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Mark Scheme (Results)

November 2021

Pearson Edexcel International GCSE
In Mathematics B (4MB1)
Paper 01

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November 2021
Question Paper Log Number P66021RA
Publications Code 4MB1_01_2111_MS

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme.

  Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

- **Types of mark**
  - M marks: method marks
  - A marks: accuracy marks
  - B marks: unconditional accuracy marks (independent of M marks)
- **Abbreviations**
  - cao – correct answer only
  - ft – follow through
  - isw – ignore subsequent working
  - SC - special case
  - oe – or equivalent (and appropriate)
  - dep – dependent
  - indep – independent

- awrt – answer which rounds to
- eeoo – each error or omission

- **No working**

  If no working is shown then correct answers normally score full marks
  If no working is shown then incorrect (even though nearly correct) answers score no marks.

- **With working**

  If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.
  If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks.
  If a candidate misreads a number from the question: eg. Uses 252 instead of 255; method marks may be awarded provided the question has not been simplified. Examiners should send any instance of a suspected misread to review.
  If there is a choice of methods shown, mark the method that leads to the answer on the answer line; where no answer is given on the answer line, award the lowest mark from the methods shown.
  If there is no answer on the answer line then check the working for an obvious answer.

- **Ignoring subsequent work**

  It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: eg. Incorrect cancelling of a fraction that would otherwise be correct.
  It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect eg algebra.
  Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

- **Parts of questions**

  Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded to another.

Question	Working	Answer	Mark	Notes	Total
1 (a)		A, E	1	B1 for both of these and no extras	
(b)		N, S	1	B1 for both of these and no extras	
					2

2	$\frac{4}{3}\times\frac{12}{5}$ or $[1\times]2+[-1]\frac{2}{5}+\frac{1}{3}\times 2+\frac{1}{3}\times\frac{2}{5}$		2	M1 must see correct fractions for multiplying or four terms added including at least two products NB for this questions we will not accept any misreads	
	$\frac{48}{15}=3\frac{1}{5}$ or $\frac{4}{\cancel{3}}\times\frac{\cancel{12}4}{5}=\frac{16}{5}=3\frac{1}{5}$ or $2+\frac{6}{15}+\frac{10}{15}+\frac{2}{15}=3\frac{3}{15}=3\frac{1}{5}$	shown		A1 dep on M1 No incorrect working seen. Minimum working required shown. Must end with $3\frac{1}{5}$	
					2

3	$3 \times 4^2 + 2$[=50] or $3 \times 5^2 + 2$[=77] or $3(4^2 + 5^2) + 4$ oe.		2	M1 finding either term	
		127		A1	
					2

4			2	M1 **correct arcs on *QP* and *QR*** and arcs from these points to join to form bisector	
				A1 dep completely correct bisector with all arcs shown SCB1 for a correct bisector without full construction seen.	
					2

5	216 = 2 × 2 × 2 ×3 × 3 × 3 540 = 2 × 2 × 3 × 3 × 3 × 5 eg 4 | 216 | 540 9 | 54 | 135 3 | 6 | 15 2 | 5			M1 for correct prime factors of 216 and 540 (may be on a factor tree) OR Correct factorisation of 216 and 540 that include paired numbers (ie the same numbers but possible in a different order) whose product is 108 and 2 and 5 respectively. Eg 27 × 4 × 2 and 5 × 4 × 27 the 4s and 27s are paired. OR or a list of factors including 108 for both numbers OR Use of table method, but may have different numbers down the side that have a product of 108.	
		108		A1 dep on M1 being awarded	
					2

6		$18x^5 + 12x^{-4}$	2	B2 oe fully correct (B1 for one correct term)	
					2

7	[*BAC* =]107 – 58 or 180 – 107 = 73 and 180 – (“73” + 58)		2	M1 complete method to find *BAC* or 49 marked on the diagram	
		49		A1 allow on diagram if no answer given on answer line. 49 with no incorrect working gains full marks	
					2

8	$\frac{q+17}{2} = 13$ oe ($q = 9$) or $p + q + r + 17 = 4 \times 15$ [=60] oe		3	M1 Use either median = 13 or mean = 15 to form an equation Accept $p + q + 17 + p + 18 = 4 \times 15$ oe or $r - 18 + q + r + 17 = 4 \times 15$ oe	
	$p + r =$ "60" – "9" – 17 [=34] or $p +$ "9" $+ p + 18 + 17 = 4 \times 15$ [=60] or $r - 18 +$ "9" $+ r + 17 = 4 \times 15$ [=60] oe			M1 Find an expression for $p + r$ or an equation in just p or r (allow $p = 8$ or $r = 26$)	
		$p = 8$, $q = 9$, $r = 26$		A1	
					3

9	Gradient = $-3 \div 1$ oe		3	M1 for a correct method to work out the gradient, accept $-3 \div 1$, $-6 \div 2$ oe or "m" = −3 Allow any expression that evaluates to –3 or $-3x$	
	$y = mx - 2$ or $y =$ "−3"$x + c$ or $L =$ "−3"$x - 2$ or "−3"$x - 2$			M1 for one of the expressions seen in the scheme oe ft their gradient if the first method mark is gained.	
		$y = -3x - 2$		A1 oe eg $y - 4 = -3(x + 2)$ We will only ISW $-3x - 2$ on the answer line.	
					3

10 (a)		0.00012	1	B1	
(b)	605×10^{142} or 6.05×10^{144} or $1.2 \times 10^{139} + [1 \times] 10^{137}$ or 121×10^{137} or 1.21×10^{n}		2	M1	
		1.21×10^{139}		A1	
					3

11	$8^2 = 10^2 + 15^2 - 2 \times 10 \times 15 \times \cos A$ or $10^2 = 8^2 + 15^2 - 2 \times 8 \times 15 \times \cos A$ or $15^2 = 8^2 + 10^2 - 2 \times 8 \times 10 \times \cos A$ oe		3	M1 for a correct start to a method to find **any** angle in the triangle or 112.4° or 38.047...° (ie another angle found correctly)	
	$\cos A = \left(\frac{10^2 + 15^2 - 8^2}{2 \times 10 \times 15}\right)\left[= \frac{261}{300}\right]$			M1 dep for a fully correct method to find smallest angle e.g. $180 - \cos^{-1}\left(\frac{10^2 + 8^2 - 15^2}{2 \times 10 \times 8}\right) - \cos^{-1}\left(\frac{8^2 + 15^2 - 10^2}{2 \times 8 \times 15}\right)$ or $180 - \text{“112.4”} - \sin^{-1}\left(\frac{10 \sin \text{“112.4”}}{15}\right)$ An indirect method must lead to the angle opposite 8 being the smallest.	
		29.5°		A1 awrt 29.5	
					3

12	$7.5(7.5 + x)$ **or** 6×14		3	M1 for a start to using intersecting secant theorem	
	eg $7.5(7.5 + x) = 6 \times 14$ oe			M1 for a correct equation in x	
		3.7		A1	
					3

13	$\sqrt{75}=5\sqrt{3}$ or $\sqrt{243}=9\sqrt{3}$ or $...\times\frac{\sqrt{7}}{\sqrt{7}}$ or $\frac{14\sqrt{3}}{\sqrt{7}}=\frac{2\times7\times\sqrt{3}}{\sqrt{7}}=2\sqrt{7}\times\sqrt{3}$		3	M1 working must be shown	
	$\sqrt{75}=5\sqrt{3}$ and $\sqrt{243}=9\sqrt{3}$ and $(...\times\frac{\sqrt{7}}{\sqrt{7}}$ or $\frac{14\sqrt{3}}{\sqrt{7}}=\frac{2\times7\times\sqrt{3}}{\sqrt{7}}=2\sqrt{7}\times\sqrt{3})$			M1 working must be show Allow $\sqrt{525}=\sqrt{25\times21}=5\sqrt{21}$ and $\sqrt{1701}=\sqrt{81\times21}=9\sqrt{21}$ and $...\times\frac{\sqrt{7}}{\sqrt{7}}$	
		$\sqrt{84}$		A1dep on both method marks allow a = 84	
					3

14	$-7(4x + x^2) + 15$ or $-7\left(x^2 + 4x - \frac{15}{7}\right)$ oe		3	M1 or $c = 2$ or $b = -7$ and $2bc = -28$	
	$-7((x + 2)^2 - 4) + 15$ or $-7\left((x+2)^2 - \frac{15}{7} - 4\right)$ oe			M1 indep or for 2 of $a = 43$, $b = -7$, $c = 2$ correct allow these seen in an expression of the form $a + b\,(x + c)^2$	
		$a = 43$, $b = -7$, $c = 2$		A1 or for $43 - 7(x + 2)^2$ clearly stated and not contradicted on answer line.	
					3

15	$(3x - 5)(2x + 5)$		3	M1 expands to give 2 terms correctly or correct substitution into correct formula (no errors) or completed square form, allow one sign error.	
	$x = \frac{5}{3}, -\frac{5}{2}$			A1 correct critical values fully evaluated. Method must be clear dependent on the method mark being awarded. Allow 1.67 or better for $\frac{5}{3}$ Critical values with no method score A0	
		$x < -\frac{5}{2}, x > \frac{5}{3}$		A1ft correct inequalities (follow through their critical values for selecting the outer region) dep on M mark being awarded. Allow $\left(\infty, -\frac{5}{2}\right) \cup \left(\frac{5}{3}, \infty\right)$ or $\left]\infty, -\frac{5}{2}\right[\cup \left]\frac{5}{3}, \infty\right[$ Do not allow $-\frac{5}{2} > x > \frac{5}{3}$ or $\frac{5}{3} < x < -\frac{5}{2}$	
					3

16 (a)		$2x^8y^2$	2	B2 fully correct (B1 for 2 correct terms in a product) allow $2\left(x^4y\right)^2$ Do not award marks if addition or subtraction or division seen.	
(b)		$16a^{20}b^{12}$	2	B2 fully correct (B1 for 2 correct terms in a product) Do not award marks if more than one term seen.	
					4

17 (a)	eg $\frac{BE}{12.6}=\frac{8}{8+3.2}\left[=\frac{8}{11.2}\right]$ oe		2	M1 a correct statement involving *BE* or correct SF $\frac{5}{7}$ or $\frac{7}{5}$ oe	
		9		A1	
(b)	eg $\frac{AC}{8.5}=\frac{8+3.2}{8}$ or $\frac{12.6}{"9"}=\frac{AC}{8.5}$ oe or $\frac{BC}{3.2}=\frac{8.5}{8}$		2	M1 Allow ft if M1 gained in part (a). For a method that will lead to *AC* or *BC* Allow 8.5 + *BC* or 8.5 + *x* or *x* for *AC* Award for [*BC* =] 3.4 seen.	
		11.9		A1	
					4

18	$12 + 4p = 4$		4	M1 An equation in p Must be seen as an equation outside of a matrix	
	$p = -2$	-2		A1 If the answer on the answer line and in the working are 2 and –2 give benefit of the doubt and award the mark.	
	$3 \times$ "-2" $+ 4q = -7$			M1 dep on M1 An equation in just q Must be seen as an equation outside of a matrix	
	$q = -0.25$ oe	-0.25		A1 If the answer on the answer line and in the working are 0.25 and –0.25 give benefit of the doubt and award the mark.	
					4

19	$9x + 6y = -3$ $\quad 12x + 8y = -4$ $8x - 6y = -10.6$ $\quad 12x - 9y = -15.9$ $17x = -13.6$ $\quad 17y = 11.9$ or $4\left(\frac{-1-2y}{3}\right) - 3y = -5.3$ or $3\left(\frac{3y-5.3}{4}\right) + 2y = -1$ or $4x - 3\left(\frac{-1-3x}{2}\right) = -5.3$ or $3x + 2\left(\frac{4x+5.3}{3}\right) = -1$ oe		4	M1 for coefficient of x or y the same in both equations and correct operation to eliminate selected variable (condone one arithmetic or sign error) or for correct rearrangement of one equation followed by correct substitution into the other (condone one arithmetic error).	
		$x = -0.8$ or $y = 0.7$		A1 dep on M1 being awarded $x = -\frac{4}{5}$ or $y = \frac{7}{10}$	
	$3 \times$ "-0.8" $+ 2y = -1$ or $4 \times$ "-0.8" $- 3y = -5.3$ or $3x + 2 \times$ "0.7" $= -1$ or $4x - 3 \times$ "0.7" $= -5.3$ oe			M1 dep on first M1 for substituting their found value correctly into one of the correct equations or correct use of elimination or substitution again, if starting again mark in line with the first method mark. If the first M1 is awarded this may be implied by both correct values being achieved.	
		$x = -0.8$ and $y = 0.7$		A1 dep only on the first M1 being awarded $x = -\frac{4}{5}$ and $y = \frac{7}{10}$	
					4

20	$\tan 23 = \frac{3}{BC}$ or $\frac{BC}{3} = \tan 67$ oe		4	M1 Form an equation that allows *BC* to be found. Other methods may be seen eg. $\frac{BC}{\sin 67} = \frac{3}{\sin 23}$	
	$[BC =] \frac{3}{\tan 23}$ or $3\tan 67 [= 7.07]$ oe			M1 dep Form an expression to calculate *BC*	
	$[\cos ACB =] \frac{\text{“7.07”}}{9}$ ($ACB = 38.2$ or 38.3)			M1 dep Fully correct method to find either *ACB* or *ACD* or a trig ratio of either. Other methods may be seen eg. $AB^2 = 9^2 - \text{“7.07”}^2 \Rightarrow AB = 5.57$ and $\cos ACB = \frac{9^2 + \text{“7.07”}^2 - \text{“5.57”}^2}{2 \times 9 \times \text{“7.07”}}$ or $CD = \frac{3}{\sin 23} = 7.68$ and $AD =$ “5.57” – 3 and $\cos ACD = \frac{9^2 + \text{“7.68”}^2 - \text{“2.57”}^2}{2 \times 9 \times \text{“7.68”}}$	
		15.3		A1 Allow awrt 15.2 or awrt 15.3	
					4

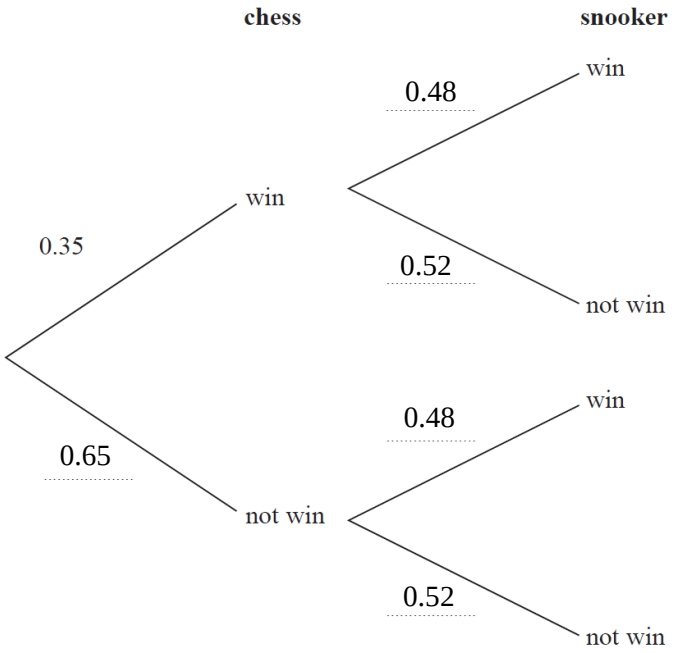
21 (a)	$\frac{2-2\times-5}{3}+2\times(-5)^2$ oe eg 4 + 50		2	M1 Give benefit of the doubt if -5^2 used. Do not allow use of –25 or –50 unless mark already awarded.	
		54		A1	
(b)	$\sqrt[3]{c}=c^{\frac{1}{3}}$ or $\frac{1}{3}-2$ or $\left(\frac{1}{c^5}\right)^{\frac{1}{3}}$ or $\sqrt[3]{c^{-5}}$		2	M1	
		$c^{-\frac{5}{3}}$		A1 accept $c^{-1\frac{2}{3}}$ or $x=-\frac{5}{3}$ accept $c^{-1.67}$ or better	
					4

22	$\frac{\sqrt[3]{312.5}}{\sqrt[3]{67.5}}\left[=\frac{5}{3}\right]$ or $\frac{\sqrt[3]{67.5}}{\sqrt[3]{312.5}}\left[=\frac{3}{5}\right]$ oe		4	M1 Considering linear scale factor. Allow this seen as a ratios eg 5:3 $\frac{x^3}{425^3}=\frac{67.5^2}{312.5^2}$ or $\frac{x^3}{425^3}=\frac{312.5^2}{67.5^2}$ oe gains this mark	
	$\left(\frac{\sqrt[3]{312.5}}{\sqrt[3]{67.5}}\right)^2\left[=\frac{25}{9}\right]$ or $\left(\frac{\sqrt[3]{67.5}}{\sqrt[3]{312.5}}\right)^2\left[=\frac{9}{25}\right]$			M1 dep Consider area scale factor. Allow this seen as a ratio eg 25:9 $\frac{x^3}{425^3}=\frac{67.5^2}{312.5^2}$ oe gains this mark	
	[x =] 425 × “$\frac{9}{25}$” oe			M1 dep fully correct method to find x	
		153		A1 153 with no incorrect working seen gains full marks	
					4

23	3 hours 22.5 mins, 3.375 hours, 202.5 mins, 3 hours 27.5 mins, 3.4583 hours or 207.5 mins		4	M1 allow $3\frac{3}{8}$, $\frac{27}{8}$, $3\frac{11}{24}$ or $\frac{83}{24}$	
	$\frac{215}{3.375}$ or $\frac{215}{202.5}[\times 60]$			M1 allow for a calculation of speed in km/hr or km/min For 215 allow 200 to 220 inclusive For 3.375 allow 3.33 to 3.5 inclusive For 202.5 allow 200 to 210 inclusive	
	$\frac{215}{3.375}$ or $\frac{215}{202.5}[\times 60]$			M1 dep for $\frac{\text{UB}}{\text{LB}}$ with $210 < \text{UB} \leq 215$ **and** $3.375 \leq \text{LB} < 3.417$ ($202.5 \leq \text{LB} < 205$)	
		63.7		A1 awrt 63.7 answer must come from use of the correct values for the bounds	
					4

24	$\frac{3(x+2)-4(2x-4)}{(2x-4)(x+2)}$ oe		4	M1 Express difference as single fraction allow maximum of one sign error in the numerator. The denominator may be expanded eg $(2x^2 - 8)$ This may be awarded if both terms are multiplied and then the subtraction takes place.	
	$6x^2-4x-16 \Rightarrow 2(3x+4)(x-2)$			M1 indep Factorise denominator of divisor, must factorise to at least 2 brackets and must expand to give 2 out of 3 term correct. Allow $(3x+4)(x-2)$ only if $3x^2-2x-8$ is seen on an earlier line of working.	
	"$\frac{22-5x}{2(x-2)(x+2)}$" $\times \frac{2(3x+4)(x-2)}{3(22-5x)}$			M1 indep Attempt to invert divisor and multiply. These method marks can be awarded in any order.	
		$\frac{3x+4}{3(x+2)}$		A1 or $\frac{3x+4}{3x+6}$	
					4

25	40 ÷ 0.8 or 4000 ÷ 80 [=50]		5	M1 Number of bags made. For this mark accept $\frac{3}{5} \times 40 \div 0.8$ [=30] (number of bags at full price) or $\frac{2}{5} \times 40 \div 0.8$ [=20] (number of bags at reduced price) in working	
	$\frac{3}{5}\times"50"\times14\left[=420\right]$ oe			M1 Income from bags at full price. For this mark accept $\frac{3}{5}\times"50"\times14-\frac{3}{5}\times40\times5\left[=300\right]$ (profit on 30 bags), 458 (overall profit) or 658 (overall income) in working. This mark also implies the first M1	
	$0.85\times14\times\frac{2}{5}\times"50"\left[=238\right]$oe			M1 Income from bags at reduced price. For this mark accept $0.85\times14\times\frac{2}{5}\times"50"-\frac{2}{5}\times40\times5\left[=158\right]$ (profit on 20 bags), 458 (overall profit) or 658 (overall income) in working. This mark also implies the first M1	
	$\frac{"420"+"238"-40\times5}{40\times5}\left[\times100\right]$			M1 Expressing profit as a ratio of the income. dep on all previous method marks	
		229		A1	
					5

26 (a)			2	B2 (B1 for at least 3 probabilities correct, correctly placed) Accept equivalent fractions on diagram $\left(\frac{13}{20}, \frac{12}{25}\right.$ and $\left.\frac{13}{25}\right)$	
(b)	0.35×0.52 [= 0.182] **or** 0.65×0.48 [= 0.312] **or** $0.35 \times 0.48 + 0.65 \times 0.52$ [= 0.506]		3	M1 ft If tree is incorrect allow correct values or ft their tree diagram. NB any value used > 1 gives M0	
	$0.35 \times 0.52 + 0.65 \times 0.48$ $1 - (0.35 \times 0.48 + 0.65 \times 0.52)$			M1 ft If tree is incorrect allow correct values or ft their tree diagram. Do not award if extra terms seen. NB any value used > 1 gives M0	
		0.494		A1 oe $\frac{247}{500}$	
					5

27	$0.5 \times 8 \times 8 \times \sin 60°$ [$=16\sqrt{3}$] or $0.5 \times 8 \times 4\sqrt{3}$ [$=16\sqrt{3}$] or $0.5 \times 8 \times 8 \times \sin 120°$ [$=16\sqrt{3}$] or $0.5 \times 4 \times 8\sqrt{3}$ [$=16\sqrt{3}$] or $0.5 \times (8+16) \times 4\sqrt{3}$ [$=48\sqrt{3}$] or $8 \times 8\sqrt{3}$ [$=64\sqrt{3}$] or $8 \times 4\sqrt{3}$ [$=32\sqrt{3}$] or $0.5 \times 4 \times 8 \times \sin 60°$ [$=8\sqrt{3}$] or $0.5 \times 4 \times 4\sqrt{3}$ [$=8\sqrt{3}$] or $0.5 \times 8\sqrt{3} \times 8\sqrt{3} \times \sin 60°$ [$=48\sqrt{3}$] oe		5	M1 correct method to find area of one triangle, trapezium, parallelogram or rectangle within hexagon. Award for sight of $8\sqrt{3}$, awrt 13.9, $16\sqrt{3}$, awrt 27.7, $32\sqrt{3}$, awrt 55.4, $48\sqrt{3}$, awrt 83.1, $64\sqrt{3}$ and awrt 111. This may be implied by the award of the second method mark.	
	$6 \times 0.5 \times 8 \times 8 \times \sin 60°$ or $2 \times 0.5 \times 8 \times 8 \times \sin 120° + 8 \times 8\sqrt{3}$ or $2 \times 0.5 \times (8+16) \times 4\sqrt{3}$ or $2 \times 0.5 \times 8\sqrt{3} \times 8\sqrt{3} \times \sin 60°$ oe			M1 fully correct method to find area of hexagon Award for sight of $96\sqrt{3}$ or awrt 166	
	$\pi r^2 - \text{“}96\sqrt{3}\text{”} = \text{“}96\sqrt{3}\text{”}$ or $\pi r^2 = 2 \times \text{“}96\sqrt{3}\text{”}$ oe			M1 indep equation involving the area of the circle with their result for the area of the hexagon.	
	$r = \sqrt{\frac{192\sqrt{3}}{\pi}}$			M1 dep on 3rd M mark solve their equation to find *r*	
		10.3		A1 awrt 10.3 gains all 5 marks.	
					5

28	$\frac{4}{n}\times\frac{3}{n-1}$ or $\frac{n-4}{n}\times\frac{n-5}{n-1}$ or $2\times\frac{4}{n}\times\frac{n-4}{n-1}$ oe		6	M1 one correct product for 2 beads the same colour or correct method to find probability of 2 beads with different colours	
	$\frac{4}{n}\times\frac{3}{n-1}+\frac{n-4}{n}\times\frac{n-5}{n-1}$ or $1-2\times\frac{4}{n}\times\frac{n-4}{n-1}$			M1 dep correct probability sum of 2 beads of the same colour	
	$\frac{4}{n}\times\frac{3}{n-1}+\frac{n-4}{n}\times\frac{n-5}{n-1}=\frac{51}{91}$ or $1-2\times\frac{4}{n}\times\frac{n-4}{n-1}=\frac{51}{91}$ oe			M1 dep a correct equation allow $\frac{n^2-9n+32}{n(n-1)}=\frac{51}{91}$ or $\frac{8n-32}{n(n-1)}=\frac{40}{91}$	
	$40n^2-768n+2912=0$ oe eg $5n^2-96n=-364$			A1 a correct three term quadratic equation	
	eg $(5n-26)(n-14)[=0]$ or $\frac{96+\sqrt{(-96)^2-4\times5\times364}}{2\times5}$			M1 indep for a correct method to solve their quadratic trinomial equation. Factorisation must expand to 2 of their 3 terms or correct substitution into correct quadratic formula (no errors) or complete square form, allow 1 sign error or 14 [and 5.2] seen.	
		14		A1 do not allow $\frac{26}{5}$ in addition to 14 Must gain at least the 1st 3 method and the 1st accuracy mark.	
SC	$\left(\frac{4}{n}\right)^2+\left(\frac{n-4}{n}\right)^2=\frac{51}{91}$			B1 Equation seen (or equivalent) for selection with replacement scores B1 and may also gain the 4th method mark	
					6

29	$\left[\frac{dy}{dx} =\right] 3x^2 - 8x + 5$		5	M1 1 non-zero term correct	
	Gradient = $3 \times 2^2 - 8 \times 2 + 5$ (=1)			M1 dep substituting 2 into their derivative.	
	$3x^2 - 8x + 5 =$ "1" or $3x^2 - 8x + 4 = 0$			M1 dep equating their derivative to their gradient.	
	$(3x - 2)(x - 2)$ (=0)			M1 indep method to solve their quadratic trinomial. Brackets must expand to give two terms correct or correct substitution into correct quadratic formula or correct completed square form allow 1 sign error or correct solution of correct equation.	
		$\left(\frac{2}{3}, \frac{131}{27}\right)$		A1 oe accept other alternative exact forms eg $\left(0.\dot{6}, 4.\dot{8}5\dot{1}\right)$, $\left(\frac{2}{3}, 4\frac{23}{27}\right)$	
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