KESTEVEN AND SLEAFORD HIGH SCHOOL

Mathematics Scheme of Learning
Year 7 – Term 6/Construction/Powers&Indices/Graphs&Equations/Pythagoras'Theorem

Intent – Rationale

This term the students have an opportunity to make explicit links between topics. Perigal's puzzle provides an opportunity to discover Pythagoras' theorem using learnt knowledge from the year. Students will improve their confidence in using a compass in preparation for Year 8 topics such as bearings and loci.

Sequencing – what prior learning does this topic build upon?	Sequencing – what subsequent learning does this topic feed into?
• Year 7 Term 4 draw and measure angles accurately • Year 7 Term 2 substitution, Term 4 straight line graphs • Year 7 Term 2 substitution, Term 3 Squares and Roots	• Year 8 Term 3 bearings, Term 4 construction including Loci • Year 8 Term 2 straight line graphs • Year 8 Term 1 Powers, Term 5 Pythagoras' Theorem
What are the links with other subjects in the curriculum?	**What are the links to SMSC, British Values and Careers?**
Geography • use and understand gradient Design and Technology • Plot, draw and interpret appropriate graphs.	• SMSC (C/SO) - Trigonometry and it's foundation in Greek culture, as well as it's wider contribution to the development of the world as we know it. • GB4a)d)e)f)g)I)
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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• 'Alex's Adventure in Numberland' - Alex Bellows • 'The Math Book' - Clifford Pickover • What's Your Angle, Pythagoras? (Charlesbridge Math Adventures) by Julie Ellis and Phyllis Hornung • Pythagoras: Mathematician and Mystic (Greatest Greek Philosophers) by Louis C Coakley and Dimitra Karamanides	• Use of mathematical equipment including a compass to construct and a protractor to measure when checking • Research famous Mathematician, Pythagoras • Research careers/applications of Pythagoras

Mathematics Scheme of Learning
Year 7 – Term 6

Intent – Concepts

What knowledge will students gain and what skills will they develop as a consequence of this topic?
Know Construct a circle of given radius/diameter. Construct an equilateral triangle and isosceles triangle. Construct a triangle given an angle and two side lengths. Draw a straight-line graph and a non-linear graph using a table of values. Know how to draw a graph of the form x + y = c, using when x = 0 and y=0. State Pythagoras' theorem. Identify the hypotenuse of a triangle and label the sides accurately. Use Pythagoras' theorem to find the hypotenuse length. **Apply** Construct compound triangles to form an image Identify the y intercept from a graph and an equation of the form y = mx + c **Extend** Students begin to recognise the gradient from an equation Using knowledge from balance equations, students can find the shorter side lengths

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What subject specific language will be used and developed in this topic?	What opportunities are available for assessing the progress of students?
• Compass, construct, protractor, scale drawing, accurately, equilateral, linear equation, y-intercept, Pythagoras' theorem,	• Mid-term target questions • End of half term assessment

Construction	R	A	G
Construct a circle of given radius/diameter			
Construct an equilateral triangle			
Construct an isosceles triangle			
Construct a triangle given an angle and two side lengths			

Graphs & Equations	R	A	G
Recall: Drawing a straight-line graph using a table of values			
Draw the graph for an equation of the form x + y = c			
Identify the y intercept			
Draw a graph for a non-linear equation			

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Pythagoras' Theorem	R	A	G
Recap: Use BIDMAS in calculations, square numbers and roots			
State Pythagoras' Theorem			
Identify the hypotenuse and label the triangle			
Use Pythagoras' Theorem to find the length of the hypotenuse			

Intent – Concepts

Lesson title	Learning challenge	Higher level challenge	Suggested activities and resources
Construction	Construct a circle of given radius/diameter Construct an equilateral triangle		KMB Y7 Construction PPT
	Construct an isosceles triangle Construct a triangle given an angle and two side lengths	Compound triangle drawings	
Graphs and Equations	Recall: Drawing a straight- line graph using a table of values		KMB Y7 Graphs and Equations PPT
	Draw the graph for an equation of the form x + y = c		(0,y) (x,0)
	Identify the y intercept	Connect equation with y values in table, can they spot m in y=mx+c?	Relate to (0,y) plotted last lesson, compare with y=mx+c equations, can students spot any connection?
	Draw a graph for a non-linear equation using table of values	What happens when plot y=1/x for x values -10 to 10?	
Pythagoras' Theorem	State Pythagoras' Theorem	Will discover and use algebra to form $a^2 + b^2 = c^2$	KMB Y7 Pythagoras' Theorem PPT

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			Starter: Indices Recap: Squares and roots, Substitution Perigal's puzzle to discover formula
	Identifying the hypotenuse Finding the hypotenuse	Find a shorter length recognising the subtraction.	10 ticks labelling right-angled triangles, finding c.