

SYDNEY BOYS HIGH SCHOOL

MOORE PARK, SURRY HILLS

2007

Year 7 Yearly Examination

Mathematics

General Instructions

- Working time 90 minutes
- Write using black or blue pen
- Board Approved calculators may be used.
- <u>All necessary</u> working should be shown in every question if full marks are to be awarded.
- Marks may not be awarded for messy or badly arranged work.
- If more space is required, clearly write the number of the QUESTION on one of the back pages and answer it there. Indicate next to the actual question that you have done so.
- Attempt all questions.
- Clearly indicate your class by placing an X next to your class.

Class	Teacher	Tick
7E	Mr Gainford	
7F	Mr McQuillan	
7M	Ms Roessler	
7R	Ms Nesbitt	
. 7S	Mr Hespe	
7T	Mr McQuillan	

NAME

Examiner: R. Boros

	Question	Marks
	1	/20
	2	/20
	3	/20
	4	/20
į	5	/20
	6	/20

Quest	ion One (20 Marks)	Answers	Marks
(a)	What is 12 ½ % of \$166?		1
(b)	Write 2xyxy2ppp in index form.		1
(c)	Convert 8231mm to metres.	:	1
(d)	List all the subsets of $\left\{\Delta,\Box\right\}$.		2
(e)	List all the prime numbers between 17 and 30.		1.
(f)	What is 0.584 as a fraction in simplest form?		1
(g)	Write 2455 in Roman Numerals.		1
(h)	Simplify $2xy - 5yx + 7$		1
(i)	Expand $5m(1-m)$		1
(j)	Simplify $3p^2 \times 2p^3$		1
(k)	Simplify $12p^4 \div 2p^4$	and the second of the second o	1
(1)	Insert grouping symbols to make a true statement with the following: $4 \times 9 \div 2 + 8 \div 4 = 20$		1
(m)	Solve for x : $2+x=7$		1
(n)	The point R(2,4) is on the number plane. What is the point 5 units to the right and 4 units below R?	(,)	1

(o)	Use the given prime factors to find the HCF		1
	(Highest Common Factor) of this pair of		
	$\begin{array}{c} 630 = 2 \times 3 \times 3 \times 5 \times 7 \\ \text{numbers:} \end{array}$	·	
	$2940 = 2 \times 2 \times 3 \times 5 \times 7 \times 7$		
(p)	Use the given prime factors to find the LCM		1
	(Lowest Common Multiple) of this pair of		
	numbers; $630 = 2 \times 3 \times 3 \times 5 \times 7$		
	$2940 = 2 \times 2 \times 3 \times 5 \times 7 \times 7$		
(q)	Write down the largest 5 digit odd number		1
	with a four in the hundreds place and a 3 in		
	the units place.		
(r)	Is it possible to have a polyhedron with 15		1
	faces, 16 edges and 5 vertices? Give reasons	•	
	for your answer.	•	
(s)	The diagrams below show the petrol gauge of		1
	a car before and after a trip.		
	1 2 3 4 F F F F F F F F F F F F F F F F F F		
	Before After		
	The car's petrol tank holds 56 litres when	· ·	
	full. How many litres were used on the trip?		
	Tun. How many nues were used on the mp?		

Ques	ction Two (20 Marks)	Answers	Marks
(a)	Insert a < or > sign in order to make a true		1
	statement: $\frac{7}{11}$ $\frac{16}{25}$		
	$\frac{1}{11} \frac{1}{25}$		
(b)	Write this recurring decimal using the		1
	appropriate dot notation: 72.712712712		
(c)	Write as a single numeral		1
	$5 \times 10^4 + 3 \times 10^3 + 5 \times 10 + 9$		
(d)	Simplify -5 - 8		1
(e)	What is 68 in base 2 (binary)?		1
(f)	Given that $A = \{p, r, t, w\}$ and $B = \{p, a, t, u\}$,		1.
	write down $A \cup B$.		
(g)	The fraction half way between X and $3\frac{2}{5}$ is		1
	$1\frac{7}{12}$. Find the value of X as a mixed		
	numeral.		
(h)	Write an algebraic expression for "four less		1
	than the product of six and p ".		
(i)	ASBA n		1
	Which line is an axis of symmetry?		
	A. m only.		
	B. <i>n</i> only.		
	C. Both m and n.		
	D. Neither m nor n.		

(j)	Which of the above figures could actually be drawn using the measurements shown? A. I only. B. II only. C. Both I and II D. Neither I nor II	1
(k)	Two nails M and N are hammered into a board as shown. A set square PQR is placed on the board so that the two shorter sides touch the nails.	
	Q R	
	If the set square was moved so that PQ always touches nail M and PR always touches N, the path of P would be: (circle the correct answer)	1
	A. M. B. M. N.	
	D. M. N. M.	
.(1)	Use your calculator to evaluate correct to 2 decimal places: $\frac{1.28^2 + 3.56}{4 - \sqrt{1.38}}$	1

(m)	Angie scored $\frac{14}{18}$ and $\frac{16}{21}$ in two spelling	1
	tests. To the nearest whole number calculate	
	her best score as a percentage.	
(n)	Shade in $(A \cap C) \cup B$	1
	C B	
(0)	The numbers in the diagram below represent the height of the stacks of blocks used.	
	A B	
	D C	
	Using the isometric dots given below draw a sketch of this solid looking from point C	2
		:
(p)	A bag has equal sized and weighted balls in	1
	it. There are 3 blue balls, 5 red balls and 2	
	white balls. Find the probability of picking	
	one ball that is white or blue.	

to be on the dotted line through X. Complete the triangle so that XY = YZ Keep in any construction lines. (r) WASTE: WHAT WE TIROW OUT (BY WEIGHT) glass 4% plastics. 8% other 9% metals 11% food waste 20% wood and garden 21% waste (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown	(q)	Sofia is drawing an isosceles triangle XYZ.	XY is one side of the triangle. Point Z is	1
(i) Which two items together make up $\frac{3}{20}$ of the waste?		to be on the dotted line through X. Comple	te the triangle so that $XY = YZ$	
(i) Which two items together make up $\frac{3}{20}$ of the waste?		Keep in any construction lines.	· · · · · · · · · · · · · · · · · · ·	
(i) Which two items together make up $\frac{3}{20}$ of the waste?				
(i) Which two items together make up $\frac{3}{20}$ of the waste?				
(i) Which two items together make up $\frac{3}{20}$ of the waste?				
(i) Which two items together make up $\frac{3}{20}$ of the waste?				
(i) Which two items together make up $\frac{3}{20}$ of the waste?		process .	•	
(i) Which two items together make up $\frac{3}{20}$ of the waste?				
glass 4% plastics 8% other 9% metals 11% food waste 20% wood and garden 21% waste 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown		X Y		
glass 4% plastics 8% other 99% metals 11% food waste 20% wood and garden 21% waste ipaper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown	(r)	WASTE: WHAT WE THROW OUT (BY WEIGHT)		
plastics 8% other 9% metals 11% food waste 20% wood and garden 21% waste paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown				
plastics 8% other 9% metals 11% food waste 20% wood and garden 21% waste paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown				
food waste 20% wood and garden 21% waste paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown		glass 4%	P.	
food waste 20% wood and garden 21% waste paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown		plastics 8%		
food waste 20% wood and garden 21% waste paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown		other 9%		
food waste 20% wood and garden 21% waste paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown		metals 11%		
wood and garden 21% waste paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown				
wood and garden 21% waste paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown		food waste 20%		
paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown		100d Waste 2010		
paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown				
paper 27% (i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown		wood and garden 21%		
(i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown		Wasie		
(i) Which two items together make up $\frac{3}{20}$ of the waste? (ii) If 15kg of food waste is thrown		d(0)		
(i) Which two items together make		paper 27%		
		And the second s		
up $\frac{3}{20}$ of the waste?		(i) Which two items together make		1
(ii) If 15kg of food waste is thrown		af the wester		1
(ii) If 15kg of food waste is thrown		$\frac{\text{up}}{20} = \frac{1}{20} \text{ of the waster}$		
		(ii) If 15kg of food waste is thrown		1
out, what weight of plastics is		out, what weight of plastics is		1
thrown out?		thrown out?		

Q	uestion Three (20 Marks)	Answers	Marks
(a)	A yard is to be fenced, and a gate		
	included, as shown on the diagram.		
	12 m		- ,
	8 m		
	8 m		
	Gate 4 m		
	4 111		
	(i) Find the length of the cote		1
	(i) Find the length of the gate.		1
	The fence will need vertical posts and		
	three strands of wire, as shown.	-	
	7		
	Strands of wire Post		
	(ii) How many metres of wire are		1
	needed to fence the block of		
	land? (ignore extra wire		
	needed for tying to posts).		
	(iii) A post is to be placed at each		1
	side of the gate, and then		
	every two metres. How many	9	
	posts are needed?		
(b)	The equation $w^2 = 16w$ has $w = 16$		1
	as one solution. What is the other		
	solution?		
(c)	Convert 11011011 ₂ to a decimal		2
	numeral.		
	.1	I	

(4)	Dayl left Drighton et 7 10cm and	1		
(d)	Paul left Brighton at 7.10am and	1		
	drove for 4.2 hours before stopping			
	for an early lunch and walk about in a			
	town (which took 1.85 hours). At			
	what time did Paul resume driving?			
(e)	One of the lines below has been drawn to a scale of 1 centimetre to 2 metres. Which	1		
	line is it? (circle the letter of the correct answer)			
	(A) (B)			
	5 m			
	5 m			
	(C) (D)			
	5 m			
(f)	Charles wants to draw a circle with centre <i>P</i> and diameter 6cm. Which of the points	1		
	A, B, C or D lie on the circumference of the circle (circle the letter of the correct	1		
	answer)?			
	• A			
	n.			
	$D \bullet$			
	P×			
	C ● B ●			
(g)	Simplify $4x^3 - 3x^3 + x^2$	1		
(h)	Simplify $(4x^3y)^2$	1		
(i)	Simplify $7q+2p-10q-5p$	1		
(j)	Which formula has the algebra machine used in this table (circle the letter of the	1		
	correct answer)			
	n 2 7 -1 -2			
	m 12 22 6 4			
	(A) $m = 3n + 6$ (B) $m = n + 10$			
	I and the second	1		
	(C) $m = 30 + 9n$ (D) $m = 2n + 8$			

(k)	Which angle is obtuse? (circle the letter of		1
	the correct answer)	(A) ∠POQ	
	Q P	(B) ∠ <i>QOR</i>	
	R	(C) <i>ZQOS</i>	
	s o	(D) ∠ <i>POR</i>	
(1)	David started to bisect this angle. Complete	the construction to find which point (A,	1
	B, C or D) lies on the bisector, write the lette	er of this point.	
	A D B		
			-
(m)	Given $s = ut + \frac{1}{2}at^2$ and $s = 200$, a correct	set of values for u , a and t is: (circle the	
	letters of the correct answers):		2
	(A) $u = 20$, $a = 8$, $t = -5$	(B) $u = 20$, $a = 8$, $t = 5$	
	(C) $u = -20$, $a = 8$, $t = -5$	(D) $u = -20, \forall a = 8, t = 5$	
(n)	Doug is $\frac{1}{3}$ the age of his father who is $12x$	·	1
	years old. In 5 years time, what will the		
	sum of their ages be?		
-			

(0)	Find the value of x . 140° x°	1
(p)	A gardener is told "never cut more than $\frac{1}{3}$ off the grass height in a single mowing" The lawn is $4\frac{1}{2}$ cm high. What is the minimum height to which the gardener should cut the lawn? (circle the letter of the correct answer):	1.
	(A) $1\frac{1}{2}$ cm (B) 3 cm	
	(C) $4\frac{1}{6}$ cm (D) 6 cm	

Go to next page:

Quest	ion Four (20 Marks)	Answers	Marks
(a)	Expand and simplify $-(1-5w)+2(1-5w)$		2
(b)	Given	, , , , , , , , , , , , , , , , , , ,	2
	$n(A) = 20$, $n(B) = 17$ and $n(A \cap B) = 6$, find		
	$n(A \cup B)$		
(c)	Eric wants to graph the straight line		
	y = -2x + 6.	↑	
	(i) Complete the table of values	20	
	below for $y = -2x + 6$		2
	x -1 1.	10 —	
	y 10 6	<u> </u>	
	(ii) Hansamunh u 2016 autha	-3 -2 -1 1 2 3 4	
	(ii) Hence graph $y = -2x + 6$ on the	-10	2
(d)	number plane provided by plotting (x, y)		1
(u)		•	
	One unit of length is represented by the diagram	n above. Which diagram on the right	
	represents 0.2 units of length. (Circle the letter		
	(A)		
	Marie		
	(B)		
	-		
	(C)		
	·		
	(D)		
(e)	Look carefully at the pattern of numbers in		2
	this table. Then complete the formula on the		
	right by filling in the blanks.		
	c 0 14 11 6 12 ½	c= d	
	d 32 4 10 20 7		
(f)	Find a pair of numbers 'a' and 'b' such that	 a =	2
	$2^a \times 2^b = 2^{-3}$		
		b =	

(g)	Numbers may be chained together in many	
	ways. The rule 'twice the units digit, then add	
	the tens digit' makes a chain from 54 as	
	follows:	
	54-137-14	
	(i) Write down the next two numbers	2
	in the chain.	
	(ii) If the first number is Δ , the	2
	chain is: Δo 12 $ o$ 5.	
	Find two possible values of Δ .	
(h)	Draw a picture of a rhombus, showing its important properties.	1
	(i) List TWO properties that a rhombus has that a parellogram does not have.	1
	(ii) Write down ONE additional property that a square has, that a rhombus does not	1
	have.	

Quest	ion Five (20 Marks)	Answers	Marks
(a)	What is the reciprocal of $5\frac{2}{3}$. Answer as a		2
	fraction.		
(b)	Given that $x = -3$, evaluate $-2(x)^3$		1
(c)	What is the first square number that is just less than 260?		1
(d)	Add together the fifth and the ninth Fibonacci number.		2
(e) [*]	Find the value of k.	k ==	2
(f)	The largest standard paper size is A0. Two A1 sheets can be cut from one A0. Two A2 sheets can be cut from one A1 and so on. How many A4 sheets can be cut from one A0.		1
	How many A4 sheets can be cut from one A0 sheet. A0 A1 A3 A4 A3 A4 A5 A6		

(g)	Name and measure the largest angle in this	2
	triangle (to the nearest degree).	
	S	
(h)	The sides of a quadrilateral are extended to	1
	make the angle whose sizes are shown. Find	
	the value of x .	
	75°	
	x =	
	115°	
	90°	
(i)	A town has 2500 residents of whom 60%	2
	voted in an election to fill a council vacancy.	
	The result was that , of those who voted, 38%	
	voted for P, 32% voted for Q and 30% voted	
	for R. Under the voting system, P was	
	elected. Find the number of residents who	
	voted for P.	
(j)	Mark works 7 nights per week as a poker	2
	machine repair man. He works from 9pm	
	until 3am. He earns \$27 per hour before	
	midnight and \$32.50 per hour after midnight.	
	How much did he earn in a week?	
(k)	In which figure is x not necessarily equal to y . (circle the letter of the correct answer)	1
	(A) / ▶ ▶ ∘/ (B) /_• ▶	
	/x /x	
	/y°	
	(0)	
	(C) (D)	
	x ,	

(l)	The value of 50! is the product of all the	3
	whole numbers from 1 to 50 inclusive, i.e.	
	$50! = 50 \times 49 \times 48 \times \dots \times 4 \times 3 \times 2 \times 1$	
	Find the maximum number of times that 2	
	will divide into 50! exactly.	

Ques	tion Six (20 Marks)	Answers	Marks
(a)	The number 21 can be expressed as a <u>sum of</u> <u>two or more consecutive positive integers</u> in three different ways, namely		3
	21 = 10 + 11 $21 = 6 + 7 + 8$ $21 = 1 + 2 + 3 + 4 + 5 + 6$		
	Find the number of ways 63 can be expressed as such a sum.	1	
(b)	Some new maths symbols tell us that $P\uparrow$ mea	ns $(P+1)$ and $P \downarrow$ means $(P-1)$.	3
	Then $(4\uparrow)\times(3\downarrow)$ is equal to: (circle the correct	et answer)	
	(A) 9↓ (B) 10↑ (C)11↓	(D)12↑ (E)13↓	
(c)	If there are 10 people at a party and each person shakes hands with every other person just once, find the number of handshakes.		3
(d)	A school bus leaves the depot with the driver	• • • • • • • • • • • • • • • • • • • •	3
	at three stops and no pupil gets off the bus ur after the first, it picks up twice as many pupil number of pupils the bus has on board when correct answer)	ls as it did at the previous stop. The	
	(A) 27 (B) 32 (C)35	(D)43. (E)48	
(e)	Graph $x > -4$ on a number line.		2

(f)	A ball is	dropped to the ground from a		3
	height of	100cm and rebounds to a height of		
	50cm. It	continues to rebound each time to		
	half of its	s preceding height. What is the total	·	
	distance t	travelled by the ball when it hits		
	the groun	d for the third time.		
(g)	It can be	proved (by checking) that		
	$1^3 + 2^3 = 1$	3^2 and $1^3 + 2^3 + 3^3 = 6^2$		
	(i)	If we were able to generalise		1
		from these two statements, what		
		would we expect $1^3 + 2^3 + 3^3 + 4^3$		
		to equal?		
	(ii)	Again, if we were able to		
		generalise, how many such		2
		numbers, each cubed, would add		
		together to give a total of 441?		
		END OF EXA	MINATION	
		For additional space for	answers see next page.	

	Space for Answers	Marks
Question	Put "see back" at original question.	
Number		
		1
		}
	·	
÷		
		•
	C	
	•	
	•	

Que	stion One (20 Marks)	Answers	Marks
(a)	What is 12 ½ % of \$166?	\$20.75	1.
(b)	Write 2xyxy2ppp in index form.	4p322y2	1
(c)	Convert 8231mm to metres.	8.23lm.	1
(d)	List all the subsets of $\{\triangle, \square\}$.	{0,03,{03,{03,60}, \$	2
(e)	List all the prime numbers between 17 and 30.	19,23,29.	1
(f)	What is 0.584 as a fraction in simplest form?	73	1
(g)	Write 2455 in Roman Numerals.	MMCDLV	1
(h)	Simplify $2xy - 5yx + 7$	MMCDLV 7-3xy	1
·(i)	Expand $5m(1-m)$	5m-5m²	1
(j)	Simplify $3p^2 \times 2p^3$	6p5	1
(k)	Simplify $12p^4 + 2p^4$	6	1
(l)	Insert grouping symbols to make a true statement with the following: $4 \times 9 \div 2 + (8 \div 4) = 20$		1
(m)	Solve for x : $2+x=-7$	x=-9.	1
(n)	The point R(2,4) is on the number plane. What is the point 5 units to the right and 4 units below R?	(7,0)	1

(o)	Use the given prime factors to find the HCF		1
	(Highest Common Factor) of this pair of	7×3×5×7= 210.	[
	$numbers: 630 = 2 \times 3 \times 3 \times 5 \times 7$	$Z_{4}S_{5}S_{7}I - Z_{1}U$.	
	$2940 = 2 \times 2 \times 3 \times 5 \times 7 \times 7$		
(p)·	Use the given prime factors to find the LCM		1
	(Lowest Common Multiple) of this pair of	7x2 x 3x 3x 5 x 7x7 = 8820	
	numbers: $630 = 2 \times 3 \times 3 \times 5 \times 7$	7.7 x 2x 2y 2 1 1 1 0 8 77	
	$2940 = 2 \times 2 \times 3 \times 5 \times 7 \times 7$		
(q)	Write down the largest 5 digit odd number		1
	with a four in the hundreds place and a 3 in	ca 1 0 3	
	the units place.	99493	
		,	1
(r)	Is it possible to have a polyhedron with 15	15+5=20	1
	faces, 16 edges and 5 vertices? Give reasons	16+2=18 NO.	
	for your answer.	16+2=18 NO. Evler's Formula S+v=e+2.	
(s)	The diagrams below show the petrol gauge of		1
	a car before and after a trip.		
	1 2 3		
		28/ilres.	
	[E-H / HF] E-H / HF]	L8litres.	
	Before After		
	The car's petrol tank holds 56 litres when		-
	full, How many litres were used on the trip?	,	
	The state of the s		

stion Two (20 Marks)	Answers	Marks
Insert a < or > sign in order to make a true	I ~ 0.636364.	1
statement: $\frac{7}{11} \leq \frac{16}{25}$	16 28 0.64.	
Write this recurring decimal using the	77 717	1
	16.712	
Write as a single numeral	77.6	1
$5 \times 10^4 + 3 \times 10^3 + 5 \times 10 + 9$. 53 0 59.	
Simplify -5 - 8	-3	1
What is 68 in base 2 (binary)?	1000100,	1
Given that $A = \{p, r, t, w\}$ and $B = \{p, a, t, u\}$,		1
write down $A \cup B$.	{ P17, 4, w, a, us.	
The fraction half way between X and $3\frac{2}{5}$ is	33=17=149	1
$1\frac{7}{12}$. Find the value of X as a mixed	17-149=- 7	
numeral.		
Write an algebraic expression for "four less	60-14	1
than the product of six and p ".	GP-7.	
, m		1
AC BA n	A	
Which line is an axis of symmetry?	·	
1		
1		
1	•	
D. Neither m nor n.		
	Insert a $<$ or $>$ sign in order to make a true statement: $\frac{7}{11} \le \frac{16}{25}$ Write this recurring decimal using the appropriate dot notation: 72.712712712 Write as a single numeral $5 \times 10^4 + 3 \times 10^3 + 5 \times 10 + 9$ Simplify $ -5 - 8 $ What is 68 in base 2 (binary)? Given that $A = \{p, r, t, w\}$ and $B = \{p, a, t, u\}$, write down $A \cup B$. The fraction half way between X and $3\frac{2}{5}$ is $1\frac{7}{12}$. Find the value of X as a mixed numeral. Write an algebraic expression for "four less than the product of six and p ". m m Which line is an axis of symmetry? A. m only. B. n only. C. Both m and n .	Insert a $<$ or $>$ sign in order to make a true statement: $\frac{7}{11} \boxtimes \frac{16}{25}$ Write this recurring decimal using the appropriate dot notation: 72.712712712 Write as a single numeral $5 \times 10^4 + 3 \times 10^3 + 5 \times 10 + 9$ Simplify $ -5 - 8 $ What is 68 in base 2 (binary)? Given that $A = \{p, r, t, w\}$ and $B = \{p, a, t, u\}$, write down $A \cup B$. The fraction half way between X and $3\frac{2}{5}$ is $3\frac{2}{5} - \frac{17}{12} = \frac{149}{60}$. $1\frac{7}{12}$. Find the value of X as a mixed numeral. Write an algebraic expression for "four less than the product of six and p ". Which line is an axis of symmetry? A. m only. B. n only. C. Both m and n .

 $^{*}t$

(j)	Fig. I. Solution of the above figures could actually be drawn using the measurements shown?	1
	A. I only.	
	B. II only.	
	C. Both I and II	
	D. Neither I nor II	
(k)	Two nails M and N are hammered into a board as shown. A set square PQR is placed	
	on the board so that the two shorter sides touch the nails.	
	Q P	
	If the set square was moved so that PQ always touches nail Mand PR always touches N, the path of P would be: (circle the correct answer)	1
	A.) M B. M	
	C. D. M. N. M. N.	
(1)	Use your calculator to evaluate correct to 2 decimal places: $\frac{1.28^2 + 3.56}{4 - \sqrt{1.38}}$	1

Angie seored $\frac{14}{18}$ and $\frac{16}{21}$ in two spelling tests. To the nearest whole number calculate her best score as a percentage. Shade in $(A \cap C) \cup B$ The numbers in the diagram below represent the height of the stacks of blocks used. (0) Using the isometric dots given below draw a sketch of this solid looking from point C 2 A bag has equal sized and weighted balls in it. There are 3 blue balls, 5 red balls and 2 white balls. Find the probability of picking one ball that is white or blue.

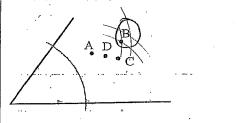
(q)	Sofia is drawing an isosceles triangle XYZ , XY is one side of the triangle. Point Z is	1
	to be on the dotted line through X . Complete the triangle so that $XY = YZ$	
	Keep in any construction lines.	
	- Lander Control of the Control of t	
	Margaret .	
	Land Control of the C	
	\\	
	X	
(r)	WASTE WHAT WE THROW OUT BY WEIGHT)	
	glass 4%	
	plastics 8%	,
	other 9%	
	metals 11%	
	Control of the Contro	
	food waste 20%	
	TOOL MASILE 2010	
	wood and garden 21%	
	The part of the pa	
	paper 27% /	
	Name of the second seco	
	(i) Which two items together make $ up \frac{3}{20} of the waste? $	₁
	$up \frac{3}{20} \text{ of the waste?}$	
	20	
	(ii) If 15kg of food waste is thrown out, what weight of plastics is	$\begin{vmatrix} 1 \end{vmatrix}$
	out, what weight of plastics is	
	thrown out?	

(Question Three (20 Marks)	Answers	Marks
(a)	A yard is to be fenced, and a gate included, as shown on the diagram. 12 m 1 12 m 8 m 6 m Gate 4 m		
	(i) Find the length of the gate. The fence will need vertical posts and	2 m	1
	three strands of wire, as shown. Strands of wire Post		
	(ii) How many metres of wire are needed to fence the block of land? (ignore extra wire needed for tying to posts).	(8+6+12+8+4)x3 114m	1
	(iii) A post is to be placed at each side of the gate, and then every two metres. How many posts are needed?	20 posts	
(b)	The equation $\psi^2 = 16w$ has $w = 16$ as one solution. What is the other solution?	W= 0	1
(c)	Convert 11011011_2 to a decimal numeral.	1+2+0+23+24+0+26+27 219	2

(d)	Paul left Brighton at 7.10am and 7.10am + 4hrs 12min	1
	drove for 4.2 hours before stopping + 16 51 min	
	for an early lunch and walk about in a	
	town (which took 1.85 hours). At 1.13 pm or 13.13	
	what time did Paul resume driving?	
(e)	One of the lines below has been drawn to a scale of 1 centimetre to 2 metres. Which	1
(-)	line is it? (circle the letter of the correct answer)	
	(A) (B)	
	(A)	
	5 m 5 m	
	(C) (D)	
	5 m	
(f)	Charles wants to draw a circle with centre P and diameter 6cm. Which of the points	1
	A, B, C or D lie on the circumference of the circle (circle the letter of the correct	
	answer)?	
	radius 3 cm · · · · · · · · · · · · · · · · · ·	
	(/ _D)	
	" Might	
	P×	•
•		
	Co Bo	
(g)	Simplify $4x^3 - 3x^3 + x^2$ $3 + 2$	1
(h)	1 ,0 (,0	1
(11)	Simplify $(4x^3y)^2$ $(6x^6y^2)$	
(i)	Simplify $7q+2p-10q-5p$ $-3q\sqrt{-3p}$	1
(j)	Which formula has the algebra machine used in this table (circle the letter of the	1
	correct answer)	
r Teg	m 2 .7 -1 -2 :	
	"'	
	m 12 22 6 4	
	(D) = 110	
	I(A) m = 3n + 6 (B) $m = n + 10$	
	(C) $m = 30 + 9n$ (D) $m = 2n + 8$	

(k)	Which angle is obtuse? (circle the letter of		1
	the correct answer)	(A) ∠POQ	
	Q	(B) ∠QOR	
	, R	(C) ∠ <i>QQ</i> ,S	
	8-0	((D))∠ <i>POR</i>	-

(l) David started to bisect this angle. Complete the construction to find which point (A, B, C or D) lies on the bisector, write the letter of this point.



(m) Given $s = ut + \frac{1}{2}at^2$ and s = 200, a correct set of values for u, a and t is: (circle the letter of the correct answer):

(A)
$$u = 20$$
, $a = 8$, $t = -5$

(B)
$$u = 20, a = 8, t = 5$$

(C)
$$u = -20, a = 8, t = -5$$

(D)
$$\dot{u} = -20$$
, $a = 8$, $t = 5$

(n)	1.	70-100 /100	1
	Doug is $\frac{1}{3}$ the age of his father who is $12x$	Doug 4x	
	years old. In 5 years time, what will the	12 %	
	sum of their ages be?	4245+12145	
		= 160c + 10	
	,		

(0)	Find the value of x.	1
	140° 4° 2° 70°	
(p)	A gardener is told "never cut more than $\frac{1}{3}$ off the grass height in a single mowing"	1
	The lawn is $4\frac{1}{2}$ cm high. What is the minimum height to which the gardener should	
	cut the lawn? (circle the letter of the correct answer):	
	$(A)1\frac{1}{2}$ cm (B) cm	-
	(C) $4\frac{1}{6}$ cm (D) 6 cm	

Go to next page:

Ques	tion Four (20 Marks)	Answers	Marks	
(a)	Expand and simplify $-(1-5w)+2(1-5w)$	-1+SW+2-10W -1-SW	2	
(b)	Given	20+17-6 = 31	2	
	$n(A) = 20$, $n(B) = 17$ and $n(A \cap B) = 6$, find	(14 6) 11 14+6+11 = 31		
	$n(A \cup B)$		·	
(c)	Eric wants to graph the straight line	4		
	y = -2x + 6.			
	(i) Complete the table of values	20 —	2	
	below for $y = -2x + 6$	10—	2	
	x -2 -1 0 1			
	y. 10 g. 6 4			
	(ii) Hence graph $y = -2x + 6$ on the	-3 -2 -1 1 2 3 4		
	number plane provided by plotting (x, y)	-10	2	
(d)	named plane provided by providing (s), y)		1	
()				
	One unit of length is represented by the diagram	n above. Which diagram on the right		
	represents 0.2 units of length. (Circle the letter	of the correct answer)		
((A))	ndie.		
. `			J	
	(B)	•	''	
	(C)			
	(D)			
,		,		
(e)	Look carefully at the pattern of numbers in	· with	2	
(-)	this table. Then complete the formula on the			
	right by filling in the blanks.			
	c 0 14 11 6 12 ½	c=16-d2		
	d 32 4 10 20 7			
(f)	Find a pair of numbers 'a' and .'b' such that	a = -1) 1 : 0.2h = 3	2	
	Find a pair of numbers 'a' and 'b' such that $a = -1$ $b = -2$ $b = -3$			
		025		
٠.	12			
		•		

(g)	Numbers may be chained together in many		
	ways. The rule 'twice the units digit, then add	·	
	the tens digit' makes a chain from 54 as	·	
	follows:	•	
	54		
	(i) Write down the next two numbers	9 18	2
	in the chain.	·.	
	(ii) If the first number is Δ , the		
	· ·	6 25 44 63 82	2
	chain is: $\triangle \longrightarrow 12 \longrightarrow 5$.		
	Find two possible values of Δ .		
(h)	Draw a picture of a rhombus, showing its impo	rtant properties.	1
		•	
	Approx.		
		•	
		•	
	(i) List TWO properties that a rhombus has that Dragonals meet at right ansles	t a parellogram does not have. ,, all 51 des aqual	1
	(ii) Write down ONE additional property that a	square has, that a rhombus does not	1
	have.	i	
	nave. all right angles	diagonals equal	
		•	

Ques	tion Five (20 Marks)	Answers	Marks
(a)	What is the reciprocal of $5\frac{2}{3}$. Answer as a fraction. $5\frac{2}{3} = \frac{17}{3}$	3/ /17 \	2
(b)	Given that $x = -3$, evaluate $-2(x)^3$	-2x(-27) = 54 V	1.
(c)	What is the first square number that is just less than 260? \[\frac{1}{260} \div 16.\]	162= 256 V	1
(d)	Add together the fifth and the ninth Fibonacci number. 1,1,2,3,5,5,8,13,21,34	34+5=39	2
(e)	Find the value of k.		2
	65° k°	k = 360 - 65 - 90 $= 205$	
	silya-		
(f)	The largest standard paper size is A0. Two		1
	A1 sheets can be cut from one A0. Two A2		
	sheets can be cut from one A1 and so on.		
	How many A4 sheets can be cut from one A0		
	sheet. AO 1 A3 8 A1 2 A4 16 A2 4	16	
	A0 A1 A3 A4		
	A5 A6		
(g)	Name and measure the largest angle in this		2
	triangle (to the nearest degree). S	RŜT=123° /	
		<u>*</u>	
•	R		

y en tresident N		
g. V		
(h)	The sides of a quadrilateral are extended to make the angle whose sizes are shown. Find the value of x. $ \begin{array}{c} 360 - (90 + 65 + 105) \\ = 100 \end{array} $ $ x = 80 $ $ x = 80 $	
(i)	A town has 2500 residents of whom 60% voted in an election to fill a council vacancy. The result was that, of those who voted, 38% voted for P, 32% voted for Q and 30% voted for R. Under the voting system, P was elected, Find the number of residents who	2
(j)	voted for P. Mark works 7 nights per week as a poker	2
	Mark works 7 nights per week as a poker machine repair man. He works from 9pm until 3am. He earns \$27 per hour before midnight and \$32.50 per hour after midnight. How much did he earn in a week?	
(k)	In which figure is x not necessarily equal to y . (circle the letter of the correct answer)	1
	$(A) \xrightarrow{y^{\circ}} (B) \xrightarrow{x^{\circ}}$	
	$(C) \qquad (D) \qquad x^{\circ} \qquad y^{\circ}$	
(1)	The value of 50! is the product of all the whole numbers from 1 to 50 inclusive, i.e. $50! = 50 \times 49 \times 48 \times \times 4 \times 3 \times 2 \times 1$ Find the maximum number of times that 2	3
	50!=50×49×48××4×3×2×1 Find the maximum number of times that 2	

2 1 4 2 6 7 8 3 10 1 12 2 14 1 16 4 18 4 20 2 22 1 24 3 26 1 28 2 30 1 32 5 34 1 36 2 38 1 40 3 42 1 44 2 46 1 48 4 50 1		50, = 1 × 2 × 3 × 4 × 5 × 6 · · · 48 × 49 × 50
12 2 14 1 16 4 18 1 20 2 22 1 24 3 26 1 28 2 30 1 32 5 34 1 36 2 38 1 40 3 42 1 44 2 46 1 48 4		4 Z 6 / 8 3
24 3 26 1 28 2 30 1 32 5 34 1 36 2 38 1 40 3 42 1 44 2 46 1 48 4		12 2 14 1 16 4 18 1 20 2
34 36 2 38 40 3 42 44 2 46 48 4		24 3 26 28 2 30 1
44 2 46 1 48 4		3
47	4	44 2 46 1 48 4
		47

Onest	ion Six (20 Marks)	Answers	Marks
(a) (b)	The number 21 can be expressed as a <u>sum of</u> two or more consecutive positive integers in three different ways, namely $21 = 10 + 11$ $21 = 6 + 7 + 8$ $21 = 1 + 2 + 3 + 4 + 5 + 6$ Find the number of ways 63 can be expressed as such a sum. Some new maths symbols tell us that $P\uparrow$ means		3
	Then $(4\uparrow)\times(3\downarrow)$ is equal to: (circle the correct at (A) 9\(\psi\) (B) 10\(\phi\) (C)11\(\psi\) (D	nswer)	Ĉ
(0)	If there are 10 people at a party and each person shakes hands with every other person just once, find the number of handshakes.	45	3
(d)	A school bus leaves the depot with the driver at at three stops and no pupil gets off the bus until after the first, it picks up twice as many pupils a number of pupils the bus has on board when it a correct answer) \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	it arrives at school. At each stop, as it did at the previous stop. The	3
(e) ·	Graph $x > -4$ on a number line.	<u>-</u>	2

(f)	A ball is dropped to the ground from a	100+10+0+10+10+16+6	3
	height of 100cm and rebounds to a height of	1000	- O _d
	50cm. It continues to rebound each time to		
ĺ	half of its preceding height. What is the total	000	
	distance travelled by the ball when it hits	250	
	the ground for the third time.		
(g)	It can be proved (by checking) that		
	$1^3 + 2^3 = 3^2$ and $1^3 + 2^3 + 3^3 = 6^2$	·	
	(i) If we were able to generalise	10	1
	from these two statements, what	· · ·	
	would we expect $1^3 + 2^3 + 3^3 + 4^3$		
i	to equal?	·	
1	(ii) Again, if we were able to	***	
	generalise, how many such		2
	numbers, each cubed, would add		
	together to give a total of 441?	·¢	
END OF EXAMINATION			
For additional space for answers see next page.			