

Stage 11 2022-23

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	Autumn Term		Spring Term		Summer Term	
	1	2	1	2	1	2
Key Concepts	1A Solving Equations and Inequalities 2 1B Proportional Reasoning 2					

	<p>variables) 0 substitution Solve two linear simultaneous equations in two variables) 0 elimination multiplication of equations required Derive and solve two simultaneous equations in four cases Interpret the solution to a pair of simultaneous equations Understand the concept of decimal search to solve a four equation $Ax^2 =$ decimal search to solve a four equation $Ax^2 =$ Understand the process of interval bisection to locate an approximate solution for a four equation</p>	<p>Binomials involving surds $207b8^{*98}$: Rationalise the denominator of a surd expression $207c8^{*98}$: Complete the square for a given quadratic expression 209a, 209b $1\\$91\\2 Apply completing the square to solve a quadratic equation 209b $1\\$91\\2 , no 7 and apply the formula for solving a quadratic equation of the form $ax^2 + bx + c = 0$ $1\\$29$ $1\\$>$</p>	<p>$ky^2 + 2y + 8 = 0$, $199 = 29 = 8$ Use given facts to identify the value of the multiplier in a situation involving proportion 42, $199 = 29 = 8$ Create an equation in two variables describing an identified proportional relationship $ky^2 + 2y + 8 = 0$, $199 = 29 = 8$ Solve problems involving direct and inverse proportion 42, 199 $= 29 = 8$ 2) Find a given term in a simple geometric progression 163 128</p>	<p>class width 205 $\frac{h}{k} = \frac{9}{1} > 1$ Identify the necessary to calculate the frequency density 205 $\frac{h}{k} = \frac{9}{1} > 1$ Construct histograms for grouped data with equal class intervals 205 Construct histograms for grouped data with unequal class intervals 205 $\frac{h}{k} = \frac{9}{1} > 1$ Use a histogram to find missing values in a frequency table 205 $\frac{h}{k} = \frac{9}{1} > 1$ Use a partially completed histogram and frequency table to complete the 205 $\frac{h}{k} = \frac{9}{1} > 1$</p>		
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	<p>rearranged into the form $ax^2 + bx + c = 0$ Solve problems involving quadratic equations Identify the iterative processes used to find approximate solutions to an equation</p> <p>1. Understand the speed of density and pressure are functions of</p>					
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	<p>Substitute into an equation given linear function for variables Use and interpret all linear functions for variables</p> <p>1.1, not the criteria for triangles to be congruent (SSS) SAS ASA AAS Identify congruent triangles Use known facts to form conjectures about lines and angles in</p>					
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	<p>Use angles in an isosceles triangle #ust)e equal Explain the connections)et7een P0t agorean triples , no7 t e conditions for creating a right angle 7it t ree points on the circumference of a circle 183,184 <u>221922A</u> , no7 t at lit e angle in a se#icircle is a right angle !and ot ers I see pedagogical notes% 183,184 <u>221922A</u> "or# a conjecture fro# a geometrical situation Set up a proof 183,184 Create a chain of</p>					
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	<p>can)e used to elp solve a geo#etrical pro)le# 183,184 <u>221922A</u></p> <p>6se a co#)inat on of Gno7n and derived facts to solve a geo#etrical pro)le# <u>221922A</u></p> <p>+ust f0 solut ons to geo#etrical pro)le#s</p> <p>1\$ Appl0 P0t agorasl t eore# in t7o di#ensions , no7 t e trigono#etric rat osl sinM @ oppN 0pl cosM @ adjN 0pl tanM @ oppNadj C oose an appropriate trigono#etric rat o t at can)e used in a given t7o9di#ensional situa on</p> <p>Set up and solve a trigono#etric equat on to ; nd a</p>					
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	<p>#issing side or angle in a rig t9angled triangle</p> <p>3isualise t e diagonals of a cu)oid 217, 218 <u>2>: 92>8</u></p> <p>3isualise triangle t at can)e created)0 joining an0 t ree vert ces of a t ree di#ensional s ape 217, 218 <u>2>: 92>8</u></p> <p>6se P0t agorasl t eore# to ; nd t e lengt a given diagonal in a cu)oid 217 <u>2>: 9</u> <u>2>8</u></p> <p>6se P0t agorasl t eore# to ; nd lengt s in t ree di#ensional ; gures 217 <u>2>: 9</u> <u>2>8</u></p> <p>6se trigono#etr0 to ; nd t e angle)et 7een a line and a plane 218 <u>2: =9282</u></p> <p>Solve pract cal pro)le#s involving lengt s and angles in</p>					
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	<p> t ree di#ensional ; gures 2: =9282 , no7 t e la)elling conven t ons for non9rig t angled triangles 2: 292: > Derive t e sine rule 201 2: 292: > , no7 t e cosine rule 202 2: 292: > Ident f0 7 en t e sine !cosine% rule is needed to solve a pro)le# 201,202 2: 292: > Set up and use t e sine !cosine% rule to ; nd a #issing side in a non9rig t angled triangle201,202 2: 292: > Set up and use t e sine !cosine% rule to ; nd a #issing lengt in a non9rig t angled triangle201,202 2: 292: > Recognise t e a#)iguous case 7 en using t e sine rule 201 2: 29 2: > Solve pro)le#s </p>					
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	involving bearings 124 2: 292: >					
Assessment	Assessment & Unit tests	EM practice Unit tests	MOC+GC, E E-a%	Unit tests	E-ternal e-a%	E-ternal E-a%

Curriculum Area: Maths			
Subject:			
Year Level	Basic Skills () * + ! i) ts,	Clear Skills () * + ! i) ts,	Detailed Skills () * + ! i) ts,
7	Pupils use mathematical concepts as an integral part of classroom activities < ' e0 represent their work with objects or pictures and discuss it < ' e0 recognise and use a simple pattern or relationship	Pupils develop their own strategies for solving problems and use these strategies to in working with mathematical concepts and in applying mathematical concepts to practical contexts < P en solving problems with or without ICT < ' e0 check their results are reasonable < ' e0 considering the context < ' e0 look for patterns and relationships < ' e0 presenting information and results in a clear and organised way < ' e0 using ICT appropriately < ' e0 search for a solution < ' e0 trying out ideas of their own	Pupils carry out substantial tasks and solve quite complex problems < ' e0 independently and systematically < ' e0 relating the work into smaller more manageable tasks < ' e0 interpret, discuss and sometimes inform a topic presented in a variety of mathematical forms < ' e0 relating findings to the original context < ' e0 their own and spoken language < ' e0 explains and informs their use of diagrams < ' e0 begin to give mathematical justifications < ' e0 making connections between the current situation and situations they have encountered before
8	Pupils select the mathematical concepts to use in some classroom activities < ' e0 discuss their work using mathematical language and are beginning to represent it using symbols and simple diagrams < ' e0 explain why an answer is correct	In order to explore mathematical situations < ' e0 carry out tasks or tackle problems < ' e0 pupils identify the mathematical aspects and obtain necessary information < ' e0 calculate accurately < ' e0 using ICT where appropriate < ' e0 check their working and results < ' e0 considering whether these are sensible < ' e0 show understanding of situations < ' e0 describing the	Starting from problems or contexts that have been presented to them < ' e0 pupils explore the effects of varying values and look for invariance in models and representations < ' e0 working with and without ICT < ' e0 progressively re-interpret the mathematical concepts used < ' e0 giving appropriate

Curriculum Area: Maths

Subject:

Year r! u"	#asic \$%! &er Abilit' ()* +! i) ts,	Clear \$Mi**le Abilit' ()* +! i) ts,	-etaile*

Curriculum Area: Maths			
Subject:			
Year r! u"	Basic Skills () * +! i) ts,	Clear Skills () * +! i) ts,	Advanced Skills () * +! i) ts,
	<p>solving problems using their own methods or by using ICT to check their results are reasonable) considering the content of problems and relationships) presenting information and results in a clear and organised way) using ICT appropriately) searching for a solution) trying out ideas of their own</p>	<p>and by using ICT to progressively refine or extend their methods) giving reasons for their choice of mathematical presentation and explaining features that have selected) justify their generalisations) arguments or solutions) looking for equivalence to different problems) similar structures) appreciate the difference between mathematical explanation and experimental evidence</p>	<p>strategies were used) considering the elegance and efficiency of alternative lines of enquiry or procedures) apply the mathematical concepts in a wide range of familiar and unfamiliar contexts) use mathematical language and symbols effectively) in presenting a convincing) reasoned argument) their reports include mathematical justification) distinguishing between evidence and proof and explaining their solutions to problems involving a number of features or variables</p>
11	<p>In order to explore mathematical situations) carry out tasks or tackle problems) pupils identify the mathematical aspects and obtain necessary information) calculate accurately) using ICT where appropriate) check their working and results) considering whether these are sensible) show understanding of situations) describing the mathematical situation using symbols) words and diagrams) draw simple conclusions of their own and explain their reasoning</p>	<p>Pupils develop and follow alternative approaches) compare and evaluate representations of a situation) introducing and using a range of mathematical techniques) reflect on their own lines of enquiry) explore mathematical tasks) communicate mathematical or statistical meaning to different audiences) rigorous precise and consistent use of symbols that is sustained) rigorous) thorough) generalisations or solutions reached in an active and) further progress in the activity as a result) constructively on their reasoning and logic) the process explored and their results obtained</p>	<p>Pupils perform procedures accurately) interpret) communicate complex information accurately) and) make deductions and inferences and draw conclusions) Pupils can construct substantial chains of reasoning) including convincing arguments and formal proofs) generate efficient strategies to solve complex mathematical and non-mathematical problems) translating them into a series of mathematical processes) Pupils make and use connections) identify different parts of mathematical concepts and interpret results in the context of the given problem) critically evaluate methods) arguments) results and their</p>

Curriculum Area: Maths			
Subject:			
Year	Basic	Clear	Detailed*
1	Basic	Clear	Detailed*
2	Basic	Clear	Detailed*
3	Basic	Clear	Detailed*
4	Basic	Clear	Detailed*
5	Basic	Clear	Detailed*
6	Basic	Clear	Detailed*
7	Basic	Clear	Detailed*
8	Basic	Clear	Detailed*
9	Basic	Clear	Detailed*
10	Basic	Clear	Detailed*

-I' ERAC5
Pupils will develop their spelling of GeO #at e#atcal 7ords<' is 7ill)e #onitored using spelling tests at t e start and end of eac unit<' is 7ill)e SPA&
#arGed< Pupils 7ill)e given opportunit es to 7rite in sentences and paragrap s 7 en suited to t e topic<

<p> . ' y t' is/ . ' y now/ </p>	<p> Mat' e%atics is an interconnected s012ect in w' ic' pOpils need to 1e a1le to %o3e 40ently 1etween representations o5 %at' e%atical ideas) &' e progra%%e o5 stOdy 5or +ey stage 6 is organised into apparently distinct do%ains7 10t pOpils s' oOld 10ild on +ey stage 2 and connections across %at' e%atical ideas to de3elop 40ency7 %at' e%atical reasoning and co%petence in sol3ing to de3ef@nneckKc2 d </p>

80pils will 1e gi3en t' e oport0nity to wor+ toget' er to de3elop and s' are t' eir ideas on topics/ disc0ss %isconceptions and ' ow t' ese topics can 1e 0sed in real<li5e sit0ations)

Creativity

80pils will de3elop creati3ity t' ro0g' a 3ariety o5 pro1le% sol3ing acti3ities wit' in eac' topic7

	<p>develop algebraic and graphical fluency, including understanding linear and simple quadratic functions use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics!</p> <p>Reason mathematically extend their understanding of the number system" make connections between number relationships, and their algebraic and graphical representations extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically identify variables and express relations between variables algebraically and graphically make and test conjectures about patterns and relationships" look for proofs or counter- examples begin to reason deductively in geometry, number and algebra, including using geometrical constructions interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally!</p> <p>Solve problems develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics begin to model situations mathematically and express the results using a range of formal mathematical representations select appropriate concepts, methods and techniques to apply to unfamiliar and non- routine problems!</p>
<p>Aspirations & Careers</p>	<p>All pupils should be able to use mathematics at a level that allows them to work and in everyday life beyond school) Mathematics is fundamental to future success and closely linked with financial success) It enables their ability to identify, solve and logically spot patterns as well as navigate their chosen career with a well-equipped 21st century) For their own sake and for the benefit of the world) C\$1@ 17 11</p>

CIA"
AM, 8 days
Careers Fairs
Career t' e%ed lessons
Finance lessons :C\$I@ 16;
Cultural Capital
Mat' s c' allenges
Manga' ig' c' allenges
Mat' e%atics in t' e real world
#rganising trips7 days o0t and ot' er e3ents
#tracurricular
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C' ess & ga%es cl01
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