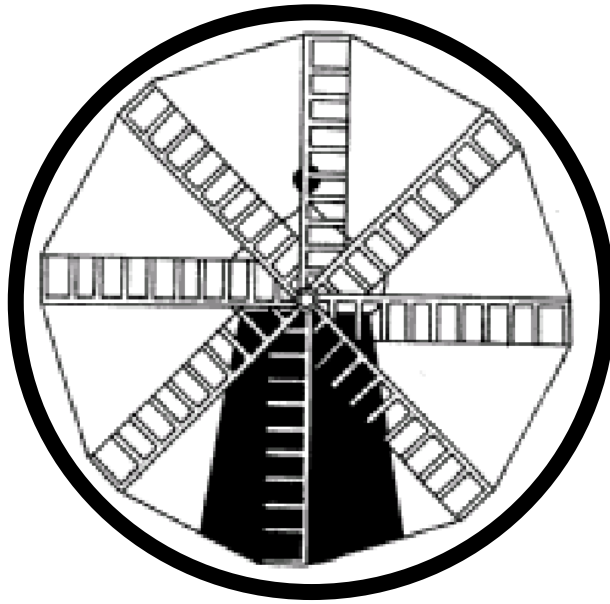


# Heckington St. Andrew's Primary School



## Mathematics Learning Journey

Name: \_\_\_\_\_

**YEAR FIVE**

## NUMBER—Number and Place Value

I can say the value of each digit in a number to at least 1,000,000.	I can write numbers to at least 1000000 and determine the value of each digit.	I can read numbers to at least 1,000,000.
I can order numbers to at least 1,000,000.	I can compare numbers to at least 1,000,000.	I can count forwards and backwards in steps of powers of 10 for any given number up to 1,000,000.
I can interpret negative numbers in context.	I can count forwards with positive and negative whole numbers, including through zero.	I can count backwards with positive and negative whole numbers, including through zero.
I can find missing numbers in a sequence that includes negative numbers.	I can recognise linear number sequences involving those fractions, decimals.	I can recognise linear number sequences and find term-to-term rule.
I can read Roman numerals to 1000 (M).	I can recognise dates written in Roman numerals.	I can round any number up to 1,000,000 to the nearest 10.
I can round any number up to 1,000,000 to the nearest 100.	I can round any number up to 1,000,000 to the nearest 1000.	I can round any number up to 1,000,000 to the nearest 10,000.
I can round any number up to 1,000,000 to the nearest 100,000.	I can solve number problems and practical problems.	

## NUMBER—Addition and Subtraction

I can explain each step when I write addition and subtraction calculations in columns.	I can add whole numbers with <b>more</b> than 4 digits, including using formal written methods (columnar addition).	I can subtract whole numbers with <b>more</b> than 4 digits, including using formal written methods (columnar subtraction).
I can mentally add four-digit numbers.	I can mentally subtract four-digit numbers.	I can mentally add increasingly larger numbers (12 642 + 2300).
I can mentally subtract increasingly larger numbers (12 642 - 2300).	I can round numbers to check answers in calculations, and determine, in the context of the problem, levels of accuracy.	I can solve multi-step problems in context and decide which operations and methods to use and why.

# NUMBER—Multiplication and Division and Place Value

I know my tables to 12 for multiplication facts and division facts and can use these facts to multiply multiples of 10 and 100.	I can identify multiples and factors.	I can find factor pairs of a number and common factors of two numbers.
I know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.	I can recall all prime numbers to 19.	I can establish whether a number up to 100 is prime or not.
I can use an efficient written method to multiply numbers up to a four-digit number by a one-digit number.	I can use an efficient written method to multiply numbers up to four-digits by a two-digit number, including long multiplication.	I can use an efficient written method to divide a four-digit number by a one-digit number.
I can use a short division method.	I know when to round up or down (remainders in division), depending on the problem and the context.	I can explain each step of my calculation.
I can use different mental strategies for multiplication depending on the numbers involved.	I can use different mental strategies for division depending on the numbers involved.	I recognise and can use square numbers.
I recognise and can use cube numbers.	I can multiply or divide a whole number or decimal by 10 and 100.	I can multiply or divide a whole number or decimal by 10, 100 and 1000.
I can scale amounts up or down using different rates.	I can use materials and diagrams to multiply simple fractions by whole numbers.	
I can solve problems involving multiplication and scaling.	I can solve problems involving division and scaling.	I can explain the equals sign to indicate equivalence, including missing numbers ( $13+24 = 12+25$ ; $33=5 \times ?$ )

# NUMBER—Fractions including decimals & %

I can compare and order fractions when the denominators are all multiples of the same number. e.g. I can put $\frac{1}{2}$ , $\frac{3}{5}$ and $\frac{7}{10}$ in order of size.	I can identify, name and write equivalent fractions of a given fraction.	I can identify, name and write equivalent fractions of a give fraction using visual representation.
I can identify, name and write equivalent fractions of a give fraction using visual representation including 10th and 100ths.	I recognise and can convert mixed numbers and improper fractions and can covert one from the other. e.g I know that $1\frac{1}{2}$ is the same as $\frac{3}{2}$	I can solve mathematical statements such as $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$
I can add fractions with the same denominator and denominators that are multiples.	I can subtract fractions with the same denominator and denominators that are multiples.	I can multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.
I can connect equivalent fractions $> 1$ that simplify to integers with division and fractions $> 1$ to division with remainders, using the number line and other models.	I can count forwards and backwards in simple fractions.	I can mentally add and subtract tenths, and one-digit whole numbers and tenths.
I can read decimal numbers as fractions.	I can write decimals numbers as fractions.	I recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.
I can round decimals to two decimal places, to the nearest whole and one decimal place.	I can read and write decimal up to three decimal places.	I can order decimal up to three decimal places.
I can compare decimal up to three decimal places.	I can solve problems involving numbers up to 3dp.	I know that 'per cent' means 'parts in every 100', so $1\% = \frac{1}{100}$ .
I can write the percentages as a fraction with a denominator 100.	I can write a percentages as a decimal.	I can solve problems which require knowing percentages and decimal equivalent of those fractions with a denominator of a multiple of 10 and 25.
I can solve problems which require knowing percentages and decimal equivalent of $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{5}$ , $\frac{2}{5}$ , $\frac{4}{5}$ .	I can find a simple percentage of a quantity.	

# MEASUREMENT

I can convert between different units of measure (km↔m).	I can convert between different units of measure (cm↔m).	I can convert between different units of measure (cm↔mm).
I can convert between different units of measure (g↔kg).	I can convert between different units of measure (l↔ml).	I can estimate and measure length in kilometres, metres, centimetres and millimetres using appropriate measuring instruments.
I can use some common imperial units and their equivalent metric measurement Inches, pounds, pints.	I can measure and calculate the perimeter of composite rectilinear shapes in cm and m.	I can calculate the area of rectangles (including squares) and including using standard units, square centimetres (cm <sup>2</sup> ) and estimate the area of irregular shapes.
I can estimate the volume (using 1cm <sup>3</sup> blocks to build a cuboid).	I can estimate capacity (using water).	I can solve problems involving converting between units of time.
I can solve problems, using a timetable written in 24-hour clock notation.	I can solve problems converting between units of time . I can change am or pm times to 24-hour clock times, and vice versa .	I can solve problems involving addition and subtraction of units of measure (length, mass, volume, money) using decimal notation, including scaling.
I can use all four operations to solve problems involving time and money, including conversions (for example, days to weeks, expressing the answer as weeks and days.	I can express missing measures questions algebraically.	

## GEOMETRY—Properties of shape & Position and direction

I can identify 3D shapes including cubes and other cuboids from 2D representations.	I know angles are measured in degrees; estimate and measure them and draw a given angle, writing its size in degrees ( $^{\circ}$ ).	I can identify multiples of $90^{\circ}$ .
I can identify angles at a point on a straight line and $1/2$ a turn (total $180^{\circ}$ ).	I can identify angles at a point and one whole turn (total $360^{\circ}$ ).	I can identify reflex angles.
I can identify and compare angles.	I can draw shapes using given dimensions and angles.	I can state and use the properties of rectangles (including squares) to deduce related facts.
I can distinguish between regular and irregular polygons based on reasoning and equal sides and angles.	I am accurate in drawing lines with a ruler to the nearest mm.	I can measure accurately with a protractor.
I can use the term diagonal and make conjectures about the angles formed by diagonals and sides, and other properties of quadrilaterals.	I use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.	I can identify, describe and represent the position of a shape following a reflection or translation, using appropriate language, and know that the shape has not changed.
I recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2D grid and coordinates in the first quadrant.		



# STATISTICS

<i>I can solve comparison problems using information presented in a line graph.</i>	<i>I can solve sum problems using information presented in a line graph.</i>	<i>I can solve difference problems using information presented in a line graph.</i>
<i>I can complete information in tables.</i>	<i>I can read information in tables.</i>	<i>I can interpret information in tables.</i>
<i>I can complete information in timetables.</i>	<i>I can read information in timetables.</i>	<i>I can interpret information in timetables.</i>
<i>I can interpret the scale in a line graph.</i>	<i>I understand which representations of data are most appropriate and why.</i>	

**YEAR SIX**

## NUMBER—Number and Place Value

<i>I can read and write numbers up to 10 000 000.</i>	<i>I can order numbers up to 10 000 000.</i>	<i>I can compare numbers up to 10 000 000.</i>
<i>I can say the value of each digit in a number up to 10 000 000, including decimals up to thousandths</i>	<i>I can round any whole number up to 10,000,000 to the nearest 10.</i>	<i>I can round any whole number up to 10,000,000 to the nearest 100.</i>
<i>I can round any whole number up to 10,000,000 to the nearest 1000.</i>	<i>I understand negative numbers in context and calculate intervals across zero.  (counting forwards)</i>	<i>I understand negative numbers in context and calculate intervals across zero.  (counting backwards)</i>
<i>I can solve number problems and practical problems that involve all elements of place value.</i>		

## NUMBER— +, -, x, ÷

I can multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.	I can divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division.	When dividing I can interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.
I can 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.	I can use efficient written methods to add and subtract whole numbers and decimal numbers.	I can perform mental calculations, including with mixed operations and large numbers.
I can find common factors of numbers.	I can find common multiples of numbers.	I can identify prime numbers.
I know and can explain the order of operations to use in calculations with brackets.	I know and can explain the order of operations to use in calculations including all four operations.	I can give a good estimate of an answer before I multiply or divide large numbers or decimals.
I can round numbers to estimate answers to calculations.	I can factorise numbers to help with mental calculations.	I can find the highest common factor of different numbers .
I can find the lowest common multiple of different numbers.	I can describe and explain sequences, pattern and relationships.	I can use my knowledge of the order of operations to carry out calculations involving the four operations.
I can solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.		

## NUMBER—Fractions including decimals & %

I can use common factors to simplify fractions.	I can compare and order fractions $>1$ .	I can use common multiples to express fractions in the same denomination ( $5/6 = 15/18$ ).
I can add fractions with different denominators and mixed numbers using the concept of equivalent fractions.	I can subtract fractions with different denominators and mixed numbers using the concept of equivalent fractions.	I can multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g $1/4 \times 1/2 = 1/8$ ).
I can divide proper fractions by whole numbers (e.g $1/3 \div 2 = 1/6$ ).	I understand a fraction is linked to division and calculate decimal fraction equivalents ( e.g 0.375) for a simple fraction (e.g $3/8$ ).	I can convert fractions to decimals.
I can identify the value of each digit in numbers give to three decimals places.	I can multiply one-digit numbers with up to two decimal places by a whole number.	I can use written division where the answer has up to two decimal places.
I can recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.	I can solve problems which require answers to be rounded to specified degrees of accuracy.	

# RATIO AND PROPORTION

<p>I can solve problems involving the relative sizes of two quantities, where missing values can be found by using integer multiplication and division facts.</p>	<p>I can solve problems involving the calculations of percentages (e.g. of measures) such as 15% of 360 and the use of percentages for comparison.</p>	<p>I can solve problems involving similar shapes, where the scale factor is known or can be found.</p>
<p>I can solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.</p>	<p>I can recognise proportionality in contexts when the relations between quantities are in the same ratio (for example, similar shapes and recipes).</p>	<p>I can use ratio and proportion to link percentages or 360° to calculating angles of pie charts.</p>
<p>I can use ratio when comparing sizes and scale drawings by solving a variety of problems.</p>	<p>I can solve problems involving unequal quantities, for example, 'for every egg you need 3 spoonfuls of flour', '<math>\frac{3}{5}</math> of the class are boys'.</p>	

# ALGEBRA

<i>I can generate and describe linear number sequences .</i>	<i>I can write and use simple expressions in words and formulae.</i>	<i>I can express missing number problems algebraically.</i>
<i>I can use formula to work out missing numbers.</i>	<i>I can find pairs of numbers that satisfy an equation with two unknowns.</i>	<i>I can enumerate all possibilities of combinations of two variables.</i>
<i>I can use simple formulae</i>	<i>I can use formula to work out missing lengths, coordinates and angles.</i>	<i>I can use equivalent expressions.</i>
<i>I can make generalisations of number patterns.</i>	<i>I can solve number puzzles and problems where enumerate possibilities of combinations of two variable exist number puzzles (for example, what 2 numbers can add up to).</i>	

# MEASUREMENT

I can solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate.	I can use, read and write and convert between standard units (mass, length, volume and time) from a smaller unit to a larger unit. (up to 3dp) i.e $1\text{km}$ and $251\text{m} = 1.251\text{km} = 1251\text{m}$ .	I can use, read and write and convert between standard units (mass, length, volume and time) from a larger unit to a smaller unit. (up to 3dp) i.e $1\text{km}$ and $251\text{m} = 1.251\text{km} = 1251\text{m}$ .
I can convert between Kilometres and miles. I know that 1 mile is about 1.6 km, and that 1 km is about $\frac{5}{8}$ of a mile.	I know that shapes with the same areas can have different perimeters and vice versa.	I can calculate the area of triangles using my knowledge of areas of rectangles.
I can calculate the area of parallelograms using my knowledge of areas of rectangles and triangles.	I can work out the volume of different cubes and cuboids made from centimetre cubes.	I can calculate the volume of different cubes and cuboids (including $\text{cm}^3$ , $\text{m}^3$ ).
I can calculate and compare the volume of different cubes and cuboids (including $\text{mm}^3$ , $\text{km}^3$ ).	I can solve problems, using a timetable written in 24-hour clock notation.	



## ***GEOMETRY—Position and direction & Properties of shape***

<i>I can draw 2-D shapes accurately, with given dimensions and angles.</i>	<i>I can recognise, describe and build simple 3D shapes including drawing nets and making nets.</i>	<i>I can compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons.</i>
<i>I can illustrate and name the parts of circles, including radius, diameter and circumference.</i>	<i>I know that the diameter is twice the radius.</i>	<i>I can recognise angles where they meet at a point, are on a straight line, or are vertically opposite.</i>
<i>I can find missing angles..</i>	<i>I can explain how unknown angles and lengths can be derived from known measurements.</i>	<i>I can express relationships algebraically.</i>
<i>I can describe positions on the full coordinates grid (all four quadrants).</i>	<i>I can draw and translate simple shapes on the coordinates plane, and reflect them in the axes.</i>	

# STATISTICS

<i>I can interpret pie charts to solve problems.</i>	<i>I can interpret lines graphs to solve problems.</i>	<i>I can construct pie charts and use these to solve problems.</i>
<i>I can construct line graphs and use these to solve problems.</i>	<i>I can calculate the mean as an average (of a set of data).</i>	<i>I can interpret the mean as an average and use this to solve problems.</i>
<i>I can connect my work on angles, fractions and percentages to the interpretation of pie charts.</i>	<i>I can encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects.</i>	<i>I can connect conversion from kilometres to miles in measurement to its graphical representation.</i>
<i>I know when it is appropriate to find the mean of a data set.</i>		



