angles* ● *distinguish between regular and irregular polygons based on reasoning about equal sides and angles* **Geometry: position and direction** ● identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.	*Problem Solving and Reasoning 5*, pp 52–3, 5 'It's all reflecting'
NUMBER SENSE		**Number and place value** ● *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* ● *round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000* ● *solve number problems and practical problems that involve all of the above* **Multiplication and division** ● *multiply and divide whole numbers and those involving decimals by 10, 100 and 1000* **Fractions (including decimals and percentages)** ● *compare and order fractions whose denominators are all multiples of the same number* ● *recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number [for example, $^{2}/_{5} + {}^{4}/_{5} = {}^{6}/_{5} = 1{}^{1}/_{5}$]* ● *read and write decimal numbers as fractions [for example, 0.71 = $^{71}/_{100}$]* ● *recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents* ● *round decimals with two decimal places to the nearest whole number and to one decimal place* ● *read, write, order and compare numbers with up to three decimal places* ● *solve problems involving number up to three decimal places* **Measurement** ● *convert between different units of measure (e.g. kilometre and metre; metre and centimetre; centimeter and millimetre; kilogram and gram; litre and millilitre)*	*Problem Solving and Reasoning 5*, pp 56–7, 7 'Twenty-three' *Problem Solving and Reasoning 5*, pp 58–9, 8 'Tablet problems' *Problem Solving and Reasoning 5*, pp 64–5, 11 'Place value guess who'

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ADDITIVE REASONING **NUMBER SENSE**	**Summer term 1st half**	● *solve problems involving converting between units of time.* **Addition and subtraction** ● *add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)* ● *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 multi-step problems in contexts, deciding which operations and methods to use and why* **Fractions (including decimals and percentages)** ● *recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]* ● add and subtract fractions with the same denominator and denominators that are multiples of the same number ● *solve problems involving number up to three decimal places* **Measurement** ● *use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling* *solve problems involving converting between units of time* **Statistics** ● *solve comparison, sum and difference problems using information presented in a line graph* ● *complete, read and interpret information in tables, including timetables.* **Multiplication and division** ● *multiply and divide whole numbers and those involving decimals by 10, 100 and 1000* **Fractions (including decimals and percentages)** ● *compare and order fractions whose denominators are all multiples of the same number* ● *recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number [for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]* ● *read and write decimal numbers as fractions [for example, 0.71 = $\frac{71}{100}$]* ● *recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents* ● *recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100, and as a decimal.* **Measurement** ● *convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre].* **Multiplication and division** ● *identify multiples and factors, including finding all factor pairs, and*	*Problem Solving and Reasoning 5*, pp 72–3, 15 'Fraction pairs' *Problem Solving and Reasoning 5*, pp 72–3, 15 'Fraction pairs' *Problem Solving and Reasoning 5*, pp 78–9, 18 'Body proportions'

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MULTIPLICATIVE REASONING **GEOMETRIC REASONING**	**Summer term 2nd half**	*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* ● *recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})* ● *solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes* ● *solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign* ● *solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.* **Fractions (including decimals and percentages)** ● *identify, name and write equivalent fractions of a given fraction, represented visually including tenths and hundredths* ● multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams ● *solve problems which require knowing percentage and decimal equivalents of ½, ¼, ⅕, ⅖, ⅘ and those with a denominator of a multiple of 10 or 25* **Measurement** ● *use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling* ● understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints ● *solve problems involving converting between units of time.* **Geometry: properties of shapes** ● *use the properties of rectangles to deduce related facts and find missing lengths and angles* ● *distinguish between regular and irregular polygons based on reasoning about equal sides and angles* **Geometry: position and direction** ● *identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed* **Measurement** ● measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres ● calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes ● estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water].	*Problem Solving and Reasoning 5*, pp 74–5, 16 'The flood' *Problem Solving and Reasoning 5*, pp 54–5, 6 'Meerkat madness'

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NUMBER SENSE	**Year 6 Autumn term 1st half**	**Number and place value** ● read, write, order and compare numbers up to 10 000 000 and determine the value of each digit ● round any whole number to a required degree of accuracy ● solve number and practical problems that involve all of the above **Fractions (including decimals and percentages)** ● identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000	

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ADDITIVE REASONING **MULTIPLICATIVE REASONING**	**Autumn term 2nd half**	giving answers up to three decimal places **Measurement** ● use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places convert between miles and kilometres **Addition, subtraction, multiplication and division** ● perform mental calculations, including with mixed operations and large numbers ● use their knowledge of the order of operations to carry out calculations involving the four operations ● solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why ● solve problems involving addition, subtraction ● use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy **Fractions (including decimals and percentages)** ● solve problems which require answers to be rounded to specified degrees of accuracy **Algebra** ● use simple formulae ● generate and describe linear number sequences ● express missing number problems algebraically ● find pairs of numbers that satisfy an equation with two unknowns ● enumerate possibilities of combinations of two variables **Measurement** ● solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate ● *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places* **Statistics** ● interpret and construct pie charts and line graphs and use these to solve problems. **Addition, subtraction, multiplication and division** ● 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 ● *use their knowledge of the order of operations to carry out calculations involving the four operations* ● *solve problems involving addition, subtraction,* multiplication and division ● *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate*	*Problem Solving and Reasoning 6*, pp 72–3, 15 'Monsters' *Problem Solving and Reasoning 6*, pp 44–5, 1 'Missing numbers' *Problem Solving and Reasoning 6*, pp 50–1, 4 'Baffling banquets'

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		degree of accuracy **Fractions (including decimals and percentages)** ● 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 **Ratio and proportion** ● solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison **Algebra** ● *use simple formulae* ● *generate and describe linear number sequences* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns* ● *enumerate possibilities of combinations of two variables.* **Measurement** ● *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate* ● *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places* **Statistics** ● *interpret and construct pie charts and line graphs and use these to solve problems* ● calculate and interpret the mean as an average.	*Problem Solving and Reasoning 6*, pp 60–1, 9 'Pascal's triangle'
GEOMETRIC REASONING		**Geometry: properties of shapes** ● draw 2-D shapes using given dimensions and angles ● recognise, describe and build simple 3-D shapes, including making nets ● compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons ● illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius ● recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles **Algebra** ● *use simple formulae* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns* ● *enumerate possibilities of combinations of two variables* **Measurement** ● recognise that shapes with the same areas can have different perimeters and vice versa ● calculate the area of parallelograms and triangles recognise when it is possible to use the formulae for area and volume of shapes	*Problem Solving and Reasoning 6*, pp 64–5, 11 'Chickens' *Problem Solving and Reasoning 6*, pp 78–9, 18 'Chunky chocolate cubes'
NUMBER SENSE		**Number and place value** ● *read, write, order and compare numbers up to 10 000 000 and determine the value of each digit* ● *round any whole number to a required degree of accuracy* ● use negative numbers in context, and calculate intervals across zero ● *solve number problems and practical problems that involve all of the*	*Problem Solving and Reasoning 6*, pp 46–7, 2 'Magic squares'

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ADDITIVE REASONING **NUMBER SENSE**	**Spring term 1st half**	*above* **Fractions (including decimals and percentages)** ● *identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 given answers up to three decimal places* **Measurement** ● *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places.* **Number and place value** ● *use negative numbers in context, and calculate intervals across zero* **Addition, subtraction, multiplication and division** ● *perform mental calculations, including with mixed operations and large numbers* ● *use their knowledge of the order of operations to carry out calculations involving the four operations* ● *solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why* ● *solve problems involving addition, subtraction* ● *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy* **Fractions (including decimals and percentages)** ● *solve problems which require answers to be rounded to specified degrees of accuracy* **Algebra** ● *use simple formulae* ● *generate and describe linear number sequences* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns* ● *enumerate possibilities of combinations of two variables* **Measurement** ● *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate* ● *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places* **Statistics** *interpret and construct pie charts and line graphs and use these to solve problems* **Fractions (including decimals and percentages)** ● use common factors to simplify fractions; use common multiples to express fractions in the same denomination ● compare and order fractions, including fractions >1 ● associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] ● recall and use equivalences between simple fractions, decimals and percentages, including in different contexts ● *identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places*	

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MULTIPLICATIVE REASONING	**Spring term 2nd half**	**Algebra** ● *use simple formulae* ● *generate and describe linear number sequences* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns* **Measurement** ● *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate* ● *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places* **Statistics** ● *interpret and construct pie charts and line graphs and use these to solve problems.* **Addition, subtraction, multiplication and division** ● *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* ● *perform mental calculations, including with mixed operations and large numbers* ● *identify common factors, common multiples and prime numbers* ● *use their knowledge of the order of operations to carry out calculations involving the four operations* ● *solve problems involving addition, subtraction, multiplication and division* ● *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy* **Fractions (including decimals and percentages)** ● *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* **Ratio and proportion** ● *solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison* ● <u>solve problems involving the relative sizes of two quantities, where missing values can be found by using integer multiplication and division facts</u> ● <u>solve problems involving unequal sharing and grouping using knowledge of fractions and multiples</u> **Algebra** ● *use simple formulae* ● *generate and describe linear number sequences* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns*	*Problem Solving and Reasoning 6*, pp 58–9,

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GEOMETRIC REASONING		• *enumerate possibilities of combinations of two variables* **Measurement** • *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate* • *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places* • *convert between miles and kilometres* **Statistics** • *interpret and construct pie charts and line graphs and use these to solve problems* *calculate and interpret the mean as an average.* **Geometry: properties of shapes** • *draw 2-D shapes using given dimensions and angles* • *recognise, describe and build simple 3-D shapes, including making nets* • *compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons* • *illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius* **Geometry: position and direction** • describe positions on the full coordinate grid (all four quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes **Algebra** • *use simple formulae* • *express missing number problems algebraically* • *find pairs of numbers that satisfy an equation with two unknowns* • *enumerate possibilities of combinations of two variables* **Measurement** • *calculate the area of parallelograms and triangles* • *recognise when it is possible to use the formulae for area and volume of shapes* • calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimeters (cm^3) and cubic metres (m^3) and extending to other units, [for example, mm^3 and km^3] **Ratio and proportion** • Solve problems involving similar shapes where the scale factor is known or can be found. **Geometry: properties of shapes** • *draw 2-D shapes using given dimensions and angles* • *recognise, describe and build simple 3-D shapes, including making nets* • *compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons* • *illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius* **Geometry: position and direction** • describe positions on the full coordinate grid (all four quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes **Algebra** • *use simple formulae* • *express missing number problems algebraically*	8 'Greatest product'

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NUMBER SENSE **ADDITIVE REASONING**	**Summer term 1st half**	• *find pairs of numbers that satisfy an equation with two unknowns* • *enumerate possibilities of combinations of two variables* **Measurement** • *calculate the area of parallelograms and triangles* • *recognise when it is possible to use the formulae for area and volume of shapes* • calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimeters (cm^3) and cubic metres (m^3) and extending to other units, [for example, mm^3 and km^3] **Ratio and proportion** • Solve problems involving similar shapes where the scale factor is known or can be found. **Number and place value** • *read, write, order and compare numbers up to 10 000 000 and determine the value of each digit* • *round any whole number to a required degree of accuracy* • *use negative numbers in context, and calculate intervals across zero* • *solve number problems and practical problems that involve all of the above* **Fractions (including decimals and percentages)** • *use common factors to simplify fractions; use common multiples to express fractions in the same denomination* • *compare and order fractions, including fractions >1* • *identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places* **Measurement** • *use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places* • *convert between miles and kilometres.* **Addition, subtraction, multiplication and division** • *perform mental calculations, including with mixed operations and large numbers* • *use their knowledge of the order of operations to carry out calculations involving the four operations* • *solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why* • *solve problems involving addition, subtraction, multiplication and division* • *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy* **Fractions (including decimal and percentages)** • add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • *solve problems which require answers to be rounded to specified degrees of accuracy* **Algebra** • *use simple formulae* • *generate and describe linear number sequences* • *express missing number problems algebraically* • *find pairs of numbers that satisfy an equation with two unknowns* • *enumerate possibilities of combinations of two variables* **Measurement** • *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where*	

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NUMBER SENSE		*appropriate* ● *use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places* **Statistics** ● *interpret and construct pie charts and line graphs and use these to solve problems* *calculate and interpret the mean as an average* **Fractions (including decimals and percentages)** ● *use common factors to simplify fractions; use common multiples to express fractions in the same denomination* ● *compare and order fractions, including fractions >1* ● *associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$]* ● *recall and use equivalences between simple fractions, decimals and percentages, including in different contexts* ● *identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places* **Algebra** ● *use simple formulae* ● *generate and describe linear number sequences* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns* **Measurement** ● *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate* ● *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places* **Statistics** ● *interpret and construct pie charts and line graphs and use these to solve problems.*	*Problem Solving and Reasoning 6*, pp 66–7, 12 'Perfect, abundant and deficient numbers' *Problem Solving and Reasoning 6*, pp 68–9, 13 'Number knowledge' *Problem Solving and Reasoning 6*, pp 76–7, 17 'Pies or lines?'
MULTIPLICATIVE REASONING	**Summer term 2nd half**	**Addition, subtraction, multiplication and division** ● *multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient 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* ● *use their knowledge of the order of operations to carry out calculations involving the four operations* ● *solve problems involving addition, subtraction, multiplication and division* ● *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy* **Fractions (including decimals and percentages)** ● multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$]	*Problem Solving and Reasoning 6*, pp 54–5, 6 'Divisibility' *Problem Solving and Reasoning 6*, pp 70–1, 14 'Trickier triangles'

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GEOMETRIC REASONING		● divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$] ● *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* **Ratio and proportion** ● *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 the relative sizes of two quantities, where missing values can be found by using multiplication and division facts* ● *solve problems involving unequal sharing and grouping using knowledge of fractions and multiples* **Algebra** ● *use simple formulae* ● *generate and describe linear number sequences* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns* ● *enumerate possibilities of combinations of two variables* **Measurement** ● *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate* ● *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places* **Statistics** ● *interpret and construct pie charts and line graphs and use these to solve problems* *calculate and interpret the mean as an average.* **Geometry: properties of shapes** ● *draw 2-D shapes using given dimensions and angles* ● *recognise, describe and build simple 3-D shapes, including making nets* ● *compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons* ● *illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius* ● *recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles* **Geometry: position, direction, motion** ● *describe positions on the full coordinate grid (all four quadrants)* ● *draw and translate simple shapes on the coordinate plane, and reflect them in the axes* **Algebra** ● *use simple formulae* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns* ● *enumerate possibilities of combinations of two variables* **Measurement** ● *recognise that shapes with the same areas can have different perimeters and vice versa* ● *calculate the area of parallelograms and triangles* ● *recognise when it is necessary to use the formulae for area and volume of shapes* ● *calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimeters (cm^3) and cubic metres (m^3) and extending to other units, [for example, mm^3 and km^3]* **Ratio and proportion** ● *solve problems involving similar shapes where the scale factor is known*	*Problem Solving and Reasoning 6*, pp 52–3, 5 'Cube nets' *Problem Solving and Reasoning 6*, pp 56–7, 7 'Formulae'

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		or can be found.	