Medium Term Plans for Mathematics: Curriculum 2016-17 Year 3_4

Y3/4 Block A Term 1 (15 lessons) 3/4 A1 Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..* These objectives will also be revisited throughout the year	
Problem solving and reasoning	**Year 3**	**Year 4**

• Solve one and two-step problems involving whole numbers, simple fractions and decimals, money and measures, including time and temperature, perimeter and applying multiplicative scaling
 	
• Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs
 	
• Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons
 	
• Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument
 	
Number and Place Value
• ***count from 0 in multiples of 4, 8, 50 and 100***
• ***count in multiples of 6, 7, 9, 25 and 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 3 and four-digit number (thousands, hundreds, tens, and ones)***
• order and compare numbers to and beyond 1000
• identify, represent and estimate numbers using different representations
• read and write numbers to at least 1000 in numerals and in words
• 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 understand how, over time, the numeral system changed to include the concept of zero and place value.
	Addition and subtraction
	• add and subtract numbers mentally, including:
	    o a three-digit number and ones
	    o a three-digit number and tens
	    o a three-digit number and hundreds
	• add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction
	  (number-lines –Diennes – column)
	
	Measures
	• measure, compare, add and subtract: **lengths (m/cm/mm);** mass (kg/g); volume/capacity (l/ml)
	• *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 angles as 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
		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, (inc. money), deciding which operations and methods to use and why.
		
		Measures
		• convert between different units of **measure (e.g. kilometre to metre**; hour to minute)
		• *read, write and convert time between analogue and digital 12 and 24-hour clocks (mostly mental)*
		
		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

Key: **BOLD = focus**   Blue = could be done mentally in mental maths meetings/starters

Medium Term Plans for Mathematics: Curriculum 2016-17 Year 3_4

Y3/4 Block B Term 1 (15 lessons) 3/4B1 Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..* These objectives will also be revisited throughout the year	
Problem solving and reasoning • Solve one and two-step problems involving whole numbers, simple fractions and decimals, money and measures, including time and temperature, perimeter and applying multiplicative scaling • Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs • Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons • Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument **Number and Place Value** • ***count from 0 in multiples of 4, 8, 50 and 100*** • ***count in multiples of 6, 7, 9, 25 and 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 3 and four-digit number (thousands, hundreds, tens, and ones)*** • order and compare numbers to and beyond 1000 • identify, represent and estimate numbers using different representations • read and write numbers to at least 1000 in numerals and in words • 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 understand how, over time, the numeral system changed to include the concept of zero and place value.	**Year 3** **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 (numberlines – grid – column) • solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects. **Fractions** (see NC notes and guidance) • 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 (1/3, ¼, 1/5) and non-unit fractions (2/3, ¾, 2/5)with small denominators • recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators • compare and order unit fractions, and fractions with the same denominator • solve problems that involve all of the above.	**Year4** **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 • multiply two-digit and three-digit numbers by a one-digit number using formal written layout • solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. **Fractions, decimals and percentages** • count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten • 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

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Y3/4 Block C Term 1 (15 lessons) 3/4C1 Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..* These objectives will also be revisited throughout the year	
Problem solving and reasoning	**Year 3**	**Year4**
• Solve one and two-step problems involving whole numbers, simple fractions and decimals, money and measures, including time and temperature, perimeter and applying multiplicative scaling • Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs • Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons • Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument **Number and Place Value** • *count from 0 in multiples of 4, 8, 50 and 100* • *count in multiples of 6, 7, 9, 25 and 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 3 and four-digit number (thousands, hundreds, tens, and ones)* • order and compare numbers to and beyond 1000 • identify, represent and estimate numbers using different representations • read and write numbers to at least 1000 in numerals and in words • 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 mentally, including: o a three-digit number and ones o a three-digit number and tens o a three-digit number and hundreds • **add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction (numberlines – dienes – column)** • solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. **Measures** • measure, compare, add and subtract: **lengths (m/cm/mm);** mass (kg/g); volume/capacity (l/ml) • measure the perimeter of simple 2-D shapes • know the number of seconds in a minute and the number of days in each month, year and leap year **Statistics** • interpret and present data using bar charts, pictograms and tables • solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables.	**Addition and subtraction** • **add and subtract numbers with up to 4 digits using the efficient 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. **Measures** • convert between different units of **measure (e.g. kilometre to metre;** hour to minute) • measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • find the area of rectilinear shapes by counting • read, write and convert time between analogue and digital 12 and 24-hour clocks **Statistics** • interpret and present discrete data using bar charts and continuous data using line graphs • solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and simple line graphs. *Compare the impact of representations where scales have intervals of differing step sizes*

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Y3/4 Block D Term 1 (15 lessons) 3/4D1 Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..* These objectives will also be revisited throughout the year	
Problem solving and reasoning	**Year 3**	**Year 4**
• Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs • Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons • Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument **Number and Place Value** • *count from 0 in multiples of 4, 8, 50 and 100* • *count in multiples of 6, 7, 9, 25 and 1000* • *count backwards through zero to include negative numbers* • *recognise the place value of each digit in 3 and four-digit number (thousands, hundreds, tens, and ones)* • order and compare numbers to and beyond 1000 • identify, represent and estimate numbers using different representations • read and write numbers to at least 1000 in numerals and in words • 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 understand how, over time, the numeral system changed to include the concept of zero and place value.	**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 (numberline – grid – column) • solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects. **Fractions** • add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$) • **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** • compare and order unit fractions, and fractions with the same denominator **Geometry: properties of shape** • draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them • recognise angles as a property of shape or a description of a turn • identify right angles, identify whether angles are greater than or less than a right angle identify horizontal, vertical, perpendicular and parallel lines in relation to other lines	**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 commutatively 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, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects. **Fractions, decimals and percentages** • **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** • solve simple measure and money problems involving fractions and decimals to two decimal places. • add and subtract fractions with the same denominator. **Geometry: position and direction** • describe positions on a 2-D grid as coordinates in the first quadrant • plot specified points and draw sides to complete a given polygon.

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Y3/4 Block A Term 2 (15 lessons) 3/4A2 Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..* These objectives will also be revisited throughout the year	
Problem solving and reasoning	**Year 3**	**Year 4**

• Solve one and two-step problems involving whole numbers, simple fractions and decimals, money and measures, including time and temperature, perimeter and applying multiplicative scaling
• Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs
• Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons
• Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument
 	
Number and Place Value
• *count from 0 in multiples of 4, 8, 50 and 100*
• *count in multiples of 6, 7, 9, 25 and 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 3 and four-digit number (thousands, hundreds, tens, and ones)*
• order and compare numbers to and beyond 1000
• identify, represent and estimate numbers using different representations
• read and write numbers to at least 1000 in numerals and in words
• 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 mentally, including:
	    o a three-digit number and ones
	    o a three-digit number and tens
	    o 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.**
	
	Measures
	• measure, compare, add and subtract: lengths (m/cm/mm); **mass (kg/g);** volume/capacity (l/ml)
	• measure the perimeter of simple 2-D shapes
	• **add and subtract amounts of money to give change, using both £ and p in practical contexts**
	• 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 angles as 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
		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.
		
		Measures
		• convert between different units of measure (e.g. kilometre to metre; **kg to g,** hour to minute)
		• measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
		• find the area of rectilinear shapes by counting squares
		• **estimate, compare and calculate different measures, including money in pounds and pence**
		• read, write and convert time between analogue and digital 12 and 24-hour clocks
		
		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.**

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Y3/4 Block B Term 2 (15 lessons) 3/4B2 Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..* These objectives will also be revisited throughout the year	
Problem solving and reasoning	**Year 3**	**Year 4**
• Solve one and two-step problems involving whole numbers, simple fractions and decimals, money and measures, including time and temperature, perimeter and applying multiplicative scaling • Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs • Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons • Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument **Number and Place Value** • *count from 0 in multiples of 4, 8, 50 and 100* • *count in multiples of 6, 7, 9, 25 and 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 3 and four-digit number (thousands, hundreds, tens, and ones)* • order and compare numbers to and 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 understand how, over time, the numeral system changed to include the concept of zero and place value.	**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, including 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 • 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** • compare and order unit fractions with the same denominator • solve problems that involve all of the above.	**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 commutatively 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, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.** **Fractions, decimals and percentages** • count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten • 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 • **recognise and show, using diagrams, families of common equivalent fractions** • add and subtract fractions with the same denominator.

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Y3/4 Block C Term 2 (15 lessons) 3/4C2 Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..* These objectives will also be revisited throughout the year	
Problem solving and reasoning	**Year 3**	**Year 4**

• Solve one and two-step problems involving whole numbers, simple fractions and decimals, money and measures, including time and temperature, perimeter and applying multiplicative scaling
• Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs
• Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons
• Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument
 	
Number and Place Value
• *count from 0 in multiples of 4, 8, 50 and 100*
• *count in multiples of 6, 7, 9, 25 and 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 3 and four-digit number (thousands, hundreds, tens, and ones)*
• order and compare numbers to and beyond 1000
• identify, represent and estimate numbers using different representations
• read and write numbers to at least 1000 in numerals and in words
• 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 mentally, including:
	  o a three-digit number and ones
	  o a three-digit number and tens
	  o a three-digit number and hundreds
	• add and subtract numbers with up to three digits, using formal written methods of columnar + and -
	• 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 (money).**
	
	Measures
	• measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); **volume/capacity (l/ml**)
	• **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, hours and o'clock; use vocabulary such as 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 such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts, tables and pictograms.
		Addition and subtraction
		• add and subtract numbers with up to 4 digits using the efficient 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(money), deciding which operations and methods to use and why.**
		
		Measures
		• convert between different units of measure (e.g. kilometre to metre; **l to ml**, 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
		• interpret and present discrete data using bar charts and continuous data using line graphs
		• solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and simple line graphs.
		• *Compare the impact of representations where scales have intervals of differing step sizes*

Key: **BOLD = focus**   Blue = could be done mentally in mental maths meetings/starters

Y3/4 Block D Term 2 (15 lessons) 3/4D2 Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..* These objectives will also be revisited throughout the year	
Problem solving and reasoning	**Year 3**	**Year 4**
• Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs • Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons • Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument **Number and Place Value** • *count from 0 in multiples of 4, 8, 50 and 100* • *count in multiples of 6, 7, 9, 25 and 1000* • *count backwards through zero to include negative numbers* • *recognise the place value of each digit in 3 and four-digit number (thousands, hundreds, tens, and ones)* • order and compare numbers to and beyond 1000 • identify, represent and estimate numbers using different representations • read and write numbers to at least 1000 in numerals and in words • 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 understand how, over time, the numeral system changed to include the concept of zero and place value. .	**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, including integer scaling problems and correspondence problems in which n objects are connected to m objects. **Fractions** • add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$) • 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 show, using diagrams, equivalent fractions with small denominators • compare and order unit fractions with the same denominator **Geometry: properties of shape** • draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them • recognise angles as a property of shape or a description of a turn • identify right angles, identify whether angles are greater than or less than a right angle • **identify horizontal, vertical, perpendicular and parallel lines in relation to other lines**	**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 commutatively 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, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects. **Fractions, decimals and percentages** • **recognise and write decimal equivalents of any number of tenths or hundredths** • **recognise & 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** • **solve simple measure and money problems involving fractions and decimals to two decimal places.** **Geometry: position and direction** • **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.

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Y3/4 Block A Term 3 (15 lessons) Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..*	
Problem solving and reasoning	**Year 3**	**Year 4**

• Solve one and two-step problems involving whole numbers, simple fractions and decimals, money and measures, including time and temperature, perimeter and applying multiplicative scaling
• Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs
• Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons
• Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument
 	
Number and Place Value
• *count from 0 in multiples of 4, 8, 50 and 100*
• *count in multiples of 6, 7, 9, 25 and 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 3 and four-digit number (thousands, hundreds, tens, and ones)*
• order and compare numbers to and beyond 1000
• identify, represent and estimate numbers using different representations
• read and write numbers to at least 1000 in numerals and in words
• 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 understand how, over time, the numeral system changed to include the concept of zero and place value.
	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, 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.
	
	Measures
	• measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
	• measure the perimeter of simple 2-D shapes
	• add and subtract amounts of money to give change, using both £ and p in practical contexts
	• 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
	
	Geometry: properties of shape
	• recognise angles as 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
		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.*
		
		Measures
		• convert between different units of measure (e.g. kilometre to metre; hour to minute)
		• measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
		• find the area of rectilinear shapes by counting squares
		• estimate, compare and calculate different measures, including money in pounds and pence
		• 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
		• interpret and present discrete data using bar charts and continuous data using line graphs
		• solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and simple line graphs.

Key: **BOLD = focus**   Blue = could be done mentally in mental maths meetings/starters

Y3/4 Block B Term 3 (15 lessons) Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..*	
Problem solving and reasoning	**Year 3**	**Year 4**
• Solve one and two-step problems involving whole numbers, simple fractions and decimals, money and measures, including time and temperature, perimeter and applying multiplicative scaling • Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs • Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons • Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument **Number and Place Value** • *count from 0 in multiples of 4, 8, 50 and 100* • *count in multiples of 6, 7, 9, 25 and 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 3 and four-digit number (thousands, hundreds, tens, and ones)* • order and compare numbers to and beyond 1000 • identify, represent and estimate numbers using different representations • read and write numbers to at least 1000 in numerals and in words • 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 understand how, over time, the numeral system changed to include the concept of zero and place value.	**Multiplication and division** • recall and use x and ÷ facts for the 3, 4 & 8s • 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, including 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 • 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 • compare and order unit fractions with the same denominator • solve problems that involve all of the above. **Statistics** • interpret and present data using bar charts, pictograms and tables • solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts, pictograms and tables.	**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 commutatively 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, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects**.** **Fractions, decimals and percentages** • count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten • 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 • recognise and show, using diagrams, families of common equivalent fractions • add and subtract fractions with the same denominator. **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

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Y3/4 Block C Term 3 (15 lessons) Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..*	
Problem solving and reasoning	**Year 3**	**Year 4**

Problem solving and reasoning

- Solve one and two-step problems involving whole numbers, simple fractions and decimals, money and measures, including time and temperature, perimeter and applying multiplicative scaling
- Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs
- Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons
- Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument

Number and Place Value

- *count from 0 in multiples of 4, 8, 50 and 100*
- *count in multiples of 6, 7, 9, 25 and 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 3 and four-digit number (thousands, hundreds, tens, and ones)*
- order and compare numbers to and beyond 1000
- identify, represent and estimate numbers using different representations
- read and write numbers to at least 1000 in numerals and in words
- 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 understand how, over time, the numeral system changed to include the concept of zero and place value.

Year 3

Addition and subtraction

- add and subtract numbers mentally, including:
  - o a three-digit number and ones
  - o a three-digit number and tens
  - o 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.

Measures

- 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
- 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, hours and o'clock; use vocabulary such as 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 such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts, pictograms and tables

Year 4

Addition and subtraction

- add and subtract numbers with up to 4 digits using the efficient 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.

Measures

- convert between different units of measure (e.g. kilometre to metre; hour to minute)
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- find the area of rectilinear shapes by counting
- estimate, compare and calculate different measures, including money in £s and p
- 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

- interpret and present discrete data using bar charts and continuous data using line graphs
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and simple line graphs.
- *Compare the impact of representations where scales have intervals of differing step sizes*

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Y3/4 Block D Term 3 (15 lessons) Ongoing/embedded AT1 and mental calculations	Learning Objectives : *By the end of this sequence of lessons all pupils will be able to…..*	
Problem solving and reasoning	**Year 3**	**Year 4**
• Represent a problem using number sentences involving more than one operation; draw and interpret diagrams and graphs • Report orally on solutions to problems, providing explanations and decisions supported with an argument and reasons • Identify and describe patterns, properties and relationships to establish invariants, apply in unfamiliar situations to make deductions; investigate a given statement and test with examples; collect data to create graphs and support an argument **Number and Place Value** • ***count from 0 in multiples of 4, 8, 50 and 100*** • ***count in multiples of 6, 7, 9, 25 and 1000*** • ***count backwards through zero to include negative numbers*** • ***recognise the place value of each digit in 3 and four-digit number (thousands, hundreds, tens, and ones)*** • order and compare numbers to and beyond 1000 • identify, represent and estimate numbers using different representations • read and write numbers to at least 1000 in numerals and in words • 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	**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, including integer scaling problems and correspondence problems in which n objects are connected to m objects. **Fractions** • add and subtract fractions with the same denominator within one whole (e.g. $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$) • 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 show, using diagrams, equivalent fractions with small denominators • compare and order unit fractions with the same denominator **Geometry: properties of shape** • draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations; and describe them • recognise angles as a property of shape or a description of a turn • identify right angles, identify whether angles are greater than or less than a right angle identify horizontal, vertical, perpendicular and parallel lines in relation to other lines	**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 commutatively 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, including using the distributive law and harder multiplication problems such as which n objects are connected to m objects. **Fractions, decimals and percentages** • 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 • solve simple measure and money problems involving fractions and decimals to two decimal places. **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.

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Medium Term Plans for Mathematics: Curriculum 2016-17 Year 3_4