St Edward's Maths Curriculum Map 2016-2017

Year 6 - Maths

Autumn 1	Autumn 2
Number and place value ● read, write, order and compare numbers up to 10 000 000 and determine the value of each digit ● round any whole number to a required degree of accuracy ● solve number and practical problems that involve all of the above **Fractions (including decimals and percentages***)*** ● identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places **Measurement** ● use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places ● convert between miles and kilometres. <u>Success criteria</u> **Pupils can represent and explain the multiplicative nature of the number system, understanding how to multiply and divide by 10, 100 and 1000. Pupils make appropriate decisions about when to use their understanding of counting, place value and rounding for solving problems including adding and subtracting.** **Addition, subtraction, multiplication and division** ● <u>perform mental calculations, including with mixed operations and large numbers</u> ● <u>use their knowledge of the order of operations to carry out calculations involving the four operations</u> ● <u>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</u> ● <u>solve problems involving addition, subtraction</u> ● <u>use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy</u>	**Addition, subtraction, multiplication and division** ● multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication ● divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context ● divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context ● *perform mental calculations, including with mixed operations and large numbers* ● identify common factors, common multiples and prime numbers ● *use their knowledge of the order of operations to carry out calculations involving the four operations* ● *solve problems involving addition, subtraction,* <u>multiplication and division</u> ● *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy* **Fractions (including decimals and percentages***)*** ● multiply one-digit numbers with up to two decimal places by whole numbers ● use written division methods in cases where the answer has up to two decimal places **Ratio and proportion** ● solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison **Algebra** ● *use simple formulae* ● *generate and describe linear number sequences* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns* ● *enumerate possibilities of combinations of two variables.*

'Following Christ we reach our goals'

Fractions (including decimals and percentages)
● solve problems which require answers to be rounded to specified degrees of accuracy

Algebra
● use simple formulae
● generate and describe linear number sequences
● express missing number problems algebraically
● find pairs of numbers that satisfy an equation with two unknowns
● enumerate possibilities of combinations of two variables

Measurement
● solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate
● *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places*

Statistics
● interpret and construct pie charts and line graphs and use these to solve problems.

Success criteria
Pupils can solve addition and subtraction problems in different contexts, appropriately choosing and using number facts, understanding of place value and mental and written methods. They can explain their decision making and justify their solutions and levels of accuracy.

Measurement
● *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate*
● *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places*

Statistics
● *interpret and construct pie charts and line graphs and use these to solve problems*
  calculate and interpret the mean as an average

Success criteria
Pupils can solve problems involving multiplication and division and fractions and percentages in different contexts, appropriately choosing and using number facts, understanding of place value and mental and written methods. They can explain their decision making and justify their solutions.

Geometry: properties of shapes
● draw 2-D shapes using given dimensions and angles
● recognise, describe and build simple 3-D shapes, including making nets
● compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
● illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
● recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Algebra
● *use simple formulae*
● *express missing number problems algebraically*
● *find pairs of numbers that satisfy an equation with two unknowns*
● *enumerate possibilities of combinations of two variables*

Measurement
- recognise that shapes with the same areas can have different perimeters and vice versa
- calculate the area of parallelograms and triangles
- recognise when it is possible to use the formulae for area and volume of shapes.

<u>Success criteria</u>
Pupils can use their understanding of angle and properties of shapes to solve problems.

Number and place value
- *read, write, order and compare numbers up to 10 000 000 and determine the value of each digit*
- *round any whole number to a required degree of accuracy*
- *use negative numbers in context, and calculate intervals across zero*
- *solve number problems and practical problems that involve all of the above*

Fractions (including decimals and percentages)
- *identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 given answers up to three decimal places*

Measurement
- *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places.*

<u>Success criteria</u>
Pupils can make appropriate decisions about when to use their understanding of counting (including counting below zero), place value and rounding for solving problems including adding and subtracting.

Spring 1	Spring 2
Number and place value ● *use negative numbers in context, and calculate intervals across zero* **Addition, subtraction, multiplication and division** ● *perform mental calculations, including with mixed operations and large numbers* ● *use their knowledge of the order of operations to carry out calculations involving the four operations* ● *solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why* ● *solve problems involving addition, subtraction* ● *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy* **Fractions (including decimals and percentages)** ● *solve problems which require answers to be rounded to specified degrees of accuracy* **Algebra** ● *use simple formulae* ● *generate and describe linear number sequences* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns* ● *enumerate possibilities of combinations of two variables* **Measurement** ● *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate* ● *use, read, write and convert between standard units, converting measurements of length, mass and time from*	**Addition, subtraction, multiplication and division** ● *multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication* ● *divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context* ● *divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context perform mental calculations, including with mixed operations and large numbers* ● *perform mental calculations, including with mixed operations and large numbers* ● *identify common factors, common multiples and prime numbers* ● *use their knowledge of the order of operations to carry out calculations involving the four operations* ● *solve problems involving addition, subtraction, multiplication and division* ● *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy* **Fractions (including decimals and percentages)** ● *multiply one-digit numbers with up to two decimal places by whole numbers* ● *use written division methods in cases where the answer has up to two decimal places* **Ratio and proportion** ● *solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison* ● *solve problems involving the relative sizes of two quantities, where missing values can be found by using integer multiplication and division facts* ● *solve problems involving unequal sharing and grouping using knowledge of fractions and multiples* **Algebra** ● *use simple formulae*

'Following Christ we reach our goals'

*a smaller unit of measure to a larger unit, and vice versa,
using decimal notation to three decimal places*

Statistics
- *interpret and construct pie charts and line graphs and
  use these to solve problems.*

Success criteria
Pupils can solve addition and subtraction problems in different contexts, appropriately choosing and using number facts, understanding of place value and mental and written methods. They can explain their decision making and justify their solution and level of accuracy.

Fractions (including decimals and percentages)
- use common factors to simplify fractions; use common
  multiples to express fractions in the same denomination
- compare and order fractions, including fractions >1
- associate a fraction with division and calculate decimal
  fraction equivalents [for example, 0.375] for a simple fraction [for example, ⅜]
- recall and use equivalences between simple fractions,
  decimals and percentages, including in different contexts
- *identify the value of each digit in numbers given to three
  decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to
  three decimal places*

Algebra
- *use simple formulae*
- *generate and describe linear number sequences*
- *express missing number problems algebraically*
- *find pairs of numbers that satisfy an equation with two
  unknowns*

Measurement
- *solve problems involving the calculation and conversion
  of units of measure, using decimal notation to three*

- *generate and describe linear number sequences*
- *express missing number problems algebraically*
- *find pairs of numbers that satisfy an equation with two
  unknowns*
- *enumerate possibilities of combinations of two variables*

Measurement
- *solve problems involving the calculation and conversion of units of measure, using decimal
  notation to three decimal places where appropriate*
- *use, read, write and convert between standard units,
  converting measurements of length, mass and time from
  a smaller unit of measure to a larger unit, and vice versa,
  using decimal notation to three decimal places*
- *convert between miles and kilometres*

Statistics
- *interpret and construct pie charts and line graphs and
  use these to solve problems
  calculate and interpret the mean as an average.*

Success criteria
**Pupils can explain the relationship between multiplication, division, ratio and proportion.
    They use this understanding to derive facts and solve problems.**

Geometry: properties of shapes
- *draw 2-D shapes using given dimensions and angles*
- *recognise, describe and build simple 3-D shapes, including making nets*
- *compare and classify geometric shapes based on their
  properties and sizes and find unknown angles in any
  triangles, quadrilaterals, and regular polygons*
- *illustrate and name parts of circles, including radius,
  diameter and circumference and know that the diameter is twice the radius*

Geometry: position and direction
- describe positions on the full coordinate grid (all four
  quadrants)
- draw and translate simple shapes on the coordinate plane, and reflect them in the axes

decimal places where appropriate
- *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places*

Statistics
- *interpret and construct pie charts and line graphs and use these to solve problems.*

Success criteria

Pupils can represent and explain the relationship between decimals, fractions and percentages and equivalences within fractions. They use this understanding to solve problems.

Algebra
- *use simple formulae*
- *express missing number problems algebraically*
- *find pairs of numbers that satisfy an equation with two unknowns*
- *enumerate possibilities of combinations of two variables*

Measurement
- *calculate the area of parallelograms and triangles*
- *recognise when it is possible to use the formulae for area and volume of shapes*
- calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimeters (cm^3) and cubic metres (m^3) and extending to other units, [for example, mm^3 and km^3]

Ratio and proportion
- Solve problems involving similar shapes where the scale factor is known or can be found.

Success criteria

Pupils can explain how to reflect and translate shapes on a grid with four quadrants and use this knowledge and understanding to solve problems. They can explain how to find the volume of cubes and cuboids and use this understanding to solve problems.

Number and place value
- *read, write, order and compare numbers up to 10 000 000 and determine the value of each digit*
- *round any whole number to a required degree of accuracy*
- *use negative numbers in context, and calculate intervals across zero*
- *solve number problems and practical problems that involve all of the above*

Fractions (including decimals and percentages)
- *use common factors to simplify fractions; use common multiples to express fractions in the same denomination*
- *compare and order fractions, including fractions >1*
- *identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10,*

	100 and 1000 giving answers up to three decimal places **Measurement** ● *use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places* ● *convert between miles and kilometres.* <u>**Success criteria**</u> **Pupils can use their understanding of the multiplicative nature of the number system to convert between different units of measures, knowing when it is appropriate to use their understanding of how to multiply and divide by 10, 100 and 1000. Pupils make appropriate decisions about** **when to use their understanding of counting, place value and rounding for solving problems including adding and subtracting.**

Summer 1	Summer 2
Addition, subtraction, multiplication and division ● *perform mental calculations, including with mixed operations and large numbers* ● *use their knowledge of the order of operations to carry out calculations involving the four operations* ● *solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why* ● *solve problems involving addition, subtraction, multiplication and division* ● *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy* **Fractions (including decimal and percentages)** ● add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions ● *solve problems which require answers to be rounded to specified degrees of accuracy* **Algebra** ● *use simple formulae* ● *generate and describe linear number sequences* ● *express missing number problems algebraically* ● *find pairs of numbers that satisfy an equation with two unknowns* ● *enumerate possibilities of combinations of two variables* **Measurement** ● *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate* ● *use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places* **Statistics** ● *interpret and construct pie charts and line graphs and use these to solve problems* ● *calculate and interpret the mean as an average.*	**Addition, subtraction, multiplication and division** ● *multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication* ● *divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context* ● *divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context* ● *perform mental calculations, including with mixed operations and large numbers* ● *identify common factors, common multiples and prime numbers* ● *use their knowledge of the order of operations to carry out calculations involving the four operations* ● *solve problems involving addition, subtraction, multiplication and division* ● *use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy* **Fractions (including decimals and percentages)** ● multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] ● divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$] ● *multiply one-digit numbers with up to two decimal places by whole numbers* ● *use written division methods in cases where the answer has up to two decimal places* **Ratio and proportion** ● *solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison* ● *solve problems involving the relative sizes of two quantities, where missing values can be found by using multiplication and division facts* ● *solve problems involving unequal sharing and grouping using knowledge of fractions and multiples* **Algebra** ● *use simple formulae* ● *generate and describe linear number sequences* ● *express missing number problems algebraically*

Success criteria
Pupils can solve calculation problems in different contexts, appropriately choosing and using operations, number facts, understanding of place value and mental and written methods. They can explain their decision making and justify their solutions and levels of accuracy.

Fractions (including decimals and percentages)
- *use common factors to simplify fractions; use common multiples to express fractions in the same denomination*
- *compare and order fractions, including fractions >1*
- *associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, ³⁄₈]*
- *recall and use equivalences between simple fractions, decimals and percentages, including in different contexts*
- *identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places*

Algebra
- *use simple formulae*
- *generate and describe linear number sequences*
- *express missing number problems algebraically*
- *find pairs of numbers that satisfy an equation with two unknowns*

Measurement
- *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate*
- *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places*

Statistics
- *interpret and construct pie charts and line graphs and use these to solve problems.*

Success criteria
Pupils can represent and explain the relationship between decimals, fractions and percentages and how decimals and fractions fit into the number system. They use this understanding to solve problems.

- *find pairs of numbers that satisfy an equation with two unknowns*
- *enumerate possibilities of combinations of two variables*

Measurement
- *solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate*
- *use, read, write and convert between standard units, converting measurements of length, mass and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places*

Statistics
- *interpret and construct pie charts and line graphs and use these to solve problems calculate and interpret the mean as an average.*

Success criteria
Pupils can solve calculation problems in different contexts, including those involving ratio and proportion, appropriately choosing and using operations, number facts, understanding of place value and mental and written methods. They can explain their decision making and justify their solutions and level of accuracy.

Geometry: properties of shapes
- *draw 2-D shapes using given dimensions and angles*
- *recognise, describe and build simple 3-D shapes, including making nets*
- *compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons*
- *illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius*
- *recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles*

Geometry: position, direction, motion
- *describe positions on the full coordinate grid (all four quadrants)*
- *draw and translate simple shapes on the coordinate plane, and reflect them in the axes*

Algebra
- *use simple formulae*
- *express missing number problems algebraically*

- *find pairs of numbers that satisfy an equation with two unknowns*
- *enumerate possibilities of combinations of two variables*

Measurement
- *recognise that shapes with the same areas can have different perimeters and vice versa*
- *calculate the area of parallelograms and triangles*
- *recognise when it is necessary to use the formulae for area and volume of shapes*
- *calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimeters (cm^3) and cubic metres (m^3) and extending to other units, [for example, mm^3 and km^3]*

Ratio and proportion
- *solve problems involving similar shapes where the scale factor is known or can be found.*

Success criteria

Pupils can use their understanding of properties of shapes, area and volume to solve problems and make generalisations.

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