St George's Arithmetic Progression Model

	R	1	2	3	4	5	6
Addition and subtraction	Solve problems involving adding two single digits within 10 by counting how many altogether, often using manipulatives. Solve problems involving subtraction within 10 by taking away, often using manipulatives.	Add numbers within 20 using count on method, starting with the larger number. eg. TO + O = ? or O + O = ? Subtract numbers within 20 using counting back eg. TO – O =? O + O + O by counting on from the largest number.	TO + TO using column method, involving one exchange. TO - TO using column method, involving one exchange. Solve HTO – O = TO by counting back. Add or subtract multiples of ten from a number up to 100 by counting on or back in tens. eg. 94 – 30.	TO + TO using column method, involving one or two exchanges. TO - TO using column method, involving one or two exchanges. Add or subtract multiples of ten from an HTO or TO number by counting on or back in tens. eg. 124 – 30.	ThHTO + ThHTO using column method, including up to three exchanges. ThHTO - ThHTO using column method, including up to three exchanges. Add 3 numbers up to 4-digits using column method twice: Add the 2 smaller numbers first then add the total to the remaining number.	Use column method to add more than 4 digits with exchanging. Use column method to subtract more than 4 digits with exchanging. Add 3 numbers up to 4-digits each by column method, involving exchanging.	Use column method to add more than 5 digits with exchanging. Use column method to subtract more than 5 digits with exchanging. Add 3 numbers up to 5-digits each by column method, involving exchanging.
Multiplication and Division	Solve simple practical division problems by sharing equally.	÷ by 2, 5 or 10 using sharing circles. X by 2, 5 or 10 using grouping squares.	TO ÷ 10 or 5 or 2 by counting on in multiplies of 10 or 5 or 2. X by 10, 5 or 2 by counting on in multiples with answers up to 100. eg 6 x 5 = ? Divide by one digit using sharing circles. eg. TO ÷ O = ? X by 1 digit using grouping squares. eg. 4 x 6 = ?	Divide in any x table up to 10s by counting on in multiples. Multiply in any x table up to 10s by counting on in multiples. Divide HTO or TO by one digit using short division without remainders. eg. 215 ÷ 5 = ? HTO/TO X by 1-digit using column method without regrouping. eg. 32 x 3 = ?	Divide in any x table up to 12s by counting on in multiples or from memory (MTC takes place in Y4). Multiply in any x table up to 12s by counting on in multiples or from memory (MTC takes place in Y4). Divide HTO or TO by one digit using short division with remainders. eg. 215 ÷ 6 = ? HTO/TO X by 1-digit using column method with regrouping. eg. 36 x 6 = ? ÷ any number by 10, 100 and 1000 which results in a whole number answer by moving each digit to the left. Eg. 24000 ÷ 100 = ? X any whole number by 10, 100 and 1000 by moving each digit to the right. eg. 25 x 1000 = ?	Divide up to ThHTO by one digit using short division with remainders. eg. 1215 ÷ 6 = ? HTO/TO X by 2-digit using long multiplication with regrouping. eg. 36 x 24 = ? ÷ any number by 10, 100 and 1000, including answers which result in decimals by moving each digit to the left. eg. 24 ÷ 100 = ? X any whole number or decimal by 10, 100 and 1000 by moving each digit to the right. eg. 2.5 x 1000 = ?	Divide up to ThHTO by two digits using long division. eg. 1215 ÷ 16 = ? Multiply up to ThHTO by 2-digit using long multiplication with regrouping. eg. 4536 x 24 = ? ÷ any number by 10, 100 and 1000, including answers which result in decimals by moving each digit to the left. eg. 24 ÷ 100 = ? X any whole number or decimal by 10, 100 and 1000 by moving each digit to the right. eg. 2.5 x 1000 = ?
Pre-algebra		Solve addition missing number sentences using subtraction within 20. eg. 13 + ? = 16. Solve subtraction missing number sentences (where missing number is second) using subtraction (counting on) within 20 eg. 12 - ? = 4.	Solve addition missing number sentences involving 3 single digit numbers by adding the 2 known numbers then subtracting from the whole. eg. O + ? + O = TO. Solve addition missing number sentences using subtraction within 100.	Solve addition missing number sentences using column subtraction. eg. TO = TO + ? Solve subtraction missing number sentences (where missing number is second) using column subtraction. eg. TO - ? = TO/O.	Solve subtraction missing number sentences (where missing number is second) using column subtraction. eg. HTU - ? = HTO/TO/O. Solve subtraction missing number sentences (where missing number is first) using column addition. eg. ? - TO/O = TO/O.	Solve addition missing number sentences involving 3 numbers up to 3 digits by adding the 2 known numbers then subtracting from the whole using column method. eg. HTO = HTO + ? + O. Solve subtraction missing number sentences (where missing number is second) using column subtraction.	Solve addition missing number sentences using column subtraction. eg. ThHTO = ThHTO + ? Solve subtraction missing number sentences (where missing number is second) using subtraction. eg. ThHTO - ? = HTO/TO.

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		Solve subtraction missing number sentences (where missing number is first) using addition (counting on) within 20. eg. ? – 4 = 9.	Solve subtraction missing number sentences (where missing number is second) using subtraction within 100 using column subtraction. Solve subtraction missing number sentences (where missing number is first) using column addition sometimes crossing the 100 boundary).	Solve subtraction missing number sentences (where missing number is first) using column addition. eg. ? - TO/O = TO/O.	Square numbers when given the notation. eg. 6^2 = ? Cube numbers when given the notation. eg. 3^3 = ?	eg. HTO - ? = HTO/TO/O. Solve subtraction missing number sentences involving HTO (where missing number is first) using column addition. eg. ? - HTO = HTO. Solve three step operations requiring BIDMAS (not including brackets) eg. 2^2 + 6 = ? eg. 6 + 4 ÷ 2 = ?	Solve subtraction missing number sentences (where missing number is first) using addition. eg. ? - HTO/TO = HTO/TO. Solve three or four step operations requiring BIDMAS eg. 2^2 + 6 x 2= ? eg. (6 + 4) ÷ 2 = ?
Fractions	Find half of numbers within 10 using manipulatives.	Find ½ of even numbers up to 24 using sharing circles. Find a ¼ of numbers divisible by 4 up to 36 using sharing circles.	Find ½ or ¼ of even numbers using sharing circles or counting in twos or fours. Find 1/3 of a quantity by ÷ 3 using sharing circles. Find ¾ of a quantity by ÷ 4 using sharing circles then counting 3 groups.	Find a unit fraction of TO by ÷ by the denominator. eg. 1/5 of 30 = ? Find a non-unit fraction of TO by ÷ by the denominator then X by the numerator. eg. 3/5 of 40 = ? Add or subtract fractions with the same denominator within 1 whole by adding the numerators and keep the denominators the same. eg. 2/5 + 2/5 = ?	Find a unit fraction of TO or HTO by ÷ by the denominator, using short division method if required. eg. 1/5 of 225 = ? Find a non-unit fraction of TO by ÷ by the denominator then X by the numerator. eg. 3/5 of 40 = ? Add or subtract fractions with the same denominator beyond 1 whole by adding the numerators and keep the denominators the same. eg. 3/5 + 4/5 = ?	Find a unit or non-unit fraction of TO or HTO by ÷ by the denominator then X by the numerator, using short division and short multiplication if required. eg. 3/5 of 415 = ? Add or subtract fractions with the same denominator beyond 1 whole by adding the numerators and keep the denominators the same and then converting to a mixed number (ie. 1 ⅕). eg. 3/6 + 4/6 = ? Add or subtract fractions with different denominators by finding equivalent fractions using the lowest common denominator, converting to mixed numbers if required. eg. ¾ + ½ = ? Add or subtract mixed numbers and fractions with no converting required. eg. 10 ¼ + 2 ¼ = ? X fraction by O or TO by X the numerator by the whole number and placing over denominator, then simplifying. eg. ¾ x 25 = ? X a mixed number by O. eg. 2 ¾ x 6 = ?	Find a unit or non-unit fraction of TO, HTO or ThHTO by ÷ by the denominator then X by the numerator, using short division and short multiplication if required. eg. 3/5 of 2415 = ? Add or subtract fractions with the same denominator beyond 1 whole by adding the numerators and keep the denominators the same and then converting to a mixed number (ie. 1 ⅕). eg. 3/6 + 4/6 = ? Add or subtract fractions with different denominators by finding equivalent fractions using the lowest common denominator, converting to mixed numbers if required. eg. ¾ + ½ = ? Add or subtract mixed numbers and fractions with converting required. eg. 10 ½ + 2 ¼ = ? x proper fraction by proper fraction by multiplying numerator by numerator then denominator by denominator and finally simplifying. eg. 2/8 x 6/12 = ? X fraction by O or TO by X the numerator by the whole number and placing over denominator, then simplifying. eg. ¾ x 25 = ?

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							X a mixed number by O or TO. eg. 2 ¾ x 12 = ? Fraction ÷ O by X denominator by whole number which becomes new denominator. Keep numerator the same. eg. ½ ÷ 3 = 1/6
Decimals					Add or subtract two decimal numbers up to 2 decimal places where each number has the same number of digits on both sides of the decimal point. eg. 3.2 + 5.6 = ?	Add or subtract two decimal numbers up to 2 decimal places, aligning decimal places correctly and using column method. eg. 2.4 – 1.89 = ?	Add or subtract decimal numbers up to 3 places from whole numbers, aligning decimal places accurately and using column method. eg. 26 – 2.012 = ? Add or subtract two decimal numbers up to 3 decimal places, aligning decimal places correctly and using column method. eg. 2.4 – 1.893 = ?
Percentages					Find 50%, 25%, 75% and 10% of TO or HTO (relate to fractions, ie. 25% is ¼ so divide by 4) eg. 25% of 80 = ?	Find 1%, 2%, 5%, 10%, 25%, 50%, 75% of TO or HTO. eg. 2% of 300 = ?	Find multiples of 1, 5, 10 % of TO, HTO or ThHTO. eg. 15% of 3200 = ? eg. 80% of 115 = ?