
	3ith 0ractonal po3ers 188 61 $+ 9se the 0unctonality o0 a scientBc calculator 3hen calculatng 3ith roots an/ po3ers N&& , , 2 Choose the re#uire/ minimum an/ maximum "alues 3hen sol"ing a problem in"ol"ing upper an/ lo3er boun/s 152A 21 , 1&;1 , 2 Calculate the upper an/ lo3er boun/s in a gi"en situaton 152A 21 , 1&;1 , $ 2 9n/erstan/ an/ use notaton 0or recurring /ecimals 18 : 2& 2 $nterpret a calculator /isplay in"ol"ing a recurring /ecimal 2 Con"ert a 0racton to a recurring	boun/ary 0or an ine#uality on a graph 1 : 8 115;11) 2 Construct an/ sha/e a graph to sho3 a linear ine#uality o0 the 0orm y H ax I bA y J ax I bA y K ax I b or y L ax I b 1 : 8 115;11) 2 Construct an/ sha/e a graph to sho3 a linear ine#uality in t3o "ariables state/ implicitly 1 : 8 115; 11) 2 Construct an/ sha/e a graph to represent a set o0 linear ine#ualites in t3o "ariables 1 : 8 115; 11) 2 Fin/ the set o0 integer coor/inates that are solutons to a set o0 ine#ualites in t3o "ariables1 : 8 115;11) 9se set notaton to represent the soluton set to an	an/ tan o0 51A &) an/ ,1 165A 1 , 8 2 +isualise the /iagonals o0 a cuboi/ 2 +isualise triangle that can be create/ by .oining any three "ertces o0 a three /imensional shape 2 9se PythagorasF theorem to Bn/ the length a gi"en /iagonal in a cuboi/ 216 2 9se PythagorasF theorem to Bn/ lengths in three /imensional Bgures 216 2 9se trigonometry to Bn/ the angle bet3een a line an/ a plane 218 9n/erstan/ the limitatons o0 sampling 1)2A 16 , 551 ; 552 2 9se a sample to in0er propertes o0 a populaton 1)2A 16 , 551 ; 552 2 'no3	in"ersely proportonal to M is e#ui"alent to C is proportonal to 17M 11 : :2;:6 2 $nterpret e#uatons that /escribe /irect proporton 11 : :2; :6 2 $nterpret e#uatons that /escribe in"erse proporton 11 : :2; :6 2 !ol"e problems 3hich inclu/e Bn/ing the multplier in a situaton in"ol"ing /irect proporton 11 : :2;:6 !ol"e problems 3hich inclu/e Bn/ing the multplier in a situaton in"ol"ing in"erse proporton 11 : :2;:6 ' , -ecognise <plotA interpret= graphs o0 exponental 0unctons 1 :& 1)1; 1)1 2 Plot graphs o0 non;stan/ar/ 0unctons 2	e#uaton o0 the 0orm xN I bx I c by 0actorising 1)6 :8; : : 2 !ol"e a #ua/ratc e#uaton o0 the 0orm axN I bx I c by 0actorising 1)6 :8; : : 2 !ol"e a #ua/ratc e#uaton by rearranging an/ 0actorising 1)6 :8; : : 2 $/entOy 3hen a #ua/ratc e#uaton cannot be sol"e/ by 0actorising 1 : 1 :8;: : 2 aOe connectons bet3een graphs an/ #ua/ratc e#uatons o0 the 0orm axN I bx I c 4 1 1 , 1 1 , 8;1 , : 2 aOe connectons bet3een graphs an/ #ua/ratc e#uatons o0 the 0orm axN I bx I c 4 /x I e 1 , 1 1 , 8; 1 , : 2 Fin/ approximate solutons to #ua/ratc e#uatons using a graph 1 , 1 1 , 8;1 , : 2 De/uce roots o0 #ua/ratc 0unctons	proo0185A18& 2 Create a chain o0 logical steps to create a proo0 in a :: 2 $ó @ '@0 Ð 2 8 "ß1 1'P=

creat8 ß22roo0 in a

	1,& &,; &8 2 !et up a gro3th or /ecay problem&,;&8 !ol"e problems in"ol"ing gro3th an/ /ecay &,;&8 %/ A// <subtractA multplyA /i"i/e= algebraic 0racttons 211):;,2 2 !impli0y an algebraic 0ractton 211a):;,2 2 $/entTy 3hen it is necessary to Bn/ t3o linear expressions to 0actorise a #ua/ratc expression 1)6A1:2):;,& 2 Expan/ the pro/uct o0 t3o binomials in"ol"ing sur/s 216b 6) 2 Factorise an expression in"ol"ing the /iDerence o0 t3o s#uares 1)6A1:2A 1)8)8;): 2 Factorise a	%0 9n/erstan/ the meaning o0 a #ua/ratc se#uence 215 126 2 Fin/ the term in x 2 0or a #ua/ratc se#uence 215 126 2 Fin/ the nth term o0 a se#uence o0 the 0orm ax2 215 126 2 Fin/ the nth term				

	#ua/ratc					

	Pupils use mathematics as an integral part of classroom activities. They represent their work with objects or pictures and discuss it. They recognise and use a simple pattern or relationship.	Pupils develop their own strategies for solving problems and use these strategies both in working within mathematics and in applying mathematics to practical contexts. When solving problems, with or without ICT, they check their results are reasonable by considering the context. They look for patterns and relationships, presenting information and results in a clear and organised way, using ICT appropriately. They search for a solution by trying out ideas of their own.	Pupils carry out substantial tasks and solve quite complex problems by independently and systematically breaking them down into

			mathematcal explanaton an/ experimental e"i/ence⁄
	Pupils try /iDerent approaches an/ Bn/ 3ays o0 o"ercoming /iTcultes that arise 3hen they are sol"ing problems⁄ Rhey are beginning to organise their 3or0 an/ chec0 results⁄ Pupils /iscuss their mathematcal 3or0 an/ are beginning to explain their thin0ing⁄ Rhey use		

	> ! ! ; 3?, = & 0@ *& D& *(+,&1 =(,D 0 B 8 = " C 8 1 ! ! ; ! 8 ! 3? *(+,&1 =(,D 0@ =&,.A1 0&1& E = " C + F 2= 2O ! ; ! ! 3? 1 0 0 @ (,, +(* (E, ! " ;C > ! 8 ; < 3 ? & 1 6(* @ Develop fluency consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots select and use appropriate calculation strategies to solve increasingly complex problems use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships substitute values in expressions, rearrange and simplify expressions, and solve equations move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs] develop algebraic and graphical fluency, including understanding linear and simple quadratic functions use language and properties precisely to analyse numbers, algebraic expressions, 2-Dand -D shapes, probability and statistics! 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 con#ectures 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! 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!
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