GRACE COLLEGE **Curriculum Outline Year 7** **Mathematics**

Year 7 Curriculum intent

Mathematics is a language; international, universal and timeless. We want all students to experience the beauty, power and enjoyment of Mathematics, developing a sense of curiosity about the subject with a clear understanding of many aspects. We are committed to ensuring all students are Mathematically fluent, enabling them to adapt to challenges that life presents. We foster a 'can do' attitude and we promote the fact that it is good to do 'hard things'.

Year 7 Curriculum Overview

Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
• Block 1 - Sequences • Block 2 - Algebraic notation • Block 3 - Equality & equivalence	• Block 4 – Place value and ordering integers & decimals • Block 5 – Fraction, decimal & percentage equivalence	• Block 6 - Addition & subtraction • Block 7 - Multiplication & division • Block 8 - Fractions & percentages of amounts	• Block 9 - Operations & equations with directed numbers • Block 10 - Addition & subtraction of fractions	• Block 11 - Constructing, measuring & using geometric notation • Block 12 - Developing geometric reasoning	• Block 13 – Developing number sense • Block 14 – Sets & probability • Block 15 – Prime numbers & proof

Key Question

Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
• How is a linear sequence different from a non-linear sequence? • Will outputs like a+3 and 3a always, sometimes or never be the same? • What's the difference between an equation and an expression.	• What is different about the median and the range? • Is it possible to give 110% effort? Can we find 110% of an amount?	• Why isn't subtraction commutative? • Explain how 18 is both a factor and multiple of 18. • Why is it that you divide by 10 to find 10% of a number but you don't divide by 20 to find 20% of a number?	• Why is adding a negative the same as subtracting? • How can we find a fraction that is equivalent to another fraction?	• What is the difference between a line and a line segment? • When are vertically opposite angles formed?	• How does estimation help us check answers are reasonable? • What's the same and what's different between the union and intersection of sets? • How many factors do prime numbers have?

Key Vocabulary

Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
1. Term 2. Linear 3. Expression 4. Variable 5. Simplify 6. Solve	1. Integer 2. Significant figure 3. Equivalent 4. Numerator 5. Denominator 6. Approximate	1. Associative 2. Commutative 3. Inverse 4. Product 5. Quotient 6. Convert	1. Order of operations 2. Indices 3. Square root 4. Multiple 5. Mixed number 6. Improper fraction	1. Construct 2. Perpendicular 3. Vertically opposite 4. Acute 5. Obtuse 6. Reflex	1. Factor 2. Universal set 3. Venn diagram 4. Intersection 5. Union 6. Complement

GRACE COLLEGE
CORE KNOWLEDGE

Year 7 – Mathematics

	The knowledge you will need to recall:	How you will apply this knowledge:	This links to:
1	• Describe and continue sequences. • Understand and use algebraic notation. • Understand equality and equivalence.	• Move freely between different numerical, algebraic, graphical and diagrammatic representations. Make and test conjectures about patterns and relationships. Use a calculator and other technologies to calculate results accurately and then interpret them appropriately. • Move freely between different numerical, algebraic, graphical and diagrammatic representations. Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships. Recognise and use relationships between operations including inverse operations. Model Situations or procedures by translating them into algebraic expressions. • Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships.	• Year 6: Algebra • Year 6: Algebra • Year 6: Algebra
2	• Recognise and use place value to order different types of number. • Understand and use fraction, decimal and percentage equivalence.	• Consolidate understanding of the number system and place value to include decimals. Make connections between number relationships, and their algebraic representations. • Consolidate understanding of the number system and place value to include decimals and fractions. Move freely between different numerical representations (for example, equivalent fractions, fractions and decimals). Make connections between number relationships.	• Year 6: Understand and Represent Number • Year 6: Understand Fractions and Decimals (including Percentages)
3	• Solve problems involving addition and subtraction within a range of contexts. • Solve problems involving multiplication and division within a range of contexts. • Know how to find basic fractions and percentages of amounts.	• Recognise and use relationships between operations including inverse operations. Choose the most appropriate method for calculation (mental, formal written or calculator). Move freely between different representations of data. • Recognise and use relationships between operations including inverse operations. Choose the most appropriate method for calculation (mental, formal written or calculator). Make connections between number relationships and their algebraic and graphical representations. • Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems.	• Year 6: Calculation. Year 5: Statistics • Year 6: Geometry. Year 6: Calculation. Year 5: Measurement. • Year 6: Understand Fractions and Decimals (including Percentages). Year 5: Understand Fractions and Decimals (including Percentages).
4	• Understand directed number. • Add and subtract fractions.	• Select and use appropriate calculation strategies to solve increasingly complex problems. Recognise and use relationships between operations including inverse operations. Use a calculator and other technologies to calculate results accurately and interpret them appropriately. • Move freely between different numerical, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals]. Select and use appropriate calculation strategies to solve increasingly complex problems.	• Year 6: Understand and Represent Number. Year 5: Understand and Represent Number . • Year 6: Understand Fractions and Decimals (including Percentages).
5	• Construct and measure accurately. • Begin to reason within a geometric context.	• Use language and properties precisely to analyse 2D shapes. Begin to reason deductively in geometry including using geometrical constructions. Describe, sketch and draw using conventional terms and notations. • Use language and properties precisely to analyse 2D shapes. Begin to reason deductively in geometry. Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multiple step problems.	• Year 6: Geometry. Year 6: Statistics. • Year 6: Geometry.
6	• Understand set notation and calculate probabilities. • Recognise special types of numbers. • Begin to form basic mathematical proofs.	• Know when to use a mental strategy, formal written or a calculator. Select and use appropriate calculation strategies to solve increasingly complex problems. Begin to reason deductively in number and algebra. • Explore what can and cannot be inferred in probabilistic settings and begin to express their arguments formally. Use language properties and formally to analyse probabilities. • Make and test conjectures about patterns and relationships. Use counterexamples to disprove a conjecture. Begin to reason deductively in number work and algebra.	• Year 7: Solving Problems with Addition and Subtraction. Year 7: Solving Problems with Multiplication and Division. • Year 6: Understand Fractions and Decimals (including Percentages). • Year 6: Calculation. Year 5: Calculation.

GRACE COLLEGE Homework Year 7 Mathematics

		Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
Spell It	HW 1	• Term-to-term rules for sequences of patterns • Term-to-term rules for numerical sequences	• Number lines • Integer place value	• Converting between fractions decimals and percentages • Ordering fractions decimals and percentages	• Finding fractions of amounts without a calculator • Finding percentages of amounts without a calculator	• Adding and subtracting mixed numbers	• Combining angle facts
	HW 2	• Special sequences	• Decimal place value • Calculating the median • Calculating the range	• Adding integers • Adding decimals • Subtracting integers	• Adding and subtracting with negative numbers • Ordering negative numbers	• Types of angles • Measuring angles	• Estimating calculations • Using the commutative laws
Review it	HW 3	• Function machines with numbers • Function machines with letters • Algebraic notation	• Rounding integers • Rounding decimals • Round integers using significant figures • Round decimals using significant figures	• Subtracting decimals • Finding the perimeter of rectangles and simple shapes • Finding the perimeter of compound shapes	• Using the correct order of operations • Multiplying and dividing with negative numbers	• Line properties • Shape properties	• Using the associative laws • Using the distributive law
	HW 4	• Substituting into expressions with one operation • Substituting into expressions with multiple operations • Substituting into position-to-term rules	• Finding fractions of shapes • Constructing fractions	• Multiplying by 10, 100 and 1000 • Multiply using place value • Using written method to multiply integers • Using a written method to multiply decimals	• Solving equations with one step • Mixed problems: solving equations with two or more steps	• Interpreting pie charts	• Using probability phrases • Writing probabilities as fractions • Writing probabilities as fractions, decimals and percentages • Probabilities of mutually exclusive events
Apply it	HW 5	• Simplifying expressions containing a single variable	• Finding equivalent fractions • Simplifying fractions • Ordering fractions	• Dividing numbers into equal groups • Using a written method to divide integers • Dividing with a remainder • Using a written method to divide by integers to get a decimal answer • Converting units of length, mass and capacity	• Converting between mixed numbers and improper fractions • Simplifying fractions	• Angles on a line and about a point • Vertically opposite angles	• Calculating experimental probabilities • Venn diagrams • Probabilities from Venn diagrams • Venn diagrams with set notation
	HW 6	• Solving equations with one step	• Converting between decimals and fractions	• Finding the area of compound shapes • Finding the area of triangles	• Adding and subtracting fractions • Finding equivalent fractions	• Angles in triangles • Angles in quadrilaterals	• Finding prime numbers • Prime factor decomposition • Calculating with roots and powers
Beyond the curriculum		Independent learning – You can use the independent learning feature of SPARX to look to consolidate work not set in your weekly homework, look at new content or you could do some XP boost to gain more points on SPARX!					