KESTEVEN AND SLEAFORD HIGH SCHOOL

Mathematics Scheme of Learning
Year 10 – Term 2

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.

Sequencing – what prior learning does this topic build upon?	Sequencing – what subsequent learning does this topic feed into?
- Year 9 Term 4 grouped data - Year 9 Term 4 scattergraphs - Year 9 Term 3 quadratic sequences - Year 9 Term 5 percentage change and compound interest (HSL) - Year 9 Term 5 area and volume (HSL), Year 10 Term 1 expressions	- GCSE statistical measures, A level statistics - A level sequences and series including further work on geometric sequences finding the nth term - A level exponential modelling problems with percentage multipliers - A level algebraic manipulation, calculus minimum and maximum
What are the links with other subjects in the curriculum?	**What are the links to SMSC, British Values and Careers?**
- Science, Geography and Psychology data collection - Percentages are cross curricular eg profit costing in technology - Isometric drawing has links to Art and Graphics	SP2&3, C1 SP2&3, C1 GB4efghi
What are the opportunities for developing literacy skills and developing learner confidence and enjoyment in reading?	**What are the opportunities for developing mathematical skills?**

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• Summarising and interpreting data	• Statistical applications to real life • Financial maths – percentage problems • Construction – isometric drawings

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Intent – Concepts

What knowledge will students gain and what skills will they develop as a consequence of this topic?
Know Draw and interpret pie charts, bar charts (F pictograms), time series graphs. Draw and interpret cumulative frequency graphs and box plots. Draw and interpret Histograms. Draw and interpret a scatter diagram including describing correlation, relationship shown, drawing a line of best fit to estimate. Express one quantity as a percentage of another. Compare quantities using percentages. Calculate percentage change and reverse percentages using multiplier method. Calculate compound and simple interest and other repeat percentage change. Identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres. Identify parts of a circle. Calculate the perimeter of 2D shapes and composites including circles. Know and apply formulae to calculate area of triangles, parallelograms, trapezia, circles and composites. Calculate the surface area of pyramid composites. Calculate the arc length and area of sectors or circles. **Apply** Compare distributions from cumulative frequency graphs and box plots. Find proportion/percentage of population more than/less than a given value from a histogram Explore causation vs correlation and when an estimate is interpolation or extrapolation. Percentage in context problems as above. Shape problems in context

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<table>
<tr><td colspan="2" align="center"><u>**Extend**</u>
No frequency density scale problems. Estimate the median.
Explain why an estimate from a scattergraph is not reliable/appropriate.
Algebraic repeat percentage problems
Working backwards problems – knowing the surface area/volume/perimeter and using to find a missing dimension. Algebraic problems.</td></tr>
<tr><td>**What subject specific language will be used and developed in this topic?**</td><td>**What opportunities are available for assessing the progress of students?**</td></tr>
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- Cumulative frequency, distribution, averages,
- Correlation, extrapolation, interpolation, relationship, estimate
- Generate, nth term, linear, quadratic, arithmetic, sequence, progression,
- Compound, simple, interest, profit, depreciate, increase, decrease

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AQA topic <u>open book </u>assessments (homework)
Exam question practice in class – open book
Mini quizzes including Kahoot
Multiple choice to address misconceptions
Recall starters:
- LLLWLTLY
- Corbett 5 a day
- Whiterose maths KS4 problem of the day
- Mini quiz

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Intent – Concepts

Collecting and Representing data	R	A	G
Interpret and construct: frequency tables, bar charts, pie charts, pictograms (F), time series graphs			

Construct and interpret cumulative frequency diagrams and box plots			
Compare distributions			
Construct and interpret histograms			

Scatter Graphs	R	A	G
Draw scatter graphs			
Recognise positive and negative correlation			
Describe the relationship between the two variables			
Draw and use lines of best fit			
Understand correlation and causation. Interpolate and extrapolate knowing when you should be cautious			

Sequences	R	A	G
Generate sequence from a term to term or position to term rule			
Recognise sequences of triangular, square and cube numbers			
Recognise and use fibonacci sequences, quadratic sequences, simple geometric progressions			
Find the nth term for linear and quadratic sequences			

Percentages	R	A	G
Express one quantity as a percentage of another			
Compare two quantities using percentages			
Interpret percentage problems using a multiplier, including percentage increase and decrease			

Solve reverse percentage problems (finding the original amount)			
Calculate simple and compound interest			

Perimeter and area	R	A	G
Identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres. Identify parts of a circle.			
Calculate the perimeter of a 2D shapes and composites, including circles.			
Know and apply formulae to calculate area of triangles, parallelograms, trapezia, circles and composites.			
Calculate the surface area of pyramid composites.			
Calculate the arc length and area of sectors or circles.			