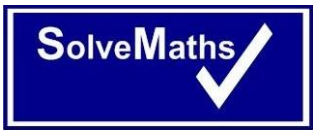

Advanced MTP Resource

YEAR 2

YEAR 2

MENTAL ORAL STARTER OBJECTIVES

It is essential to address all of the objectives as some of PoS requirements that involve mental mathematics are **not** embedded within the four teaching cycles.

Also, this is **not an exhaustive mental oral objective list**, so please use your professional judgement to build in other mental oral starter objectives that review learning or link to other areas of mathematics.

Year 2 Mental oral starter objectives:

- 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.
- [Pupils should partition numbers in different ways (for example, 23 = 20 + 3 and 23 = 10 + 13) to support subtraction.]
  [They become fluent and apply their knowledge of numbers to reason with, discuss and solve problems that emphasise the value of each digit in two-digit numbers. They begin to understand zero as a place holder]
- solve problems with addition and subtraction:
  - applying their increasing knowledge of mental 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
- recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems
- 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
- recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$,of a length, shape, set of objects or quantity
- write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$
- find different combinations of coins that 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
- 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.
- order and arrange combinations of mathematical objects in patterns and sequences

		AUTUMN		SPRING		SUMMER
YEAR 2 MTP **Teaching Cycle 1** **Approx 3 weeks**	NU	▪ Build on Year 1 Learning: children count to and across 100, forwards and backwards beginning with 0 or 1, or from any given number. Identify one more and one less. Read and write numbers from 1 to 20 in numerals and words. 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 ▪ **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)** ▪ **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** ▪	NU	▪ *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)* ▪ *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* ▪ **identify, represent and estimate numbers using different representations, including the number line** [As they become more confident with numbers up to 100, pupils are introduced to larger numbers to develop further their recognition of patterns within the number system and represent them in different ways, including spatial representations. Pupils should partition numbers in different ways (for example, 23 = 20 + 3 and 23 = 10 + 13) to support subtraction.] [They become fluent and apply their knowledge of numbers to reason with, discuss and solve problems that emphasise the value of each digit in two-digit numbers. They begin to understand zero as a place holder]	NU	▪ *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)* ▪ *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* ▪ *identify, represent and estimate numbers using different representations, including the number line* ▪ *[As they become more confident with numbers up to 100, pupils are introduced to larger numbers to develop further their recognition of patterns within the number system and represent them in different ways, including spatial representations. Pupils should partition numbers in different ways (for example, 23 = 20 + 3 and 23 = 10 + 13) to support subtraction.] [They become fluent and apply their knowledge of numbers to reason with, discuss and solve problems that emphasise the value of each digit in two-digit numbers. They begin to understand zero as a place holder]*
	A	▪ **recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100** For this teaching cycle focus on securing addition and facts to 20.	A	▪ *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* ▪ *three one-digit numbers* ▪ *solve problems with addition and subtraction*	A	▪ *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* ▪ *three one-digit numbers* ▪ *solve problems with addition and subtraction*

NU = Number understanding, **A** = Arithmetic, **M** = Measurement, **G** = Geometry

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				using concrete objects and pictorial representations **including those involving numbers, quantities and measures** ▪ **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**		*using concrete objects and pictorial representations* including those involving *numbers, quantities and measures* ▪ *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*
YEAR 2 MTP **Teaching Cycle 1** **Approx 3 weeks**	M	Build on Year 1 Learning: children solve practical for length and begin to measure and record. ▪ **choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); to the nearest appropriate unit, using rulers** ▪ **compare and order lengths and record the results using >, < and =** [They use the appropriate language and record using standard abbreviations. Comparing measures includes simple multiples such as 'half as high'; 'twice as wide'.] ▪ ▪ Note for this teaching cycle focus only on length.	M	Build on Year 1 Learning: children solve practical for mass/weight and begin to measure and record. ▪ **choose and use appropriate standard units to estimate and measure mass (kg/g) to the nearest appropriate unit, using scales** ▪ **compare and order mass and record the results using >, < and =**[They use the appropriate language and record using standard abbreviations. Comparing measures includes simple multiples such as 'half as high'; 'twice as wide'.] Note for this teaching cycle focus only on mass.	M	Build on Year 1 Learning: children solve practical for volume/capacity and begin to measure and record. ▪ **choose and use appropriate standard units to estimate temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using thermometers and measuring vessels** ▪ **compare and order volume/capacity and record the results using >, < and =** [They use the appropriate language and record using standard abbreviations. Comparing measures includes simple multiples such as 'half as high'; 'twice as wide'.] Note for this teaching cycle focus only on volume/capacity

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		AUTUMN		SPRING		SUMMER
YEAR 2 MTP **Teaching Cycle 2**		▪ Build on Year 1 Learning: children count to and across 100, forwards and backwards beginning with 0 or 1, or from any given number. Identify one more and one less. Read and write numbers from 1 to 20 in numerals and words. 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 ▪ *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)* ▪ *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.**	N U	▪ *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)* ▪ *read and write numbers to at least 100 in numerals and in words*	N U	▪ *count in steps of 2, **3** and 5 from 0, and in tens from any number, forward and backward* [They count in multiples of three to support their later understanding of a third] ▪ *recognise the place value of each digit in a two-digit number (tens, ones)* ▪ *read and write numbers to at least 100 in numerals and in words*

Approx 3 weeks	A	Build on Year 1 Learning: Add one-digit and two-digit numbers to 20, including zero
		▪ **add 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**
		▪ **solve problems with addition:**
		  ▪ **using concrete objects and pictorial representations** Focus on using coins for money.
			A	Build on Year 1 Learning: They 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
				▪ **recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables**
				▪ **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**
					A	Ensure links with multiplication and division are explicit.
						▪ *recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables*
						▪ *calculate mathematical statements for division within the multiplication tables and write them using the multiplication (x), 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 and division, using materials, arrays, repeated addition, mental methods, and*

				▪ **solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts**		*multiplication and division facts, including problems in contexts* Build on Year 1 Learning: Recognise and name a half as one of two equal parts of an object, shape or quantity / Recognise and name a quarter as one of four equal parts of an object, shape or quantity ▪ *recognise, find, name and write fractions* $\frac{1}{3}$ $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, *of a length, shape, set of objects or quantity* ▪ *write simple fractions for example,* $\frac{1}{2}$ *of 6 = 3* ▪ **recognise the equivalence of** $\frac{2}{4}$ **and** $\frac{1}{2}$ Link learning on division to fractions [They connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, sets of objects or shapes]

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YEAR 2 MTP **Teaching Cycle 2** **Approx 3 weeks**	M	Build on Year 1 learning: recognise and know the value of different denominations of coins and notes ▪ **recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value** ▪ **solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change** Link money problems to addition and subtraction calculation learning of a two-digit number and ones / a two-digit number and tens to adding pence / 10ps e.g 34p + 5p and 23p + 20p Extend to three one-digit numbers e.g 5p + 3p + 6p and then two two-digit numbers e.g. 23p + 13p	M	Build on Year 1 learning: recognise and know the value of different denominations of coins and notes ▪ *recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value* Link denomination of coins to multiplication e.g. I have six 10p coins in the purse – what is the total amount of money in my purse? Establish links between repeated addition and multiplication [They connect the 10 multiplication table to place value] ▪ **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** [They connect the 5 multiplication table to the divisions on the clock face.]	M	Note SolveMaths has not explicitly referenced any measurement objectives for this section as the arithmetic section of this cycle has a significant amount of learning. Link measures though to find fractions of measurements e.g. ½ of 10cm piece of ribbon; 1/3 of 21ml orange juice

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		AUTUMN		SPRING		SUMMER	
YEAR 2 MTP **Teaching Cycle 3** **Approx 3 weeks**	NU	▪ Build on Year 1 Learning: children count to and across 100, forwards and backwards beginning with 0 or 1, or from any given number. Identify one more and one less. Read and write numbers from 1 to 20 in numerals and words. 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 ▪ *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)* ▪ *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.*	NU	▪ *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)* ▪ *read and write numbers to at least 100 in numerals and in words*	NU	*Use this teaching cycle to address identified areas of need in preparation for SATs 2016.*

	A	Build on Year 1 Learning: Subtract one-digit and two-digit numbers to 20, including zero
		▪ **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**
		▪ **solve problems with** *addition* **and subtraction:**
		  ▪ **using concrete objects and pictorial representations** Focus on using coins for money.
			A	Ensure links with multiplication and division are explicit.
				▪ *recall and use multiplication* **and division facts for the 2, 5 and 10 multiplication tables**
				▪ **calculate mathematical statements for division within the multiplication tables and write them using the** multiplication (x)**, 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 and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts**
					A	

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YEAR 2 MTP **Teaching Cycle 3** **Approx 3 weeks**	A		A	Build on Year 1 Learning: Recognise and name a half as one of two equal parts of an object, shape or quantity / Recognise and name a quarter as one of four equal parts of an object, shape or quantity ▪ ***recognise, find, name and write fractions*** $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}$***, of a length, shape, set of objects or quantity*** ▪ ***write simple fractions for example,*** $\frac{1}{2}$ ***of 6 = 3*** Link learning on division to fractions [They connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, sets of objects or shapes]	A	*Use this teaching cycle to address identified areas of need in preparation for SATs 2016.*
	M	Build on Year 1 learning: recognise and know the value of different denominations of coins and notes ▪ *recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value* ▪ **solve simple problems in a practical context involving** *addition* **and subtraction of money of the same unit, including giving change** Link money problems to addition and subtraction calculation learning of a two-digit number and ones / a two-digit number and tens to adding and subtracting pence / 10ps e.g 34p + 5p or 50p – 6p / 60p – 20pExtend to two two-digit numbers e.g. 23p + 13p / 50p – 34p	M	Note SolveMaths has not explicitly referenced any measurement objectives for this section as the arithmetic section of this cycle has a significant amount of new learning. Link measures though to find fractions of measurements e.g. ½ of 10cm piece of ribbon	M	

		AUTUMN		SPRING		SUMMER
YEAR 2 MTP **Teaching Cycle 4** **Approx 3 weeks**	G	Build Year 1 Learning: They recognise and name common 2-D and 3-Dshapes. ▪ **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.**	G	Note: Revise learning on 2-D and 3-Shapes completed in Autumn Term of Teaching Cycle – build into mental oral starters. Build on Year 1 Learning: Describe position, direction and movement, including whole, half, quarter and three-quarter turns ▪ **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 anticlockwise)**	G	

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YEAR 2 MTP **Teaching Cycle 4** **Approx 3 weeks**	M	Build on Year 1 learning: Compare, describe and solve practical problems for: ▪ Time [for example, quicker, slower, earlier, later] ▪ 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 ▪ **know the number of minutes in an hour and the number of hours in a day.**	M	Note: Link work on position and direction – turns to telling the time. Build on Year 1 learning Measure and begin to record the following: Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. ▪ **compare and sequence intervals of time** ▪ 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.	M	

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YEAR 2

STATISTICS LINKED TO SCIENCE

Important: Please note that the 'statistics' objectives outlined below are statutory requirements within the mathematics PoS. However, they have NOT been embedded within the Advanced MTP teaching cycles.

SolveMaths' recommendation is to:

- Teach the statistics requirements within science topics
- Focus one mental oral starter per week on interpreting graphs

Year 2 Statistics statutory PoS requirements:

- **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**
- **ask and answer questions about totalling and comparing categorical data.**

[Notes and guidance from PoS: Pupils record, interpret, collate, organise and compare information (for example, using many-to-one correspondence in pictograms with simple ratios 2, 5, 10)]

You may find it helpful to use the table below to map how you will be addressing the statutory statistics requirements within each science topic. Also, you may wish to note other mathematics objectives that will arise within the science topic so that you can exploit links between science and mathematics teaching effectively.

	SCIENCE TOPIC	GRAPHS
AUTUMN TERM		
SPRING TERM		
SUMMER TERM		

SHORT-TERM PLANNING RESOURCES

Existing short-term planning for your year group is not redundant. You should use this as a starting point, but edit the planning according to the new PoS teaching requirements. It will also be necessary to change the order of your short-term plans so that it fits the SolveMaths teaching cycle sequence.

Please refer to the SolveMaths website () for useful resources to help you with ideas and activities.