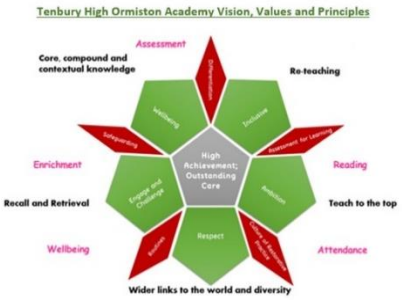
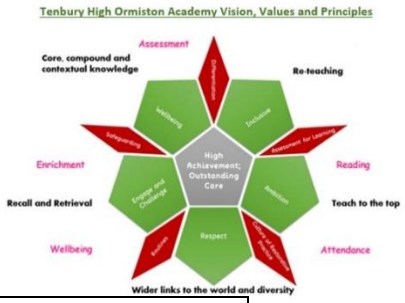
TENBURY HIGH
ORMISTON ACADEMY



Curriculum Overview for Mathematics
Year 9

Half Term 1: Exploring Graphs **Declarative Knowledge:** Recognise the four quadrants of a co-ordinate grid Plot point in at least 1 quadrant of a coordinate grid Plot co-linear points in 1 quadrant Discuss/describe a relationship between x and y coordinates Discuss/describe a relationship between 2 linear variables **Procedural Knowledge:** Create an equation for graphs with +ve gradients Create an equation for graphs with +ve gradients including decimals and fractions Create an equation for graphs with a positive gradient and +ve intercept Plot point in 4 quadrants recap Create an equation for graphs with -ve gradients Create an equation for graphs with -ve gradients including decimals and fractions Create an equation for graphs with a -ve intercept Identify the gradient from $y = mx + c$ Identify the intercept from $y = mx + c$ Rearrange to find the above $ay = mx + c$ Rearrange to find the above $mx + y = c$ Rearrange to find the above with $mx + ay = c$ Substitute to generate points with negative Substitute into an implicit points equations Check to see if coordinates points on a line Substitute into and generate coordinate for $y = x^2+c$ Plot and recognise a quadratic graph Substitute into and generate coordinate for $y = -(x)^2+c$ Substitute into and generate coordinate for $y = x^2+bx+c$ Identify a minimum or maximum for quadratic graph Identify estimated roots of a quadratic graph **Conditional Knowledge:** Recognise physical differences in line with a negative gradient and positive gradients Apply knowledge to create an equation for a horizontal line Explore the limitations of your knowledge with a vertical line Apply knowledge to across a range of linear graphs Recognise limits of a calculator	   	Modelling reading of questions by the class teacher – teaching like a Mathematician Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons Function, equation Quadratic, cubic, reciprocal Gradient, y-intercept, x-intercept, root Sketch, plot Kinematic Speed, distance, time Acceleration, deceleration Linear, non-linear Parabola, Asymptote Rate of change End of unit exam completed for Exploring Graphs. Reteaching and relearning opportunities will be delivered to each class dependent on the performance of each class. Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school) We expect Year 9 pupils to spend 30 minutes on homework for Maths per week.



Half Term 1: Expanding and Factorising **Declarative Knowledge:** Understand that single brackets produce a linear graph and double brackets produce a quadratic graph **Procedural Knowledge:** Expand brackets with only positives Expansion with more than 1 letter and/or more than 2 terms Expansion and simplify with 2 or more brackets Expansion to problems with negatives within the brackets Expansion to problems with a negative outside the brackets Expansion with negative with 2 or more brackets Expansion with all fractions Expansion with 2 brackets (all positive) Expansion with 2 brackets (all negative) Expansion with 2 brackets (mixed signs) Expansion with 3 brackets Factorise into a bracket with only positives and negative inside the bracket Factorisation with more than 1 factor Factorisation with negative common factors Factorise with indices greater than 2 Factorise quadratics (Only positives) Factorise quadratics (With negatives) **Conditional Knowledge:** Know when to expand first or divide first to solve an equation. Sketch the graph from the factorised quadratic.		Modelling reading of questions by the class teacher – teaching like a Mathematician Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Inequality Identity Equivalent Equation Formula, Formulae Expression Expand Linear Quadratic
		End of unit exam completed for Expanding Factorising. Reteaching and relearning opportunities will be delivered to each class dependent on the performance of each class.
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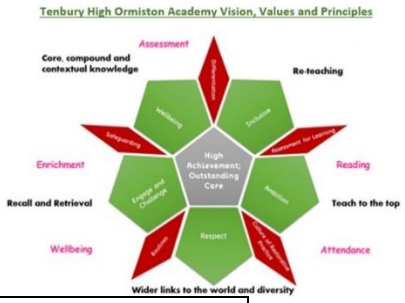
Half Term 2: Rounding and Bounds **Declarative Knowledge:** Identify the significant figures of a number in an integer Identify the significant figures of a number that $0 < n < 1$ Identify the decimal places of a number Know what truncating is Know the impact of truncating compared to rounding Know when truncating is more / less appropriate than rounding **Procedural Knowledge:** Round numbers to one or two significant figures Round numbers to one and two decimal places Identify the minimum and maximum values of an amount that has been rounded (to nearest x, x d.p., x s.f.)		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Inequality, Truncate, Round, Minimum, Maximum, Interval, Decimal place, Significant figure, Upper Bound, Lower Bound, Focus digit, Decider digit
		End of unit exam completed for Rounding and Bounds. Reteaching and relearning opportunities will be delivered to each class dependent on the performance of each class.



Conditional Knowledge: Use inequalities to describe the range of values for a rounded value Solve problems involving the maximum and minimum values of an amount that has been rounded		Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school) We expect Year 9 pupils to spend 30 minutes on homework for Maths per week.
Half Term 2: Laws of Indices **Declarative Knowledge:** Know that an index represents the number of times you multiply the base by itself Identify an index Know that expressions with an index and the same base can be simplified using index laws Know the zero-index law Know the one-index law Know that bases with a negative index are the reciprocal of the power Know that raising fractions to an integer power means raising both numerator and denominator by the power individually and then simplifying **Procedural Knowledge:** Evaluate indices with a negative base Simplify expressions using the law of indices for multiplication Simplify expressions using the law of indices for division Simplify expressions using the law of indices for powers Simplify expressions using the zero-index law Simplify expressions using the one-index law Calculate with fractions with integer indices **Conditional Knowledge:** Simplify expressions using more than one law of indices Calculate with negative indices		Modelling reading of questions by the class teacher – reading like a Mathematician and BUG Two key words at the start of each lesson defined Expectation of Mathematical vocabulary used in lessons
		Index, indices, power, multiply, divide, zero, base, law
		End of unit exams completed for Laws of indices. Reteaching and relearning opportunities will be delivered to each class dependent on the performance of each class.
		Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school) We expect Year 9 pupils to spend 30 minutes on homework for Maths per week.