

These are just predictions based on response, difficulty and last year's G/Boundaries							
(ONLY FOR PAPER 2)							
Grade PREYING AQA ARE NICE AND GRADE BOUNDARY FOR AN A* IS NO HIGHER THAN 230.	A*	A	B	C	D	E	U
Raw	83± 2	64 ± 4	55 ± 5	40 ± 6	32 ± 7	18 ± 8	0
2023 (ref)	80u hi	62 that low think it'll be 66 (Prob 63-65)	100	38	27	16	0

QuestionNumber	Question	marks	Answer	Comment
1.	What is the circle equation?	1	$(x+1)^2+(y+3)^2 = 36$	

2.	What was the area under the curve? it asked for the definite integral (cant remember the values)	1		between 3 and -2, the very right if i remember is 265 or some sort 125 you're meant to add the two areas together irrespective of whether the area on the left is negative. although the two areas were positive, we were finding the integral - as one of the areas was below the x axis it would be negative when integrating between the given limit no s so it's 125
3.	What is the set notation? $(1-x)(x+4) < 0$	1	$x: x < 1 \cup x: x > 4$	10000% U, im given a scientific calc and i can solve inequality, and its union
4.	Differentiation question	3	$(2\sin x + 3\cos x)^2 + (6\sin x - \cos x)^2 = 30$	wasn't it differentiate $x^3/\sin x$? or $x^2/\sin x$
5.	Logs question	3	$5^x - 2 = 7^{1570}$ $\log_{\text{base } 5} 5^x - 2 = \log_{\text{base } 5} 7^{1570}$ $x - 2 = 1570 \log_{\text{base } 5} (7)$ $x = 1570 \log_{\text{base } 5} (7) + 2$ $x = 1900.23$ 1900 (2 s.f.	Like i am so certain, for 1570, x came out as 1900.23

6.	fi	6	Sinx=root(6)/3 $(2\sin x + 3\cos x)^2 + (6\sin x - \cos x)^2 = 30$ Expand to get $40\sin^2 x + 10\cos^2 x = 30$ Use $\cos^2 x = 1 - \sin^2 x$ $40\sin^2 x + 10(1 - \sin^2 x) = 30$ $30\sin^2 x = 20$ $\sin^2 x = \frac{2}{3}$ $\sin x = \frac{\sqrt{6}}{3}$, can't be negative as that would be greater than 180 (needs to be obtuse)	Ain workwer is $\sqrt{6}/3$???same thing as root two over ttree it is $\sqrt{2/3}$:) <u>orm what the sigma</u> I did rsin rcos for this q and my dumbass forgot that you can expand brackets
7.	what is this question>>????? ?? Find the binomial expansion of $(1+3x)^{-1}$ up to x^2	2	$(1 + 3x)^{-1}$? <first 3 terms of this $1 - 3x + 9x^2$ was it $(1 + 3x)^{-1}$? ^^yhhhh it was nvm	
a ii)	Find the first 3 terms of the binomial expansion of $(2-3x)^{-1}$	2	$\frac{1}{2} + + \frac{3}{4}x + \frac{9}{8}x^2$	
7b.	binomial expansion	2	Guys wasn't the second bi6x-9x^2nomial expansion fractional? I got fractions Isn't there a partial fractions after this $\frac{36x}{(1+3x)(2-3x)}$ Then the one after was	yay i think this was a part c of question 7 First fraction was raised $(1+3x)^{-1}$ and second fraction was $(2+3x)^{-\frac{1}{2}}$ Am I the only one that ended up with $\frac{1}{2}$ at the start of the question where the 2 bion

			expansion of $\frac{12x}{(1+3x)(2-3x)}$ Can we add this q There was a part to the question asking you to split it into partial fractions before finding the expansion of the annoying fraction – what were your numerators for both fractions? I bejeje and that's missing here, it was around 3 marks for that in addition. I think i maybe got 6 and -4. But like I forgo Heyyy for the partial fractions I got 8 and -4, then for the second part I divided those by 4 and then timed them by the expansions yess 8 and -4 do sound more familiar. did your final answer have no constant term? just smth like $18x - ??x^2$ Yes one of my terms cancelled out!! But I do remember one of the terms being a h fraction but idk if I did it wrong	
8. Was	m onkey question	1-3 maybe7	1st part - Write in the form $y = a$	Yo how much marks was part a ?4 3 marks

		altogether I think	+blogx Show $b = 5.6/\log_3(8)$ <u>GUYS THE SECOND PART WAS TO WORK OUT THE VALUE OF A I GOT LIKE A =3.44</u> Yes same^ 2nd part- $x = \frac{1}{4}$ y when x= negative so its not accurate NOT ACCURATE FOR BABIES YOUNGER THAN A WEEK AS YOU GET NEGATIVE	
9.	determine whether there is a point of inflection where $x = 0$	4	NOT A POINT OF INFLECTION(_) $F(x) = x^2 + 2\cos x$ $F'(x) = 2x - 2\sin x$ $F''(x) = 2 - 2\cos(x)$ $F''(0) = 0$ $F'(-0.1) = \text{Negative number}$ $F'(0) = 0$ $F'(0.1) = \text{Positive number}$ Then choose values of x around it and prove that there is no change of sign	$F'''(-1) = 0.91$ $F'''(1) = 0.911$ no change of sign so not an inflection i think ur val is too big, use -0.9 and 0.1 would be better tho imo ^^ i think -1 or +1 is ok, textbook/mark schemes use it, but i get what u mean ok ok thx for clarifying^ Guys there was no change of sign 😊 ^^^yhh :) im gonna delete the other one sos ok:) ^^keep the $f'''(-1)$ and $f'''(1)$ part there was a change of sign from -ve to +ve so its a local minimum not a point of inflection

10.	Explain step 3 prove that there is no largest number in the range $3 < k < 4$	1	• 4 $x = \text{smallest number}$ $y = (3-x)/2$ That means $x < y < 3$ $3 < y < x$ say that as x was the smallest value then you get y as the smallest value which contradicts the statement Conclude with the correct statement Same thing for large value There exists a largest value $x = \text{largest value} < 4$ $y = (4+x)/2$ hence $x < y < 4$ (do you not have to flip the positive to negative? You ave to make it $(n-4)/2$) -GUYS I did $n-4/2$ (wdym?)6 Conclude with the statement -No it works with + cause the difference between x and 4 is halved this way, so $x < y < 4$	<<Yh seem correct, did something like this aswell, talked about it being a mid point
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		1	$T_3 = (T_2 + 50) \times 1.002$ I forgot the rest Rip $T_3 = (((50 \times 1.002) + 50) \times 1.002) + 50 \times 1.002$ $= 50 \times 1.002^3 + 50 \times 1.002^2 + 50 \times 1.002$ Calculate the amount of money in her savings account after 10 years: you had to factorise out 50 from the equation $T_{120} = 50(1.002 + 1.002^2 + 1.002^3 \text{ ect})$ Was a geometric sequence but a was 50.1 : $\sum_{x=1}^{120} 50 \times (1.002)^x$ $= £6787.16$ I used gemoetric sequence and got the same answer as you	n <<agreed part was just the sum to 120 using geometric equation you already get but a=50 cause thats what you start with no and r=1.002 I solved using a arithmetic sequence and got the correct answer is that fine? $U_{n+1} = (u_n + 50) \times 1.002$ $U_1 = 50 \times 1.002$ $U_{120} = 6787.16$ Possible alternative solution Genuine question i sat and iterated the formula 120 times on my calculator. Am i cooked - pleasee I was thinking of doing this too But was it really a geometric sequence??

				Do you get any marks for just righting the answer
12.	Circle answer: particle of mass 2kg has driving force of 10N and resistive force of 4N find a	1	3ms ⁻²	<<<yh yeah it accelerated but then the speed became constante so accel when to 0 ???? i cant remember a=8 b=1 yes!! ^^^yh h h h h h h h same my mate Leon is not happy with this but it's right nevertheless. Big up Leon. He'll be okay. ^^all my homies hate leon Nah leons goated ^ Leon should accept he was cooked leon is dead

				Cold Leon just had a brain haemorrhage and fucking died I'm sorry about that Was this the apple question? yes i think so the apple question explanation is in q 15!! its where you had to prove d was 54! yup Was q16 the one where we had to prove something was 82??? yes! also what was p? 87?? i got 87 ^^same agreed Yup I got that toooooo
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				Both had same $3i + 4j$ velocity? yes Scalar multiple was -3 ^^^ swear it was just 1 since both velocity were the same ^^^agree the vector of the displacement was a scalar value of the velocity, which is true for parallel things so sort of depends how u look at it i think I'm pretty confident with this ans, but lmk if anything more to add Exactly what I wrote Could it not be going opposite direction? ^kinda, in that case the SF would be negative i talked about how
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				since they are parallel they will be and SF- I think this is the correct solution but not 100% sure (said the same thing) same thing here I said that acceleration may be variable, does that count? - To respond to that, maybe? I suggested there isn't enough information to determine whether acceleration is 0, and it could be variable. So maybe. could you talk about instantaneous velocity or is that a no go!
13	Tick box Q Velocity time	1	Acceleration changes instantaneously	

	graph			
14.	displacement question????	1 2	-8 $0 < t < 3$	
14.	find the values of a and b	4	given two forces: add then use $F = MA$ where m was 2 or 3 kg yeah probably, i got fractions over 11, probably incorrect so did i it looked wrong tho same i got fractions $A=8$, $b=1$???	
15.	Apple Branch question The two apples rest on two separate branches separated by a vertical distance d. The two apples fall at the same instant. The first apple takes 0.5 seconds to hit the ground. The second apple lands 0.1 seconds later. show that $d = 54$ cm	4	Use suvat for first value(1.225 or something) use suv at for second value(1.77 something) minus second value from first u get $0.539m = 53.9$ cm and round	
16.			$q = 45/e^{-0.2 \times 3} = 81.982$	

^^wasn't it $r = p + 2qe^{-0.2t}$ ^^YHHHHHH when $t=3$ swr there was no 2 before the q and was just -q or was i tweaking??? question u had to show acceleration = 82 then find p?yeah				
		4 for part a and 2 for b i think, marks wise		
	HAH	4A it HA	change in displacement of Q is a scalar vector of P therefore they are parallel both have same velocity when calculated to be $(3i + 4j)$ B	
17b.	Claim: "Q also travels at a constant speed of $3i+4j$" Explain why it is not the case	1	He may be incorrect cause ur taking average, in 3 seconds u travelled with an average speed, the particle could be accelerating/ deaccelerating that in 3s travels the same tim	

			eA	
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18.	Moments - show that $L-x=k$ and find the value of k	4	$K = 0.2$ (i think?) Length = $2L$ $A = x$ $B = x+0.1$ CWM = ACWM about A $(L-x)mg = (2L-x-0.1)mg$ $L-x = 2L-x-0.1$ $L-2x=0.1??$ im not sure Resultant force at B = $2A$ right where A is resultant force at A? yes think so $mg(L-x)=Fb(2L-2x-0.1)$ $mg(L-x-0.1)=Fa(2L-2x-0.1)$ $2Fa=Fb$ $mg(L-x)=2mg(L-x-0.1)$ $L-x=2L-2x-0.2$ $L-x=0.2$ geometry	How do you do this one??? 🤔🤔🤔 Agreed, $k = \frac{1}{2}$ Take moments around the centre of mass Use the fact the Resistance force at B was double RF at A- the RF should then cancel I ALSO GOT 0.2 OTHER PEOPLE SAID THEY HAD 2 though.... I got -0.2 OHH we both got the same thing DAMN I FORGOT IT COULDNT BE -0.2 IT WAS + Oof I got -0.2 :(IT WAS POSITIVE 0.2 2L and x was a distance wasn't it. Frick. Must have messed up with the signs somewhere. Prob only 1 or 2 marks lost YES IT WASAND THEN 2L WAS DISTANNCE OF WHOLE THING PROB MAX 1 MARK LOST I put I don't like the topic
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17c	Question 19? what was it? i think the toy one was Q19 and the vectors on was Q20 <u>What else on mechanics not on this google doc? Anyone know?Yes</u>	5	, the speed calculate the distances travelled, get a 13-12-5 sided triangle which has a right angle Displacement from X forusing $R=12i$, $P= 4i+3j$? Distance of P from X is 5	ye RHS, use pythagorus :)) $12^2 + 5^2 =$ 13^2 these man think were isaac newton ^Imao ^Imao x2 this question was to flag the individuals who had the mark scheme before hand im jk
20.a		4	$7\cos(11)$ upwards $s= k$ $u= 7\cos(11)$ $v= 0$ $a=-9.8$ $t=$ dont give a fuck $v^2 = u^2 + 2as$ $0 = (7\cos 11)^2 - 19.6k$ $19.6s = (7\cos 11)^2$ k Would I get the mark if I put 2.40 or nah tbf its max I loose like one mark	Or you can use $7\sin(79)$ (My dumbass must have used $7\sin(49)$ on my calculator exam stress bruh) I used $7\sin(79)$ im so stupid i used $7\sin(11)$ and got 0.09 this question was 4 marks - how many marks do you think I would lose if I used 11 degrees as the angle? ^did the same mistake, i guess ill be 2/4 ish - thanks! just a bit confused guys - I though max height given by formula $U^2 \sin$

			$2.41^* = k$ $K < y < 2.5$	squared theta / 2G might be to 2 sig figs implied by use g=9.8 in question? yeah i put 2.4 cuz of g*
21.	Show that a was $\geq$ to that $a \geq (5(11 + \sqrt{3})/26)$?	6	Had to make the friction coefficient (μ) = 1, as this is when acceleration is smallest. Then combine the two equations of motion for particles m and n. n: $80a = 80g - t$ m: $50a = t - 50g \sin(60) - \text{friction}$ $130a = 80g - 25\sqrt{3} - 25g$ then rearrange to the final Friction = $\mu R = 50g \cos(60)$	ye vertical, i think thats the last if i did everything except the $\mu=1$ how many mRKS DO I GET? I did the sam
				hooting rds how many marks? first part was 2? $3 + 2 + 4$, a , b and c each
				e 🥲 ^^Will probs only lose one mark can you talk about using Mew as 1 due to $F_{\max}$ as that would be the maximum value friction would take
21 b	What assumptions have you made about the model?	1	The rope is light and inelastic	I said the pulley was smooth? it already said that in the q

GRADE BOUNDARIES:
2023 grade boundaries A* to E left to right

MATHEMATICS ADV	7357/1	MATHEMATICS ADV PAPER 1	100	82	65	52	39	27	15
	7357/2	MATHEMATICS ADV PAPER 2	100	80	62	50	38	27	16
	7357/3	MATHEMATICS ADV PAPER 3	100	86	74	60	46	32	18

2022 grade boundaries

MATHEMATICS ADV	7357/1	MATHEMATICS ADV PAPER 1	100	71	53	42	32	22	12
	7357/2	MATHEMATICS ADV PAPER 2	100	73	56	45	35	25	15
	7357/3	MATHEMATICS ADV PAPER 3	100	76	62	50	38	26	15

2019 grade boundaries

7357	MATHEMATICS ADV	7357/1	MATHS ADV PAPER 1	100	72	53	43	33	24	15
		7357/2	MATHS ADV PAPER 2	100	77	62	50	38	27	16
		7357/3	MATHS ADV PAPER 3	100	82	70	57	45	33	21

PREDICTION GRADE BOUNDARIES OVERALL FOR 2024
FOR A* YOU WILL NEED AROUND 235

2023 Grade Boundaries

A* - 245/300

A - 205/300

i flopped