

KESTEVEN AND SLEAFORD HIGH SCHOOL

Mathematics Scheme of Learning

Year 11 – Term 1

Intent – Rationale

“Maths is for everyone”. AQA GCSE Mathematics is designed to be diverse, engaging and essential to equip all students with the skills and knowledge to reach their future destination. Opportunities to make connections, generalise and apply are embedded where appropriate for each individual student. References to careers and future learning and shared with students.

<p>Sequencing – what prior learning does this topic build upon?</p> <ul style="list-style-type: none"> • Year 10 Term 3 basic trigonometry (right angled triangles only) • Year 10 Term 2 area, Year 9 Term 5 volume, Year 10 Term 6 similarity • Year 10 Term 3 basic probability (not conditional) • Year 10 changing the subject, Year 9 Term 6 ratio, Year 8 Ter 2 proportion • Year 10 Term 1 changing the subject 	<p>Sequencing – what subsequent learning does this topic feed into?</p> <ul style="list-style-type: none"> • A level trigonometry including sectors, radians and identities • A level statistics • A level rates of change • A level numerical methods
<p>What are the links with other subjects in the curriculum?</p> <ul style="list-style-type: none"> • Technology-trigonometry in design and isometric drawing in graphics • Art – isometric drawing • Science-volume in chemical calculations 	<p>What are the links to SMSC, British Values and Careers?</p> <p>SP2&3, C1 SP2&3, C1 GB4efghi</p>
<p>What are the opportunities for developing literacy skills and developing learner confidence and enjoyment in reading?</p>	<p>What are the opportunities for developing mathematical skills?</p>

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<ul style="list-style-type: none">• 'Alex's Adventure in Numberland' - Alex Bellows• 'The Math Book' - Clifford Pickover	<ul style="list-style-type: none">• Development of previous trigonometric skills (recap of SOHCAHTOA and progress onto non-right angled triangles)• Pupils will be able to calculate the volume of more complex 3D shapes• Pupils will recognise and calculate the constant of proportionality in both direct and inverse relationships
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Mathematics Scheme of Learning Year 11 – Term 1

Intent – Concepts

What knowledge will students gain and what skills will they develop as a consequence of this topic?

Know

Know and use the formulae for Sine Rule, Cosine Rule and area of a triangle (any).

Construct plans and elevations of 3D shapes

Calculate the volume of prisms, spheres, pyramids, cones and other composite solids. Use similarity and scale factors with area and volume.

Draw and use tree diagrams and use to calculate probabilities for independent and dependent events including knowing when to use the OR rule & AND rule.

Recognise direct and inversely proportional relationships. Find the scalar constant in a proportional relationship.

Use recursive formulae to find approximate solutions using iteration

Apply

Context and composite triangle problems.

Interpret plans and elevations of 3D shapes

Context volume problems

Use of tree diagram to calculate probability of combined event.

Solve proportional problems.

Recognise and interpret graphs which illustrate direct and inverse proportion.

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Extend

Area of a triangle in a sector. Mixed sine and cosine rule problems.

Calculate the volume of a frustum.

Algebraic probability problems

Squared, cubed and rooted terms in proportional relationships

Arrange an equation in to a recursive formula form

What subject specific language will be used and developed in this topic?	What opportunities are available for assessing the progress of students?
<ul style="list-style-type: none"> • Sine, cosine, right angled, scalene, opposite, adjacent, hypotenuse, trigonometry • Plan, side, elevation, isometric, construct • Volume, length, width, depth, height, capacity, cuboid, prism, formulae, pyramid, sphere, frustrum, composite, compound, dimension • Probability, and, or, tree diagram, events, outcomes, dependent, independent, conditional probability, replacement, without replacement, exhaustive, sample space, two-way table, product rule, systematic listing, frequency • Proportion, direct, inverse, scalar, scale, constant of proportionality • Iteration, recursive, approximate 	<ul style="list-style-type: none"> • End of topic homework tests • Exam question practice – open book • Mini quizzes including Kahoot • Recall starters: <ul style="list-style-type: none"> • LLLWLTLY • Corbett 5 a day • Whiterose maths KS4 problem of the day • Mini quiz on last term topics

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Trigonometry	R	A	G
Know and apply the Sine rule to find angles and sides in any given triangle			
Know and apply the Cosine rule to find angles and sides in any given triangle			
Calculate the area of any given triangle			
Solve combined trigonometry problems including triangles formed in a sector.			

2D Representation of 3D shapes	R	A	G
Construct plans and elevations of 3D shapes			
Interpret plans and elevations of 3D shapes			

Volume	R	A	G
Know and use the formulae for cuboids			
Know and use the formulae for prisms			
Calculate the volume of spheres, pyramids, cones and other composite solids			
Calculate give answers in terms of Pi.			
Calculate dimensions when the volume is known			
Solve algebraic equivalence volume problems			

Probability	R	A	G
Calculate the probability of independent events			
Draw and use tree diagrams and use to calculate probabilities including knowing when to use the OR rule & AND rule.			
Calculate conditional probability			

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Direct and Inverse proportion	R	A	G
Recognise direct and inversely proportional relationships			
Find the scalar constant in a proportional relationship			
Solve problems in direct or inverse proportion			
Recognise and interpret graphs which illustrate direct and inverse proportion.			

Numerical Methods	R	A	G
Arrange an equation in to a recursive formula form			
Find approximate solutions using iteration			
Use the recursive notation			