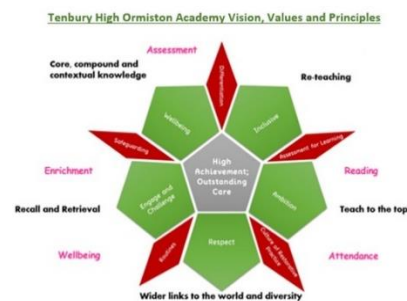




Curriculum Overview for Mathematics Year 10 (Higher)

Half Term 5: Continuous Data Declarative Knowledge: Define measures of central tendency Define each measure of central tendency Procedural Knowledge: 4.1 Measures of central tendency of grouped data - mean, mode and median 4.2 Graphical representations of continuous and grouped data - cumulative frequency and boxplots (unequal and equal class widths) 4.3 Measures of spread - interquartile range, including why it is better than the range Conditional Knowledge: 4.4 Compare data sets through graphs, central tendency and spread		Modelling reading of questions by the class teacher – teaching like a Mathematician Key words on top sheet are shared with children, including syllabification when they appear in the learning Expectation of Mathematical vocabulary used in lessons
		
		Recall test at midpoint End of unit exams with relearning tasks as part of feedback lesson. Content may be included in Y10 mock exams.
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Half Term 5: Set theory and logic

Declarative Knowledge:

Sort data into sets in a Venn diagram

Recall probability

Procedural Knowledge:

5.1 Thinking logically

5.2 Representing sets with set notation

5.3 Representing sets with Venn diagrams

5.4 Intersections and unions of sets (in notation and on Venns), subsets

5.5 Solving probability problems using sets

5.6 Applying the 'AND' and 'OR' rules for independent and mutually exclusive events.

Linking to intersections and unions

5.7 Represent the solutions to linear inequalities using set notation

Conditional Knowledge:

Calculate probability from Venn diagrams



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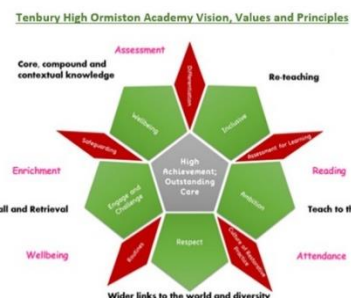
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Half Term 5: Number Theory

Declarative Knowledge:

Calculating HCF/LCM

Procedural Knowledge:

14.1 the Fundamental Theorem of Arithmetic

14.2 finding HCF/LCM using prime factors

14.5 recurring and terminating decimals - prime factor rule for identifying terminating decimals, converting a recurring decimal to a fraction

14.6 writing error intervals (recap rounding and truncation); calculations with upper and lower bounds, combining upper and lower bounds, percentage error of these calculations

Conditional Knowledge:

14.3 HCF/LCM problems

14.4 advanced prime factors - square/cube numbers, using numbers given in factorised form



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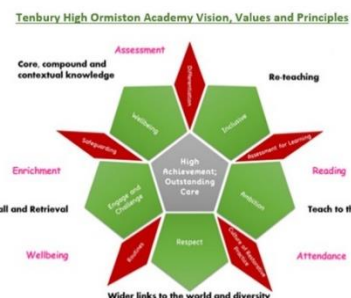
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Half Term 6: Advanced Manipulating and Simplifying Expressions

Declarative Knowledge:

Expand single brackets

Factorise into single brackets

Procedural Knowledge:

11.1 Addition and subtraction of indices, power of a power, power of 0

11.2 expand two and three binomials, including adding expressions which need first expanding

11.3 factorising a quadratic where $a = 1$

11.4 factorising the difference of two squares

11.5 factorising a quadratic where $a > 1$

11.6 simplifying algebraic fractions, including numerical factors, single letter factors and bracket factors

11.7 rearranging more complex formulae (including non-linear, subject in denominator, and subject appearing twice)

Conditional Knowledge:

11.8 simplifying an expression by factorising out a bracket



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Half Term 6: Quadratic Graphs and Equations

Declarative Knowledge:

12.1 Plotting a quadratic and reading values from a graph; solving quadratics graphically

Procedural Knowledge:

12.1 Solving quadratics through simple $ax^2=b$ by rearrangement

12.2 Solving quadratic equations $= 0$ by factorising, identifying the solutions on a graph

12.3 Solving quadratic equations $= 0$ using the quadratic formula, identifying the solutions on a graph

12.4 Completing the square to find roots. Simple examples where b is even and $a = 1$.

12.6 Solving quadratics presented not equal to 0, selecting the best method for solving

Conditional Knowledge:

12.5 Producing a sketch graph of a quadratic by finding roots, y-intercept and turning points (by symmetry only)



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Half Term 6: Surface Area and Volume

Declarative Knowledge:

Area of polygons

Procedural Knowledge:

8.1 Surface area of prisms and cylinders
8.2 Surface area of spheres, pyramids, cones, composite solids, frustums and other polyhedra

8.3 Volume of prisms and cylinders

8.4 Volume of spheres, pyramids, cones, composite solids, frustums and other polyhedra

Conditional Knowledge:

8.5 Similarity of volume and area - generalising LAV similarity with scale factors and ratios



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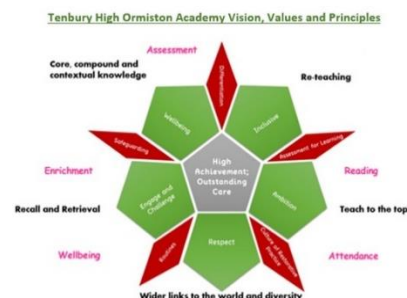
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Curriculum Overview for Mathematics Year 10 (Cross-over)

Half Term 5: Advanced Linear Graphs, Equations and Inequalities Declarative Knowledge: Sketching linear graphs. Procedural Knowledge: Find the gradient of a line using change in y/change in x Use the form $y=mx+c$ to draw lines (without plotting points) and to find the root. Identify equations of parallel and perpendicular lines. Find the solution to a pair of simultaneous equations by elimination and by substitution, and check the solution Write and solve simultaneous equations from contexts Conditional Knowledge: Solve equations in two variables graphically: know that the points on a line represent the solution set to an equation in two variables, and that the intersection of two lines represents the solution to a pair of simultaneous equations in two variables Advanced $y=mx+c$ questions - is (x,y) on the given line?, finding equations given two points or a point and gradient. Solve problems related to this. Find regional solutions to linear inequalities in two variables on a Cartesian grid, including regions formed from multiple inequalities and identifying integer solutions in a region.		Modelling reading of questions by the class teacher – teaching like a Mathematician Key words on top sheet are shared with children, including syllabification when they appear in the learning Expectation of Mathematical vocabulary used in lessons
		
		End of unit exams with relearning tasks as part of feedback lesson. Content may be included in Y10 mock exams.
		Dr Frost Maths – practising skills using DrFrost.org (a unique username and password will be provided by the school). Revision for end of unit exams. This will include Dr Frost Maths practise, but may also include extra revision set by the teacher, including practising past exam questions, creating revision cards, creating mindmaps, etc.



Half Term 5: Probability

Declarative Knowledge:

Sum of probabilities of all mutually exclusive events = 1

Procedural Knowledge:

systematic listing

Record, describe and analyse the frequency of outcomes of simple probability experiments, introduce language of probability

Theoretical probability - formalising language and notation, calculating

Generate theoretical sample spaces, including systematic listing of combinations and outcomes, and use these to calculate probabilities

Recording outcomes and possibilities using frequency trees, two-way tables and simple Venn diagrams.

Conditional Knowledge:

Product rule for counting

Use diagrams to calculate probabilities



Modelling reading of questions by the class teacher – teaching like a Mathematician
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Expectation of Mathematical vocabulary used in lessons



Recall test at midpoint
End of unit exams with relearning tasks as part of feedback lesson.
Content may be included in Y10 mock exams.



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Half Term 6: Right-angled triangles

Declarative Knowledge:

Exact values of sin, cos and tan for 0, 30, 45, 60, 90

Procedural Knowledge:

Pythagoras' Theorem in 2D to find missing sides

Proving a triangle is right-angled with Pythagoras

Identifying Pythagorean triples

Pythagoras to find the distance between two points

Trigonometric ratios for finding missing sides in right-angled triangles

Trigonometric ratios for finding missing angles in right-angled triangles

Conditional Knowledge:

Problems involving Pythagoras and trigonometry (including bearings), method selection practice



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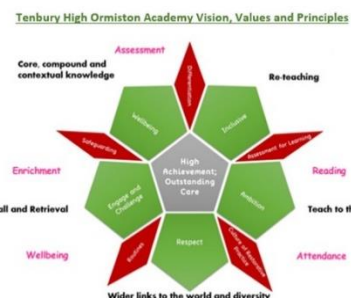
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Half Term 6: Circles

Declarative Knowledge:

Circle parts and properties

Procedural Knowledge:

Circumference of a circle (and semi/quarter circles), in terms of pi and rounded

Area of a circle (recap) and semi/quarter circles, in terms of pi and rounded

Problems with circumference and area of a circle

Length of an arc and area of a sector

Conditional Knowledge:

Identifying and using the circle theorems



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Half Term 6: Advanced Drawing, Measuring and Constructing

Declarative Knowledge:

Interior and exterior angles in polygons

Procedural Knowledge:

Converting between 2D and 3D units of measurement

Naming and recognising polyhedra. Labelling conventions (for faces esp). Euler's Formula ($F + V - 2 = E$)

Drawing 3D shapes: normal and isometric.

2D representations of 3D shapes: constructing and interpreting nets, plans and elevations

Planes of symmetry

Loci - fixed distance from a point, fixed distance from a line, equidistant from a two points, equidistant from two lines

Conditional Knowledge:

Problems with angles, including in parallel lines, bearings and polygons, and explaining reasoning



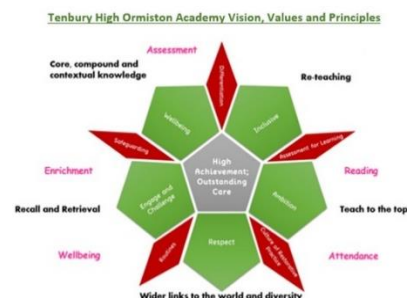
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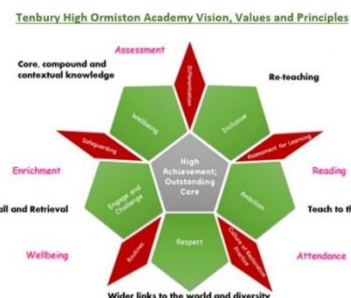


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Curriculum Overview for Mathematics Year 10 (Foundation)

Half Term 5: Proportion and Rates of Change Declarative Knowledge: Definitions of direct proportion and inverse proportion Procedural Knowledge: Direct proportion Inverse proportion Decimal multipliers to increase and decrease Conditional Knowledge: Value for money Exchange rates		Modelling reading of questions by the class teacher – teaching like a Mathematician Key words on top sheet are shared with children, including syllabification when they appear in the learning Expectation of Mathematical vocabulary used in lessons
		End of unit exams with relearning tasks as part of feedback lesson. Content may be included in Y10 mock exams.
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Half Term 5: The Cartesian Grid

Declarative Knowledge:

Coordinates in all 4 quadrants

Procedural Knowledge:

Find the midpoint of a line segment

Horizontal and vertical lines

Plot a linear graph

Plot a quadratic graph

Conditional Knowledge:

Finding gradient and y intercept from $y=mx+c$



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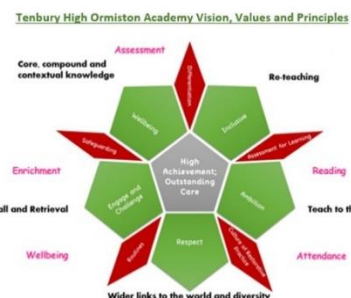
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Half Term 5: Sequences

Declarative Knowledge:

Find missing numbers in sequences

Procedural Knowledge:

Writing term to term rules

Generate terms of a sequence

Find the nth term of a sequence

Conditional Knowledge:

Picture sequences



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Half Term 5: Inequalities

Declarative Knowledge:

Understand inequality symbols

Procedural Knowledge:

Comparative inequalities

Restrictive inequalities

Solve linear inequalities

Conditional Knowledge:

Represent inequalities involving x or y by shading on a graph



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Half Term 6: Congruence, Similarity and Transformations

Declarative Knowledge:

Congruence - introduction

Knowing that enlargements produce similar shapes

Knowing that reflection, rotation and translation produce congruent shapes

Procedural Knowledge:

Tessellating congruent shapes to fill the plane
Isometries: translation (as a vector), reflection and rotation, including rotational and reflective symmetry, combinations of transformations, including successive translations.

Enlargement

Conditional Knowledge:

Similarity of length, proving shapes are similar, finding scale factors and writing equivalent sides as equivalent ratios



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Half Term 6: Probability

Declarative Knowledge:

Sum of probabilities of all mutually exclusive events = 1

Procedural Knowledge:

systematic listing

Record, describe and analyse the frequency of outcomes of simple probability experiments, introduce language of probability

Theoretical probability - formalising language and notation, calculating

Generate theoretical sample spaces, including systematic listing of combinations and outcomes, and use these to calculate probabilities

Recording outcomes and possibilities using frequency trees, two-way tables and simple Venn diagrams.

Conditional Knowledge:

Use diagrams to calculate probabilities



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