TENBURY HIGH
ORMISTON ACADEMY

Curriculum Overview for Mathematics
Year 9 (Further)

<table>
<tr>
<td rowspan="4">Half Term 5: Advanced Linear Graphs, Equations and Inequalities

Declarative Knowledge:
• 10.3 Identify equations of parallel and perpendicular lines.

Procedural Knowledge:
• 10.1 Find the gradient of a line using change in y/change in x
• 10.2 Use the form y=mx+c to draw lines (without plotting points) and to find the root. Sketching linear graphs.
• 10.4 Advanced y=mx+c questions - is (x,y) on the given line?, finding equations given two points or a point and gradient.
• 10.5 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
• 10.6 Find the solution to a pair of simultaneous equations by elimination and by substitution, and check the solution
• 10.7 Write and solve simultaneous equations from contexts

Conditional Knowledge:
• 10.4 Solve problems related to this.
• 10.8 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.</td>
<td>  </td>
<td>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</td>
</tr>
<tr>
<td>  </td>
<td>Perpendicular
Parallel
Simultaneous
Axis
Sketch
Plot
Midpoint
Inequality
Notation
Equation
Equal to</td>
</tr>
<tr>
<td>  </td>
<td>End of unit exam completed in class with relearning tasks in feedback lesson. There is an expectation of revision taking place at home.

Content may be included in Term 3 formal assessment.</td>
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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.</td>
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<tr>
<td><u>Half Term 5/6: Congruence and Similarity and Transformations</u>

Declarative Knowledge:
• 4.1 Congruence – introduction
• 4.3 Knowing that reflection, rotation and translation produce congruent shapes
• 4.6 Knowing that enlargements produce similar shapes
Procedural Knowledge:
• 4.2 Tessellating congruent shapes to fill the plane
• 4.3 Isometries: translation (as a vector), reflection and rotation, including rotational and reflective symmetry, combinations of transformations, including successive translations.
• 4.4 Similarity of length, proving shapes are similar, finding scale factors and writing equivalent sides as equivalent ratios
• 4.5 Enlargement (including negative and fractional enlargements).

Conditional Knowledge:
• 4.6 Conditions for congruent triangles - simple examples, getting familiar with terms</td>
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<td>congruent
similar
invariance
isometry
translation
reflection
rotation
enlargement</td>
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Half Term 6: Right-angled triangles

Declarative Knowledge:

- 5.7 Exact values of sin, cos and tan for 0, 30, 45, 60, 90 by heart

Procedural Knowledge:

- 5.1 Pythagoras' Theorem in 2D to find missing sides
- 5.2 Proving a triangle is right-angled with Pythagoras
- 5.3 Identifying Pythagorean triples
- 5.4 Pythagoras to find the distance between two points
- 5.5 Trigonometric ratios for finding missing sides in right-angled triangles
- 5.6 Trigonometric ratios for finding missing angles in right-angled triangles

Conditional Knowledge:

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

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Expectation of Mathematical vocabulary used in lessons

Sine
Cosine
Tangent
Pythagoras
Trigonometry
Hypotenuse
Opposite
Adjacent
Theta
Ratio
Right-angle
Triangle

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Curriculum Overview for Mathematics
Year 9 (Developing)

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<td rowspan="4"><u>Half Term 5/6: Reviewing Essential Number Skills</u>

Declarative Knowledge:
• Index laws
• The Order of Operations
• Know the parts of a fraction
• Define recurring and terminating decimals

Procedural Knowledge:
• Powers and roots
• Prime factors
• Order of operations with four operations, exponents and brackets to break the order
• Four operations with directed numbers
• Powers of negative numbers
• Adding and subtracting fractions
• Finding a fraction given the whole, finding a whole given a fraction.
• multiplying and dividing fractions, fraction of an amount (incl. fractions of fractions) with link to multiplying; increasing and decreasing by a fraction by multiplying
• Equivalent fractions, decimals and percentages
• Recurring and terminating decimals
• Percentages of amounts, percentage increase and decrease
• Fluent use of the calculator
• Rounding, truncation
• Estimation and approximation

Conditional Knowledge:
• Reasoning and problem solving
• Error intervals</td>
<td>  </td>
<td colspan="2">Modelling reading of questions by the class teacher – teaching like a Mathematician
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<tr>
<td>  </td>
<td>Power
Exponent
Index
Square
cube
root
prime
HCF
commutative
additive
inverse
rational
numbers
numerator,
denominator
proper,
improper</td>
<td>coprime
complement
"dividing is the same as multiplying by the reciprocal"
reciprocal
equivalent
recurring
terminating
round
upper bound
lower bound
error interval
truncate</td>
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Half Term 6: Reviewing Essential Algebraic and Geometric Skills

Declarative Knowledge:

- Forming formulae and using to find unknowns
- Understand y=mx+c
- Recognise common sequences
- Sum of interior angles in polygons

Procedural Knowledge:

- Expand and factorise a single bracket
- Solve equations with an unknown on both sides
- Solve equations containing brackets
- Solve simple equations containing fractions
- Substituting into a formulae to find an unknown variable
- Rearranging linear formulae
- Find the midpoint of a line segment
- Plot a linear graph
- Find the equation of a line from the gradient and y intercept
- Identify parallel lines from equations
- Plot a quadratic graph
- Generate terms of a sequence
- Find the nth term of a sequence
- Solve linear inequalities
- Constructing and drawing triangles
- Bisecting lines and angles
- Construct Perpendicular lines
- Construct Loci
- Interior angles in a triangle
- Interior angles in a quadrilateral
- Using the properties of quadrilaterals
- Angles in parallel lines
- Interpret and Construct Bearings
- Calculate area of a parallelogram
- Calculate area of a trapezium
- Calculate mixed area and perimeter
- Calculate area of circles

Conditional Knowledge:

- Forming and solving equations
- Represent inequalities on number line
- Represent inequalities involving x or y by shading on a graph
- Setting up equations to solve geometric problems

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

Subject	circle
"in terms of"	arc
Variable	construct
constant	congruent
quadrant (1st, 2nd, 3rd, 4th)	construct
gradient	bisector
plot	locus (loci)
y-intercept	equidistant
sequence	isosceles
term	scalene
difference	equilateral
inequality	interior
rate of change	parallel
interpolate	quadrilateral
extrapolate	rhombus
velocity	parallelogram
point	kite
line	trapezium
segment	regular
ray	irregular
vertex	transversal
angle	alternate
acute	corresponding
obtuse	cointerior
reflex	bearing
	pi

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