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1MA1 Nov 2026 Paper 3 Best Guess Paper

Higher · Target 9 · Mark Scheme

————————————- Disclaimer ————————————-

This practice paper has been crafted through careful analysis of historical exam trends to identify topics highly likely to appear in the Pearson Edexcel 1MA1 Paper 3H. It is specifically designed as a *targeted revision tool for students aiming to secure a Grade 9 on the Higher tier. The questions focus on challenging Higher tier topics, multi step methods and mathematical reasoning needed to support progress towards that target.*

While these topics are highly relevant for targeted revision, there is absolutely no guarantee they will appear on the real exam. Beware of social media claims promising perfect "predicted" papers—these are usually just sales tactics. The most effective preparation strategy remains a comprehensive revision of the entire mathematics specification.

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GCSE Mathematics 1MA1 · November 2026 · 20 questions · 80 marks

M: method mark · **A**: accuracy mark · **B**: independent mark. Accept equivalent valid methods. Accuracy marks require their associated method, shown or implied. Follow-through is allowed where specified. This is an independent practice-paper scheme, not an official Pearson scheme.

Question 1 · 8 marks

Q / part	Working / method	Answer	Marks	Marking guidance
1(a)	Multiply each term in the first bracket by each term in the second: $(x - 4)(x + 7) = x^2 + 7x - 4x - 28$. Collect the x terms.	**$x^2 + 3x - 28$**	**2**	**M1** — Correct multiplication of the brackets. **A1** — Correct simplified expression.
1(b)	The highest common numerical factor is 6; the common variable factors are c and w^2. $18c^5w^2 + 30cw^3 = 6cw^2(3c^4 + 5w)$.	**$6cw^2(3c^4 + 5w)$**	**2**	**M1** — Identify the highest common factor $6cw^2$. **A1** — Correct complete factorisation.
1(c)	Multiply both sides of $(7x - 2)/4 = 3x + 1$ by 4: $7x - 2 = 12x + 4$. Collect terms: $-5x = 6$. Divide by -5.	**$x = -6/5 = -1.2$**	**3**	**M1** — Multiply by 4 and expand correctly. **M1** — Collect x terms and constants. **A1** — Correct value of x.
1(d)	Any non-zero number raised to the power zero is 1, so $7^0 = 1$.	**1**	**1**	**B1** — Correct value 1.

Question 2 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
2	The middle two values are 10 and q, so $(10 + q)/2 = 11$ and $q = 12$. The repeated value is r. Since the mode is 19, $r = 19$. Range $= 19 - p = 16$, giving $p = 3$.	**$p = 3$, $q = 12$, $r = 19$**	**3**	**B1** — $p = 3$. **B1** — $q = 12$. **B1** — $r = 19$.

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Question 3 · 2 marks

Q / part	Working / method	Answer	Marks	Marking guidance
3(a)	Rounding to one decimal place has half-interval 0.05 m. Upper bound = 1.6 + 0.05.	**1.65 m**	**1**	**B1** — Correct upper bound.
3(b)	Lower bound = 1.6 – 0.05. The interval is 1.55 ≤ length < 1.65.	**1.55 m**	**1**	**B1** — Correct lower bound.

Question 4 · 5 marks

Q / part	Working / method	Answer	Marks	Marking guidance
4	Convert to euros: 600 × 1.15 = €690. Saving is 2 out of 3 + 2 = 5 parts, so €690 × 2/5 = €276. At £1 = €1.18, divide euros by 1.18: 276 ÷ 1.18 = £233.898305… . Round only the final amount to the nearest penny.	**£233.90**	**5**	**M1** — Convert £600 to €690. **M1** — Use the saving fraction 2/5. **A1** — Savings of €276. **M1** — Divide by 1.18. **A1** — Correct amount to the nearest penny.

Question 5 · 2 marks

Q / part	Working / method	Answer	Marks	Marking guidance
5	The sale price is 80% of the normal price. Normal price = 72 ÷ 0.8 = 90.	**£90**	**2**	**M1** — Divide the sale price by 0.8, or find 100% from 80%. **A1** — Correct normal price £90.

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Question 6 · 5 marks

Q / part	Working / method	Answer	Marks	Marking guidance
6	Make the DVD parts equal: books : DVDs : records = 20 : 12 : 3. After the sales, the remaining parts are 12 : 10 : 3, so 25 parts = 150 items. One part is 150 ÷ 25 = 6 items. The sold parts are 8 books-parts + 2 DVD-parts = 10 parts. Total sold = 10 × 6 = 60 items.	**60 items**	**5**	**M1** — Combine the original ratios to obtain 20 : 12 : 3 or equivalent. **M1** — Apply both sold fractions to obtain remaining parts 12 : 10 : 3. **M1** — Use the 150 remaining items to find the scale factor 6. **M1** — Calculate the number sold from the sold parts or initial total minus 150. **A1** — 60 items sold.

Question 7 · 5 marks

Q / part	Working / method	Answer	Marks	Marking guidance
7(a)	Any non-zero number to power zero is 1, so $5^0 = 1$.	**k = 0**	**1**	**B1** — Correct exponent.
7(b)	$27 = 3^3$. $27/3^8 = 3^3/3^8 = 3^{3-8} = 3^{-5}$.	**m = –5**	**2**	**M1** — Express 27 as 3^3 and subtract the denominator exponent. **A1** — Correct exponent –5.
7(c)	$(7^{-4})^3 \times 7^5 = 7^{-4\times3} \times 7^5 = 7^{-12+5} = 7^{-7}$.	**p = –7**	**2**	**M1** — Multiply the exponents for the power of a power and add for multiplication. **A1** — Correct exponent –7.

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Question 8 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
8	Each interior angle is 180° – 360°/11 = 147.272727…°. BCDE is an isosceles trapezium. Its equal base angles total 360° – 2 × 147.272727…° = 65.454545…°. So ∠DEB = 32.727272…°. ∠BEF = 147.272727…° – 32.727272…° = 114.545454…°.	**114.5°**	**4**	**M1** — Find an interior angle or use the equal central angles. **M1** — Use an appropriate equal-angle or circle-angle relationship. **M1** — Obtain the required angle by a valid combination of angles. **A1** — 114.5° to one decimal place; accept any valid method.

Question 9 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
9	With replacement, P(red) = 5/9 and P(blue) = 4/9 on each draw. P(same colour) = $(5/9)^2$ + $(4/9)^2$ = 25/81 + 16/81 = 41/81.	**41/81**	**3**	**M1** — Multiply appropriate probabilities for two reds or two blues. **M1** — Add the two mutually exclusive same-colour outcomes. **A1** — 41/81 or exact equivalent.

Question 10 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
10	Exclude the median (the sixth value, 14). The lower five values have median 8, so Q_1 = 8. The upper five values have median 20, so Q_3 = 20. Interquartile range = 20 – 8 = 12.	**12**	**3**	**B1** — Lower quartile 8. **B1** — Upper quartile 20. **A1** — Interquartile range 12.

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Question 11 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
11	Sector area = (120/360) × π × 15² = 75π cm². Triangle area = ½ × 15 × 15 × sin 120° = 97.4278579… cm². Segment area = 75π − 97.4278579… = 138.191591… cm². To 3 significant figures this is 138 cm².	**138 cm²**	**4**	**M1** — Correct sector-area calculation. **M1** — Correct triangle-area calculation using sine or an equivalent method. **M1** — Subtract the triangle area from the sector area. **A1** — 138 cm² to 3 significant figures.

Question 12 · 5 marks

Q / part	Working / method	Answer	Marks	Marking guidance
12(a)	H is the centre of the square and M is the midpoint of BC, so HM = 5 cm. In right-angled triangle VHM: VM² = 15² + 5² = 250. VM = √250 = 15.811388… cm.	**15.8 cm**	**3**	**B1** — HM = 5 cm. **M1** — Use Pythagoras in triangle VHM. **A1** — Correct length to three significant figures.
12(b)	The angle between face VBC and the base is ∠VMH. tan θ = VH/HM = 15/5 = 3. θ = tan⁻¹3 = 71.565051…°.	**71.6°**	**2**	**M1** — Correct trigonometry for the face-to-base angle. **A1** — Correct angle to one decimal place.

Question 13 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
13	The first digit is 5, 6, 7 or 8. The final digit must be even. If the first digit is 5 or 7, there are 2 × 4 × 6 × 5 = 240 codes. If the first digit is 6 or 8, only three even digits remain for the last position: 2 × 3 × 6 × 5 = 180 codes. Add the disjoint cases: 240 + 180 = 420.	**420**	**3**	**M1** — Account for the restriction on both first and final digits. **M1** — Handle the no-repetition restriction and distinguish odd/even first digits. **A1** — Correct total 420.

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Question 14 · 5 marks

Q / part	Working / method	Answer	Marks	Marking guidance
14	The removed cone has volume fraction $1 - 19/27 = 8/27$ of the original. The cones are similar, so the linear scale factor is $\sqrt[3]{(8/27)} = 2/3$. Surface areas scale with the square of the linear factor: $(2/3)^2 = 4/9$. The smaller cone's total surface area is $540\pi \times 4/9 = 240\pi$ cm².	**240π cm²**	**5**	**M1** — Find the smaller cone volume fraction 8/27. **M1** — Take a cube root to find the linear factor. **A1** — Correct linear factor 2/3. **M1** — Square the factor and apply to the original total surface area. **A1** — Correct exact area.

Question 15 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
15	Factorise: $3x^2 - 14x - 5 = (3x + 1)(x - 5)$. The roots are $-1/3$ and 5. The coefficient of x^2 is positive, so the expression is positive outside the roots. The strict inequality excludes both endpoints.	**$\{x \in \mathbb{R} : x < -1/3\} \cup \{x \in \mathbb{R} : x > 5\}$**	**4**	**M1** — Valid factorisation or quadratic method. **A1** — Both critical values $-1/3$ and 5. **M1** — Choose the two outside intervals, not the interval between the roots. **A1** — Correct strict solution in set notation.

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Question 16 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
16(a)	Total frequency: $a + b = 160 - 30 - 60 = 70$. Histogram height is proportional to frequency density. The densities are $a/5$ and $b/15$. The given height ratio gives $a/5 = 2b/15$, so $3a = 2b$. Substitute $b = 70 - a$: $3a = 140 - 2a$, hence $a = 28$ and $b = 42$. Check: the first density is $30/10 = 3$, represented by 6 cm, so the height scale is 2 cm per density unit.	**$a = 28$, $b = 42$**	**3**	**M1** — Use $a + b = 70$. **M1** — Relate the correct class densities, not the frequencies. **A1** — Both missing frequencies correct.
16(b)	Cumulative frequencies: 30, 58, 118, 160. The 80th value is in $15 < w \leq 25$.	$15 < w \leq 25$	1	B1 — Correct class interval $15 < w \leq 25$.

Question 17 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
17	Let two consecutive odd integers be $2n + 1$ and $2n + 3$, where $n \in \mathbb{Z}$. $(2n + 3)^2 - (2n + 1)^2 = (4n^2 + 12n + 9) - (4n^2 + 4n + 1)$ $= 8n + 8 = 8(n + 1)$. Because $n + 1$ is an integer, the difference is a multiple of 8. Reversing the subtraction changes the sign, but it is still a multiple of 8.	**$8(n + 1)$, hence a multiple of 8**	**4**	**B1** — Represent consecutive odd integers algebraically. **M1** — Expand and subtract, or use a valid difference-of-squares method. **A1** — Correct factorisation as 8 times an integer expression. **B1** — Conclude why the expression is always a multiple of 8.

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Question 18 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
18	The disjoint regions total 100: $x^2 + 5x + (2x + 10) + 12 = 100$. So $x^2 + 7x - 78 = 0 = (x + 13)(x - 6)$. $x = 6$ or -13; reject -13 because $5x$ students cannot be negative. Club A has $x^2 + 5x = 36 + 30 = 66$ students. Probability = 66/100 = 33/50.	**33/50**	**4**	**M1** — Form the correct total-population equation. **M1** — Solve the quadratic and select $x = 6$. **M1** — Include both A-only and the intersection in the event A. **A1** — 33/50 or equivalent.

Question 19 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
19	Increasing q by 20% multiplies it by 1.2, so q^3 is multiplied by $1.2^3 = 1.728$. Decreasing r by 36% multiplies it by 0.64, so $\sqrt{r}$ is multiplied by $\sqrt{0.64} = 0.8$. The multiplier for P is $1.728/0.8 = 2.16$. Percentage increase = $(2.16 - 1) \times 100\% = 116\%$.	**116%**	**3**	**M1** — Correct numerator multiplier 1.2^3. **M1** — Divide by $\sqrt{0.64}$ to obtain the overall multiplier. **A1** — Correct percentage increase, not 216%.

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Question 20 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
20	The successive growth multipliers are 1 + x/100 and 1 + 2x/100. (1 + x/100)(1 + 2x/100) = 1.4592. Expand and multiply by 10000: $2x^2 + 300x - 4592 = 0$. Divide by 2: $x^2 + 150x - 2296 = 0 = (x - 14)(x + 164)$. x = 14 or –164. The value increased in both years, so x must be positive. Check: 1.14 × 1.28 = 1.4592.	**x = 14**	**4**	**M1** — Correct product of the successive percentage multipliers. **M1** — Correct quadratic equation. **M1** — Solve the quadratic by a valid method. **A1** — Select x = 14 and reject the negative root.