# SECTION A (15 Marks)

JAMES RUSE -YR9 HALF YRLY - 06

	Question	Marks
1.	Simplify:	·
	a) $3\sqrt{96} - \sqrt{150}$ b) $2x + 1 - 3(2 - x)$	2
	b) $2x+1-3(2-x)$	1
2.	Solve: $\frac{2x}{3} = \frac{1}{8}$	1
3.	Express $64^{-\frac{4}{3}}$ in the form $\frac{a}{b}$ where a and b are integers.	1
4.	Make G the subject in: $F = H + \frac{1}{G}$	2
5.	Factorise:	E
	a) $8 + 27x^3$	2
	b) $-2t^2 + 11t - 12$	2
	c) $x^5 - x$	2
6.	Simplify: $\frac{x^3 - 125}{5 - x}$	2

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## SECTION B (15 Marks) Start a new page

	Question	Marks
1.	A bag contains 20 marbles coloured red, white, blue or green.  There is one more red than white, 4 more white than blue and one more blue than green.	
	a) By letting x be the number of green marbles, write an equation and solve it and show that there are 8 red marbles.	2
	b) Find the probability of drawing a red marble from the bag.	1
	c) If two marbles are selected one after the other, the first not replaced before the second is drawn, find the probability of selecting two red marbles.	1
2.	Make x the subject in $y = \frac{x+2}{x-3}$	2
3.	Given the following stem and leaf plot:	
	Stem Leaf	
	3 8 6 2 5 6 5 5 8 6 3 4 7 7 6 7 5 9 7 6 5	
	a) Find the median score.	1
	b) Find the interquartile range.	1
	c) Find the mean (to 1 decimal place).	1
	d) Find the standard deviation (to 1 decimal place).	1
	e) Draw a box and whisker plot that represents the given set of scores.	2
4.	Solve the equation: $\frac{4}{3x^2 + 16x + 5} - \frac{2}{x^2 + 3x - 10} = 0$	3

### SECTION C (16 Marks) Start a new page

subject did he perform better? Give reasons for your answer.    Subject   $\overline{x}$   $\sigma$   $x$   Maths   72   4   81   Science   78   3   81     Science   78   3   81     Stimulation   Science   1/8   3   81     Stimulation   Stimulation   Science   1/8   3   81     Stimulation   Stimulation   Science   1/8   3   81     Stimulation   Stimulati		Question	Marks
<ol> <li>Simplify: 3<sup>2n</sup> - 1/3<sup>n+1</sup> - 3</li> <li>A deck of 12 cards contains 4 kings, 4 queens, and 4 jacks. My opponent is dealt 2 cards at random. He says he holds at least one king. What is the probability that he holds 2 kings in his hand?</li> <li>John in year 9 scored 81% in each of his Mathematics and Science exams. In which subject did he perform better? Give reasons for your answer.</li> <li>Subject</li></ol>	1.	a) Expand $\left(x+\frac{1}{x}\right)^2$	1
3. A deck of 12 cards contains 4 kings, 4 queens, and 4 jacks. My opponent is dealt 2 cards at random. He says he holds at least one king. What is the probability that he holds 2 kings in his hand?  4. John in year 9 scored 81% in each of his Mathematics and Science exams. In which subject did he perform better? Give reasons for your answer.    Subject   x   σ   x     Maths   72   4   81     Science   78   3   81     Science   78   3   81     After 200 throws, a coin has shown heads exactly 110 times. By forming an equation and solving it, find how many further consecutive times must a head be thrown for heads to show exactly 70% of the total number of throws?  7.   P   S   Triangle PQR is right angled at Q. Triangles PST and TRU are isosceles as shown. Let ∠STU = x° and ∠SPT = y°.    a) Show ∠UTR = (45 + ½y)°, giving reasons for your answer.		b) Hence, if $x + \frac{1}{x} = 3$ , find the value of $x^2 + \frac{1}{x^2}$	1
andom. He says he holds at least one king. What is the probability that he holds 2 kings in his hand?  4. John in year 9 scored 81% in each of his Mathematics and Science exams. In which subject did he perform better? Give reasons for your answer.    Subject   x   σ   x     Maths   72   4   81     Science   78   3   81     Science   78   3   81     Significant   3   81     After 200 throws, a coin has shown heads exactly 110 times. By forming an equation and solving it, find how many further consecutive times must a head be thrown for heads to show exactly 70% of the total number of throws?  7.   P	2.	Simplify: $\frac{3^{2n}-1}{3^{n+1}-3}$	2
subject did he perform better? Give reasons for your answer.    Subject   $\overline{x}$   $\sigma$   $x$   Maths   72   4   81   Science   78   3   81     Science   78   3   81     Science   78   3   81     After 200 throws, a coin has shown heads exactly 110 times. By forming an equation and solving it, find how many further consecutive times must a head be thrown for heads to show exactly 70% of the total number of throws?    Triangle PQR is right angled at Q. Triangles PST and TRU are isosceles as shown. Let $\angle STU = x^o$ and $\angle SPT = y^o$ .   a) Show $\angle UTR = \left(45 + \frac{1}{2}y\right)^0$ , giving reasons for your answer.	3.	random. He says he holds at least one king. What is the probability that he holds 2 kings in	2
Science $\frac{1}{78}$ $\frac{1}{3}$ $\frac{1}{81}$ 5. If $a = \frac{1}{\sqrt{5} - 2}$ , show that $4 + \frac{1}{a} = a$ 2.  6. After 200 throws, a coin has shown heads exactly 110 times. By forming an equation and solving it, find how many further consecutive times must a head be thrown for heads to show exactly 70% of the total number of throws?  7.   P  Triangle $PQR$ is right angled at $Q$ . Triangles $PST$ and $TRU$ are isosceles as shown. Let $\angle STU = x^o$ and $\angle SPT = y^o$ .  a) Show $\angle UTR = \left(45 + \frac{1}{2}y\right)^o$ , giving reasons for your answer.	4.		2
Science 78 3 81  5. If $a = \frac{1}{\sqrt{5} - 2}$ , show that $4 + \frac{1}{a} = a$ 2.  6. After 200 throws, a coin has shown heads exactly 110 times. By forming an equation and solving it, find how many further consecutive times must a head be thrown for heads to show exactly 70% of the total number of throws?  7.   P  Triangle $PQR$ is right angled at $Q$ . Triangles $PST$ and $TRU$ are isosceles as shown. Let $\angle STU = x^o$ and $\angle SPT = y^o$ .  a) Show $\angle UTR = \left(45 + \frac{1}{2}y\right)^o$ , giving reasons for your answer.		Subject $\overline{x}$ $\sigma$ $x$	
<ul> <li>5. If a = 1/√5-2, show that 4 + 1/a = a</li> <li>6. After 200 throws, a coin has shown heads exactly 110 times. By forming an equation and solving it, find how many further consecutive times must a head be thrown for heads to show exactly 70% of the total number of throws?</li> <li>7.</li> <li>7. P</li> <li>S</li> <li>Q</li> <li>U</li> <li>R</li> <li>Triangle PQR is right angled at Q. Triangles PST and TRU are isosceles as shown.</li> <li>Let ∠STU = x° and ∠SPT = y°.</li> <li>a) Show ∠UTR = (45 + 1/2 y)°, giving reasons for your answer.</li> </ul>			
<ul> <li>6. After 200 throws, a coin has shown heads exactly 110 times. By forming an equation and solving it, find how many further consecutive times must a head be thrown for heads to show exactly 70% of the total number of throws?</li> <li>7. P  S  Q  U  R  Triangle PQR is right angled at Q. Triangles PST and TRU are isosceles as shown.  Let ∠STU = x° and ∠SPT = y°.  a) Show ∠UTR = (45 + ½y)°, giving reasons for your answer.</li> </ul>		Science   78   3   81	
solving it, find how many further consecutive times must a head be thrown for heads to show exactly 70% of the total number of throws?  7.  P  S  Q  U  R  Triangle $PQR$ is right angled at $Q$ . Triangles $PST$ and $TRU$ are isosceles as shown.  Let $\angle STU = x^o$ and $\angle SPT = y^o$ .  a) Show $\angle UTR = \left(45 + \frac{1}{2}y\right)^o$ , giving reasons for your answer.	5.	If $a = \frac{1}{\sqrt{5} - 2}$ , show that $4 + \frac{1}{a} = a$	2
Triangle $PQR$ is right angled at $Q$ . Triangles $PST$ and $TRU$ are isosceles as shown. Let $\angle STU = x^o$ and $\angle SPT = y^o$ .  a) Show $\angle UTR = \left(45 + \frac{1}{2}y\right)^o$ , giving reasons for your answer.	6.	solving it, find how many further consecutive times must a head be thrown for heads to	2
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Let $\angle STU = x^o$ and $\angle SPT = y^o$ .  a) Show $\angle UTR = \left(45 + \frac{1}{2}y\right)^o$ , giving reasons for your answer.		Q $U$ $R$	
b) Find the value of x, giving reasons for your answer.		a) Show $\angle UTR = \left(45 + \frac{1}{2}y\right)^{0}$ , giving reasons for your answer.	2
		b) Find the value of x, giving reasons for your answer.	2

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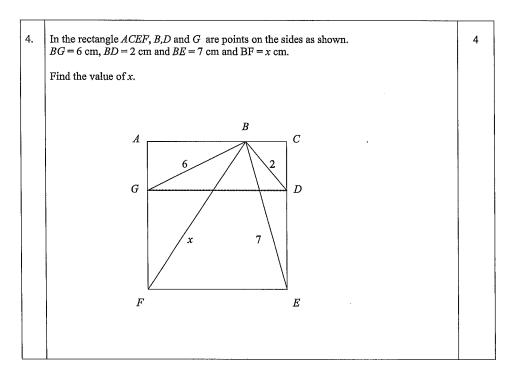
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# SECTION D (16 Marks) Start a new page

	Question	Marks
1.		
	The diagram represents a cube with diagonal $PU = \sqrt{54}$ cm. The cube has side length $x$ cm. Find the exact volume of the cube.	3
2.	a) Factorise $\sqrt{7x} - \sqrt{3x}$ .	1
	b) Hence, solve the equation: $\sqrt{7x} - \sqrt{3x} = 4$ .	2
3.	Given $AB$ is a diameter of the circle, centre $O$ . $AD = DC$ .  a) State why $\angle ADO = 90^{\circ}$ .	1
	b) Hence prove $\angle ACB = 90^{\circ}$ , giving reasons for your answer.	2
	c) Prove the perimeter $\triangle$ $AOD$ is half the perimeter $\triangle$ $ABC$ , giving reasons for your answer.	3

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End of Exam paper

Section A  1. a) $3\sqrt{4} - \sqrt{150}$ = $3 \times 4\sqrt{6} - 5\sqrt{6}$ 1. = $(7(-5)\sqrt{n^2 + 5} \times + 2.5)$ (5 - $1$ )  = $7\sqrt{6}$ 1. = $(7(-5)\sqrt{n^2 + 5} \times + 2.5)$ (5 - $1$ )  5. $2\sqrt{1 + 1} - 3(2 - 1)$ = $-\sqrt{1 + 5} \times + 2.5$ (5 - $1$ )  = $-\sqrt{1 + 5} \times + 2.5$ (5 - $1$ )  = $-\sqrt{1 + 5} \times + 2.5$ (5 - $1$ )  = $-\sqrt{1 + 5} \times + 2.5$ (5 - $1$ )  = $-\sqrt{1 + 5} \times + 2.5$ (5 - $1$ )  = $-\sqrt{1 + 5} \times + 2.5$ (7 - $1$ )  = $-\sqrt{1 + 5} \times + 2.5$ (8 - $1$ )  = $-\sqrt{1 + 5} \times + 2.5$ (9 - $1$ )  = $-\sqrt{1 + 5} \times + 2.5$ (9 - $1$ )  = $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (2 - $-\sqrt{1 + 5} \times + 2.5$ (3 - $-\sqrt{1 + 5} \times + 2.5$ (4 - $-\sqrt{1 + 5} \times + 2.5$ (5 - $-\sqrt{1 + 5} \times + 2.5$ (7 - $-\sqrt{1 + 5} \times + 2.5$ (8 - $-\sqrt{1 + 5} \times + 2.5$ (9 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (2 - $-\sqrt{1 + 5} \times + 2.5$ (3 - $-\sqrt{1 + 5} \times + 2.5$ (4 - $-\sqrt{1 + 5} \times + 2.5$ (5 - $-\sqrt{1 + 5} \times + 2.5$ (7 - $-\sqrt{1 + 5} \times + 2.5$ (8 - $-\sqrt{1 + 5} \times + 2.5$ (9 - $-\sqrt{1 + 5} \times + 2.5$ (9 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (2 - $-\sqrt{1 + 5} \times + 2.5$ (3 - $-\sqrt{1 + 5} \times + 2.5$ (4 - $-\sqrt{1 + 5} \times + 2.5$ (5 - $-\sqrt{1 + 5} \times + 2.5$ (7 - $-\sqrt{1 + 5} \times + 2.5$ (8 - $-\sqrt{1 + 5} \times + 2.5$ (9 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (2 - $-\sqrt{1 + 5} \times + 2.5$ (3 - $-\sqrt{1 + 5} \times + 2.5$ (4 - $-\sqrt{1 + 5} \times + 2.5$ (5 - $-\sqrt{1 + 5} \times + 2.5$ (7 - $-\sqrt{1 + 5} \times + 2.5$ (8 - $-\sqrt{1 + 5} \times + 2.5$ (9 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (2 - $-\sqrt{1 + 5} \times + 2.5$ (3 - $-\sqrt{1 + 5} \times + 2.5$ (4 - $-\sqrt{1 + 5} \times + 2.5$ (5 - $-\sqrt{1 + 5} \times + 2.5$ (6 - $-\sqrt{1 + 5} \times + 2.5$ (7 - $-\sqrt{1 + 5} \times + 2.5$ (8 - $-\sqrt{1 + 5} \times + 2.5$ (9 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (2 - $-\sqrt{1 + 5} \times + 2.5$ (3 - $-\sqrt{1 + 5} \times + 2.5$ (4 - $-\sqrt{1 + 5} \times + 2.5$ (4 - $-\sqrt{1 + 5} \times + 2.5$ (5 - $-\sqrt{1 + 5} \times + 2.5$ (6 - $-\sqrt{1 + 5} \times + 2.5$ (7 - $-\sqrt{1 + 5} \times + 2.5$ (8 - $-\sqrt{1 + 5} \times + 2.5$ (9 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.5$ (1 - $-\sqrt{1 + 5} \times + 2.$		ja. 1-	1		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Section A				1
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1. a) 3/96 - VI50		6. 213-125		ĺ
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$= 3 \times 4\sqrt{6} - 5\sqrt{6}$	1			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	- 7 <u>√6</u>	1	=(2(-5))(2+5)(+25)	,	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		٠.,	(5 -, c)		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			= - (x2+5x+25) OR		
2. $2\pi = \frac{1}{3}$ 2. $2\pi = \frac{1}{3}$ 3. $1 = \frac{1}{3} \times \frac{3}{2}$ 1. $1 = \frac{1}{3} \times \frac{3}{2} \times \frac{1}{2} \times \frac{1}{2}$		<u> </u>	-212-5x -25	<u>'</u>	
2. $2\pi = \frac{1}{3}$ $3\pi$	= 51 - 5	1		<u> </u>	
$x = \frac{1}{8} \times \frac{3}{2}$ $x = \frac{1}{16}$ $x = \frac{3}{16}$ $x = \frac{3}{16}$ $x + 6 = \text{Red}$ $x + 12 = 10$ $x + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + $			SechonB	<u>.</u>	
$x = \frac{1}{8} \times \frac{3}{2}$ $x + 1 = b \ln e$ $x + 2 = \frac{3}{8} \times \frac{3}{2}$ $x + 6 = \text{Red}$ $x + 12 = 10$	$\frac{12}{3}$ $\frac{2\pi}{8}$	-	1. 11= green	_	-
$3. 64^{-\frac{3}{3}} = \frac{1}{64^{4/3}}$ $= \frac{1}{164^{4/3}}$ $= \frac{1}{164^{4/3}$			x+1= blue		į
3. $64^{-\frac{4}{3}} = \frac{1}{64^{4/3}}$ $= \frac{1}{64^{4/3}}$ $= \frac{1}{256}$ 4. $F = H + \frac{1}{4}$ $= \frac{1}{164^{4/3}}$ 4. $F = H + \frac{1}{4}$ $= \frac{1}{164^{4/3}}$ 4. $F = H + \frac{1}{4}$ $= \frac{1}{164^{4/3}}$ 5. a) $8 + 27x^3$ $= (2 + 3x)(4 - 6x + 9x^2)$ 1. a) $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 1. $2x + x + (+x + 5 + x + 6 = 20)$ 2. $2x + 2x + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 $	$\chi = \frac{1}{3} \times \frac{3}{2}$			- 	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			2+6 = Real	-	-
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	- 3	-		<u> </u>	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	5. 64 =	-			
4. $F = H + \frac{1}{G}$ $F - H = \frac{1}{G}$ $\frac{1}{F - H} = G$ 5. a) $8 + 27\pi^{3}$ $= (2 + 3\pi)(4 - 6\pi + 9\pi^{2})$ b) $-2t^{2} + 11t - 12$ $-2t^{2} + 8t + 3t - 12$ $-2t(t - 4) + 3(t - 4)$ 1. $2\pi + 2\pi$ 2. $2\pi + 2\pi$ 3. $2\pi + 2\pi$ 4. $2\pi + 2\pi$ 5. $2\pi + 2\pi$ 6. $2\pi + 2\pi$ 7. $2\pi + 2\pi$ 8. $2\pi + 2\pi$ 9. $2\pi + 2\pi$ 1. $2\pi + $			414 12 = 20		
4. $F = H + \frac{1}{G}$ $F - H = \frac{1}{G}$ $\frac{1}{F - H} = G$ $\frac{1}{H - H} = G$ $\frac{1}{F -$	256	1	4x = x		
$F-H = \frac{1}{G}$ $\frac{1}{F-H} = \frac{1}{G}$ $\frac{1}$	11 1	-		11	
5. a) $8 + 27\pi^{3}$ $= (2 + 3\pi)(4 - 6\pi + 9\pi^{2})$ $= (2 + 3\pi)(4 - 6\pi + 9\pi^{2})$ $2. y = \pi + 2$ $5. z = \pi + \pi$			: Red = 2+6 = 8 marbles	ļ	-
5. a) $8 + 27\pi^{3}$ $= (2 + 3\pi)(4 - 6\pi + 9\pi^{2})$ $= (2 + 3\pi)(4 - 6\pi + 9\pi^{2})$ $2. y = \pi + 2$ $5. z = \pi + \pi$		. ! . 			
$= (2 + 3x)(4 - 6x + 4x^{2})$ $2, y = 7x + 2$ $2 + 3x - 3$ $-2t^{2} + 8t + 3t - 12                                  $	F-H = G	[	5) = = = =		-
$= (2 + 3x)(4 - 6x + 4x^{2})$ $2, y = 7x + 2$ $2 + 3x - 3$ $-2t^{2} + 8t + 3t - 12                                  $	5 2) 8 1 27 - 3		c\8,728		-
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		-	20 19 195		-
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	-	7 7(+ 2		
$-2t^{2} + 8t + 3t - 12 \qquad \times 24 \qquad 1 \qquad y \times -3y = 2t + 2$ $-2t(t - 4) + 3(t - 4) \qquad \frac{+11}{8+3} \qquad y \times -2 \qquad 1$ $(t - 4)(3 - 2t) \qquad 1 \qquad 2(y - 1) = 3y + 2$ $(t - 4)(3 - 2t) \qquad 1 \qquad 2(y - 1) = 3y + 2$ $(t - 4)(3 - 2t) \qquad 1 \qquad 2(y - 1) = 3y + 2$	$(b) - 2 + {}^{2} + 11 + -12$		x-3		
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2, 2, 2,		14.27 - 24.57 - 24.57		
$ \frac{(t-4)(3-2t)}{(y-1)} = 3y+2 $ $ \frac{2(y-1)}{y-1} = 3y+2 $ $ \frac{3y+2}{y-1} $	$-2t(t-4)+3/4-4)+\frac{717}{22}$		<del></del>		-
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			3/4 2 2		
C) 22 - 2C			_ <del>_</del> <del>-</del>		
$= 3((3c^{4}-1))$ $= 3((3c^{4}+1)(3c+1)(x-1))$ $= 3((3c^{4}+1)(3c+1)(x-1))$			Y - 1	4	
$= \pi \left( \pi r + 1 \right) \left( \pi r + 1 \right) \left( \pi r + 1 \right) \left( \pi r - 1 \right)$	$= \pi \left( \pi^{4} - 1 \right)$	-	٠. ٠		
- 7 (11 +1) (11 +1) [1 -1)   1	$= i\left(i\left(\frac{1}{2}+1\right)\left(i\left(\frac{1}{2}-1\right)\right)\right)$	1		·	
	- 1 (10 +1) (10 +1) (10 -1)	1			

3. Ordered stem-leaf:	Section C	T
3 6 8		
4 2 5 5 6	$\begin{vmatrix} 1. & a \end{vmatrix} \begin{pmatrix} 2l + \frac{1}{2l} \\ & 2l \end{vmatrix} + 2$	_
5 3 4 6 7 7 8	= 1 + 1 + 2	-   <u>J</u>
6 579	b) 2(2+ 12	
7 56	$= \left( \frac{1}{1} + \frac{1}{1} \right)^2 - \frac{1}{2}$	1
a) 56	= 32-2	
b) LQ = 45 UQ = 66	= 7	1
IQR = 66-45 = 21	1 2. 3 -1	
c) 55.2	1 2. 3 -1	-
d) 11.9	[ = (3 <sup>h</sup> -1)(3 <sup>h</sup> +1)	- -
38 45 56 66	3/27	
78	$\frac{1}{2} = \frac{3^{n}+1}{3}$	1
35 40 45 50 55 60 65 70 35	Annual Control of the Printer of the State o	
	3. KKKK Q Q Q Q J J J J	
4. 4 2 = 0	ν (0 × (0) · · · · · · · · · · · · · · · · · · ·	
	K @ @ × @ · · · · · · ·	十
$\frac{4}{((x+5)(3x+1))} = \frac{2}{(x+5)(x-2)}$	<u> </u>	
$4(x-2) - 2(3x+1) = 0 ; x \neq -5$	Q	
42-8-62-2-0	Q	
-Zoc - 10 = D	0.,	
-la = 2x	J · · · ·	-
-1-	J	
but x = -5, so	J	
2c has no sol n	P(KK) = 32+32+12	!
and the same of th	With the manage of the same and	
	$=\frac{12}{76}=\frac{3}{19}$	

4		7. a)	=	
Maths: 2=72		LR = 90 - y angle sum of J A Par is 180°		
π+1σ = 76		J DOR 10 180/		
x+20=80		LUTR = 180- (90-y)		40 .4
: Mark of 81 is more than 20	1/2	2_ }		
hum mean		(angles apposite equal sider of triangle are equal)		***
Science: Z=78	<u> </u>	angle sum of ATRUGIED	.)	
x +1σ=81		= 45 - 4	1	
i. Mark of 81 is 1 or form hear	1/2	2.		
		b) LPTS = 180-4 (as above)		
Thus, John did beter in Maths	1	= 90 - 4		
		= 90-4		
$\frac{5. \ a}{\sqrt{5-2}}$		LPTS + x + LUTR =180°		
1			1	
$\Delta = \sqrt{5} - 2$		(angles on straight angle add to 180°)	·	
		$90 - \frac{1}{4} + x + 45 + \frac{1}{2} = 120^{\circ}$		
LHS: 4+ 1	ļ	12 72		*
= 4 + √5 - 2		21 + 135 = 180		
= 2 + 5	1	x = 45°	<b>1</b>	
2Hs: a = 1 = 1 = \sqrt{\sqrt{5}-2}			1	
= -				
<u> </u>				
5-4-	<u> </u>		1	
= √5+2			1	***
· LHS = RHS				
6. Let x = no. of heads still to thou				
110+1(=7	1			~ -
lo(110+x)=7(200+x)				
$  100 + 10\pi = 1400 + 7\pi$			1	
3iC = 300		· .	]	
: 100 more heads need to be t	h no c	on consecutively.		
•		' ' '	:	

from the Property of the Control of	The second secon
Section D	Alternaturely
	$\sqrt{\chi} = \frac{\zeta_{+}}{\sqrt{7} - \sqrt{3}}$
Qu <sup>2</sup> =x <sup>2</sup> +x <sup>L</sup>	Marie
$au^2 = 2 x^2$	$ = 4(\sqrt{7} + \sqrt{3}) $
Pa2+au2= Pu2	7 -3
The second of th	$=\sqrt{7}+\sqrt{3}$
$x^2 + 2x^2 = 54$	$1  2  = \left(\sqrt{7} + \sqrt{3}\right)^2.$
3x <sup>2</sup> =54	$= 7 + 3 + 2\sqrt{21}$
2 <sup>1</sup> = 18	$= 10 + 2\sqrt{21}$
$x = \sqrt{18} \text{ or } 3\sqrt{2}$	
(-0.3)	
Volume = (352)3 = 27 x 252	$\left(-\frac{3}{4}\right) \angle AD0 = 90^{\circ}$
$= 54\sqrt{2} \text{ cm}^3$	
	Gircle, bisecting a chool
$\frac{2 \cdot a}{\sqrt{7x} - \sqrt{3}x} = \sqrt{x} \left(\sqrt{7} - \sqrt{3}\right)$	is perpendicular to H)
$= \sqrt{x} \left( \sqrt{7} - \sqrt{3} \right)$	
125/55	b) A 0 = BO ( equal rodii)
b) $\sqrt{x}(\sqrt{7}-\sqrt{3})=4$	DD BC a line thru the midpoints of 2 sides I of a triangle is
$\sqrt{x} = 4 \qquad *$ $\sqrt{7} - \sqrt{3}$	of a triangle is
The state of the s	<del></del>
?L =	1- LACB = 90° (Corresponding angles ADO PAGE)
7. # 3 - 2 \( \bar{2} \)	are equal as
$= \frac{16}{10 - 2\sqrt{21}} \times \frac{10 + 2\sqrt{21}}{10 + 2\sqrt{21}}$	
	C) DD = 1 BC (a line thru the
$= 16(10+2\sqrt{21})$	sidar of a friangle
100 - 4. 21	15 the third
$=\frac{32(5+\sqrt{21})}{16}$	$AO = \frac{1}{2} AB \left( \begin{array}{c} \text{Side} \\ \text{O is midpoint } + \text{B} \end{array} \right) + AD = \frac{1}{2} CD \left( \begin{array}{c} \text{O is midpoint } + \text{AC} \end{array} \right)$
= 3 (= 4.5)	+D= 1 CD (0 is michain+ AC)
$=2\left(5+\sqrt{21}\right)$	
	: Perimeter SAOD = 1 perimeter AHOC

4. $AR^{2} + AG^{2} = 6^{2} \implies AB^{2} = 6^{2} - AG^{2}$ (1) $AF^{2} + BC^{2} = 7^{2} \implies AF^{2} = 7^{2} - BC^{2}$ (2) $AG^{2} + BC^{2} = 2^{2}$ 1 $AG^{2} + BC^{2} = 2^{2}$ $AG^{2} + AF^{2} = 2^{2}$ $AG^{2} + AF^{2} = 2^{2}$ $AG^{2} + AF^{2} = 2^{2}$ $AG^{2} + AG^{2} + 7^{2} - BC^{2} = 2^{2}$ $AG^{2} + AG^{2} + 7^{2} - BC^{2} = 2^{2}$ $AG^{2} + AG^{2} + 7^{2} - BC^{2} = 2^{2}$ $AG^{2} + AG^{2} + AF^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + AG^{2} + AG^{2} + AG^{2} = 2^{2}$ $AG^{2} + AG^{2} + A$			
$AF^{2} + BC^{2} = 1^{2} - AF^{2} = 7^{2} - BC^{2} $ $AG^{2} + BC^{2} = 2^{2} $ $AG^{2} + AF^{2} = 2^{2} - BC^{2} = 2^{2} - BC^{2} + F^{2} + F^{2} = 2^{2} - BC^{2} + F^{2} $	4. $AB^2 + AG^2 = 6^2>$	AB2=62-AG2	(†)
$AG^{2} + BC^{2} = 2^{2}$ $\therefore AB^{2} + AF^{2} = \chi^{2}$ $6^{2} - AG^{2} + 7^{2} - BC^{2} = \chi^{2}$ $6^{2} + 7^{2} - (AG^{2} + BC^{2}) = \chi^{2}$ $6^{2} + 7^{2} - 2^{2} = \chi^{2}$ $8 = \chi^{2}$ $\therefore \chi = 9$ 1	$AF^2 + BC^2 = 7^2 \longrightarrow$	AF2= 72- BC2	
$ \frac{1}{6^{2} + 46^{2} + 7^{2} - 8c^{2}} = \chi^{2} $ $ \frac{6^{2} + 46^{2} + 7^{2} - 8c^{2}}{6^{2} + 7^{2} - 4c^{2} + 8c^{2}} = \chi^{2} $ $ \frac{6^{2} + 7^{2} - 4c^{2} + 8c^{2}}{2^{2}} = \chi^{2} $ $ \frac{8}{1 = \chi^{2}} $ $ \frac{1}{1 + 1} = \chi^{2} $ $\frac{1}{1 + 1} = \chi^{2} $ $1$	$AG^2 + BC^2 = 2^2$		
$6^{2} - 4a^{2} + 7^{2} - 8c^{2} = x^{2}$ $6^{2} + 7^{2} - (4a^{2} + 8c^{2}) = xc^{2}$ $6^{2} + 7^{2} - 2^{2} = x^{2}$ $8 = x^{2}$ $\therefore x = 9$			7100
$6^{2}+7^{2}-\left(AC^{2}+BC^{2}\right) = \chi^{2}$ $6^{2}+7^{2}-2^{2} = \chi^{2}$ $8 = \chi^{2}$ $\chi = 9$	AB2+AF2= x-	4.11.11.11.11.11.11.11.11.11.11.11.11.11	
$6^{2}+7^{2}-\left(46^{2}+8c^{2}\right) = x^{2}$ $6^{2}+7^{2}-2^{2} = x^{2}$ $8! = x^{2}$ $x = 9$	$6^2 - 46^2 + 7^2 - 86^2 - \gamma^2$		
$81 = x^{2}$ $x = 9$	$6^{2}+7^{2}-(AG^{2}+BC^{2})=7C^{2}$		
$8 \mid = x^{2}$ $x = q$	$6^2 + 7^2 - 2^2 = \chi^2$		
$\therefore x = q$			
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