



Year 7 Spring Term

Sequenced	Block 6: Problem solving with addition and subtraction	Block 7: Multiplication and division	Block 8: Fractions and percentages	Block 9a: Directed number	Block 9b: Solving multi-step equations	Block 10: Addition and subtraction of fractions
Key Knowledge	<p>To know:</p> <ul style="list-style-type: none"> the place value of integers and decimals and how these relate to addition and subtraction processes the term exchange with relation to addition and subtraction the mental strategies of compensation, counting on, partitioning and bridging the meaning of terms credit, debit and balance on bank statement 	<p>To know:</p> <ul style="list-style-type: none"> the difference between factors and multiples of a number the place value of digits in a number and the effect of multiplying and dividing by powers of 10 the conversions between metric units of mass, length and volume the hierarchy and order of operations the method for calculating the mean of a data set properties of rectangles, triangles, parallelograms and trapezia the meaning of parallel and perpendicular the meaning of and difference between area and perimeter metric conversions of length the formula for the area of a rectangle, triangle, parallelogram and trapezium (H) that units of area are units squared and that units of perimeter are units of length square numbers and their roots 	<p>To know:</p> <ul style="list-style-type: none"> the meaning and effect of numerators and denominators of fractions as operators that the denominator is the number of equal parts we share a quantity into common percentage methods for finding 10%, 1%, 50%, 25%, 75% of an amount that finding a percentage of an amount over 100 will lead to an increase 	<p>To know:</p> <ul style="list-style-type: none"> the order of directed numbers on a number line numbers less than 0 are negative and numbers above 0 are positive that subtraction is the additive inverse that addition and multiplication are commutative and that subtraction and division are not the hierarchy of operations the meaning of zero pair 	<p>To know:</p> <ul style="list-style-type: none"> the meaning of the terms equality and equivalence the hierarchy of operations and the inverse order the inverse of multiplication is division and the inverse of addition is subtraction that squaring a number is multiplying it by itself square numbers from knowledge of multiplication facts 	<p>To know:</p> <ul style="list-style-type: none"> the meaning of equivalence in fractions multiples of a number and the meaning of lowest common multiple structures of additive and multiplicative bar models when a fraction is proper and improper different representations of fractions – bar models, positions on a number line, equal part of a whole common equivalent fraction, decimal and percentages and how to convert between them that $5\frac{1}{2}$ means $5 + \frac{1}{2}$
Key Skills	<p>To be able to:</p> <ul style="list-style-type: none"> carry out mental methods of addition and subtraction decide which mental strategy in most appropriate for the problem carry out written addition and subtraction with integers and decimals complete balance statements using credit, debit and balances how to read bus and train timetables complete frequency trees and two way tables find the difference between 2 times add and subtract numbers in standard index from (H) 	<p>To be able to:</p> <ul style="list-style-type: none"> list factors of a number find the highest common factor of a pair or set of numbers list the multiples of a number find the lowest common multiple of a pair of set of numbers multiply and divide integers and decimals by powers of ten multiply and divide numbers of 0.1 and 0.01 convert between metric units calculate the perimeter of shapes and missing lengths given the perimeter calculate the area of a rectangle, triangle, parallelogram and trapezium (H) solve problems by finding missing lengths given the area of the above shapes find the area and missing lengths of compound shapes (H) use formal written methods for multiplication and division of integers and decimals perform calculations using the hierarchy of operations calculate the mean of a set of numbers work out the total or missing numbers from a data set given the mean and the number of data multiply and divide algebraic terms (H) 	<p>To be able to:</p> <ul style="list-style-type: none"> calculate fractions of amounts using bar models and other methods calculate the whole given the fraction using bar models and other methods calculate percentages using mental methods with 10%, 1%, 25%, 50%, 75% and $33\frac{1}{3}\%$ read calculator displays to give answers to an appropriate degree of accuracy e.g $\pounds 14.625 = \pounds 14.63$ use a calculator to find more complex percentages of amounts including decimal percentages e.g. 4.3% of 256 identify when it is appropriate to use percentages over 100 (H) 	<p>To be able to:</p> <ul style="list-style-type: none"> add directed numbers using zero pairs subtract directed numbers using the additive inverse multiply, including square, directed numbers divide directed numbers perform calculations with directed number using the hierarchy of operations evaluate algebraic expressions using directed number using substitution use a calculator with directed number calculate roots of positive numbers and explore higher powers and roots (H) 	<p>To be able to:</p> <ul style="list-style-type: none"> solve 1 and 2 step equations with addition and subtraction solve 1 and 2 step equations with multiplication and division solve a variety of 1 and 2 step equations with directed numbers and decimals 	<p>To be able to:</p> <ul style="list-style-type: none"> explore representations of fractions in shapes and on number lines convert between mixed numbers and improper fractions add and subtract fractions with common denominators, when one denominator is a multiple of another and using the lowest common multiple of a denominator add and subtract fractions from integers add and subtract mixed numbers add and subtract fractions and decimals using equivalence generalise the addition and subtraction using algebra (H)
	Tier 2 and 3 key vocabulary	Tier 2 and 3 key vocabulary	Tier 2 and 3 key vocabulary	Tier 2 and 3 key vocabulary	Tier 2 and 3 key vocabulary	Tier 2 and 3 key vocabulary
Subject specific	integer decimal place value addition subtraction minus sum difference partition exchange count on bridging credit debit balance two way table frequency tree	inverse commutative even odd place value tenths hundredths ones factor multiple highest common factor lowest common multiple product quotient divisor dividend remainder decimal integer convert metric units kilometre centimetre metre millimetre kilogram gram litre millilitre centilitre hierarchy operations priority efficient estimate mean average median range expression simplify term expression	fraction numerator denominator equal part bar model equivalent whole original decimal place value percent percentage convert	directed number positive negative sum minus difference zero pair double sided counters reflection symmetry commutative sea level ascending descending greater than smaller than increase decrease product multiply inverse calculator sign change fraction button substitute evaluate order of operations hierarchy priority square square root indices power exponent root	equation solve term constant equals equality expression balance co-efficient inverse operation function machine bar model algebra tiles fraction negative positive solution substitute check zero pair order of operations commutative brackets square number square root indices exponent power root	equal parts congruent denominator numerator fraction divide ascending descending greater/smaller than positive negative inequality symbols unit fraction whole multiple addition subtraction mixed number improper integer partition equivalent lowest common multiple common denominator decimal tenths hundredths place value simplify collect like terms in terms of