

KESTEVEN AND SLEAFORD HIGH SCHOOL

Mathematics Scheme of Learning

Year 7 – Term 1/Coding/Number skills/Polygons/A&P

Intent – Rationale

Year 7 begins with an extra-curricular topic to build confidence and curiosity in mathematics. Secure number and shape skills are then established in Term 1.

Sequencing – what prior learning does this topic build upon?	Sequencing – what subsequent learning does this topic feed into?
<ul style="list-style-type: none"> • KS2 many study WW1&2 may have heard of enigma, some look at binary. Most understand concept of replacing letters with symbols or scrambling. • KS2 number work; students may have a variety in written methods. • KS2 shape – seems less secure since Numeracy strategy. Most can confidently name and have some understanding of angles. • Most can find the area of rectangle, many of a triangle, few of a circle. Many have heard of pi. 	<ul style="list-style-type: none"> • Coding in computing lessons. Year 7 Term 2 basic algebra using letters to represent numbers. • All non-calculator maths! • Year 7 Term 1 area and perimeter, Term 4 angles • Year 7 Term 3 area and perimeter of circles including compound shapes.
What are the links with other subjects in the curriculum?	What are the links to SMSC, British Values and Careers?
Art <ul style="list-style-type: none"> • Appreciation of shape and their properties for creating images Design and Technology <ul style="list-style-type: none"> • Calculating required area of shapes or perimeter of designs ICT <ul style="list-style-type: none"> • Coding programmes such as Python Languages	<ul style="list-style-type: none"> • Coding – M3/BV2/C1/GB4aeghi (discuss the morality of ‘breaking’ enigma and how in spite of this success the WWII government had to be careful with what information they could use and how loss of life was still allowed to occur)

KESTEVEN AND SLEAFORD HIGH SCHOOL

<ul style="list-style-type: none"> • Language patterns in counting numbers <p>Music</p> <ul style="list-style-type: none"> • Rhythm and counting 	
What are the opportunities for developing literacy skills and developing learner confidence and enjoyment in reading?	What are the opportunities for developing mathematical skills?
<ul style="list-style-type: none"> • 'Computer Coding Python Projects for Kids: A Step-by-Step Visual – Carol Vorderman and Craig Steele • 'Ada Lovelace Cracks the Code' – Jestine Ware • 'Alex's Adventure in Numberland' - Alex Bellows 	<ul style="list-style-type: none"> • Encouraging use of column multiplication (rather than grid) • Establishing confidence in long division (A level polynomial division) and short division for quick calculations • Correct shape terminology

Mathematics Scheme of Learning

Year 7 – Term 1

Intent – Concepts

What knowledge will students gain and what skills will they develop as a consequence of this topic?
<p style="text-align: center;"><u>National Curriculum references:</u></p> <p>Consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, extend their understanding of the number system; make connections between number relationships, and their algebraic representations, understand and use place value for decimals, measures and integers of any size, order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, \neq, <, >, \leq, \geq</p> <p>Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders), calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes, describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric</p> <p style="text-align: center;"><u>Know</u></p> <p style="text-align: center;">The difference between a code and a cipher. Encode and decode a code or cipher.</p>

KESTEVEN AND SLEAFORD HIGH SCHOOL

Use written methods for the four operations with integers and decimals. Use a calculator.
 Know the names and properties of basic polygons. Identify lines of symmetry and order of rotational symmetry.
 Find the area and perimeter of basic and compound polygons (L-shape only). Find the area of a shape on a grid.

Apply

Historic codes and ciphers
 Number context problems
 Area & Perimeter context problems

Extend

Research historic codes and ciphers
 Multiplication & division with decimals of different decimal places
 Identify lines of symmetry in unfamiliar shapes.
 Estimate the area of complex irregular shapes on a grid (part squares)

What subject specific language will be used and developed in this topic?	What opportunities are available for assessing the progress of students?
Code, cipher, substitute, shift, decipher, encipher Integer, multiply, divide, subtract, add, sum, calculate, work out, column multiplication, place value, long division, short division, decimal, multiple, decimal point, negative number, positive, directed numbers, number line, Square, rectangle, parallelogram, rhombus, kite, quadrilateral, triangle, angle, side, vertices, vertex, edge, polygon, symmetry, line symmetry, order, rotational symmetry, reflection, regular, irregular Area, perimeter, units, regular, irregular, compound,	<ul style="list-style-type: none"> • End of term test (not on coding) • Mid Term marking targets • Common misconceptions: <ul style="list-style-type: none"> Ciphers are often called a code! Forgetting to use '0' place holders in column multiplication Confusion in what to write on 'top of the bus stop' Forgetting to bring down the next digit in long division Calling a rectangle an oblong Calling a kite a diamond • Encourage 'multiply' rather than 'times' • Encourage 'subtract' rather than 'takeaway'

KESTEVEN AND SLEAFORD HIGH SCHOOL

Coding	R	A	G
Know the difference between a code and cipher			
Understand how to decode and encode messages using different types of cipher			

Number Skills - written methods	R	A	G
Use written methods to multiply integers			
Use written methods to divide integers			
Understand how to calculate with directed numbers			
Be able to order, add and subtract decimals			
Understand how to multiply decimals			
Understand how to divide decimals			
Know how to use a calculator			

Polygons	R	A	G
Recognise and know the name of different types of quadrilaterals			
Recognise and know the name of different polygons			
Identify symmetry properties of polygons			

Area and Perimeter	R	A	G
---------------------------	---	---	---

KESTEVEN AND SLEAFORD HIGH SCHOOL

Understand how to find the perimeter of rectangles and other quadrilaterals			
Understand how to find the area of rectangles and compound shapes (L-shapes only)			
Understand how to find the area of irregular shapes on a grid			
Solve area and perimeter problems			