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4MA1 Nov 2026 Paper 1 Best Guess Paper

Higher · Standard · Mark Scheme

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This independently compiled practice paper is designed for students preparing for Pearson Edexcel International GCSE Mathematics A (4MA1), Higher Tier, Paper 1H. It covers a range of accessible and challenging Higher Tier questions for standard exam practice, rather than focusing only on a particular target grade. A calculator may be used.

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Video walkthrough

Calculator allowed · 25 questions · 100 marks · Suggested time: 2 hours.
Attempt every question. Show your working, then review the mark scheme and worked solutions.

Paper 1H · Standard Higher · Mark Scheme

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

Question 1 · 2 marks

Q / part	Working / method	Answer	Marks	Marking guidance
1	16/5 – 5/3 = 48/15 – 25/15 = 23/15 = 1 8/15	**1 8/15, as required**	**2**	**M1** — Convert the mixed numbers and use a common denominator. **A1** — Show 23/15 = 1 8/15 with sufficient working.

Question 2 · 2 marks

Q / part	Working / method	Answer	Marks	Marking guidance
2	Common difference = 4; first term 7; 7 + 4(n – 1)	**4n + 3**	**2**	**M1** — Use common difference 4 and a correct first-term adjustment. **A1** — 4n + 3.

Question 3 · 2 marks

Q / part	Working / method	Answer	Marks	Marking guidance
3	$(3.6 \div 4.5) \times 10^{22-(-6)} = 0.8 \times 10^{28}$	**8×10^{27}**	**2**	**M1** — Divide coefficients and subtract exponents correctly. **A1** — 8×10^{27} in standard form.

Question 4 · 2 marks

Q / part	Working / method	Answer	Marks	Marking guidance
(a)	Half the rounding unit is 0.05 m; 1.6 + 0.05	**Upper bound 1.65 m**	**1**	**B1** — 1.65 m.
(b)	1.6 – 0.05	**Lower bound 1.55 m**	**1**	**B1** — 1.55 m.

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Question 5 · 5 marks

Q / part	Working / method	Answer	Marks	Marking guidance
(a)	$6 + 10 = 16$	**a^{16}**	**1**	**B1** — Correct power.
(b)	$30 - 12 = 18$	**c^{18}**	**1**	**B1** — Correct power.
(c)(i)	$-4 \times -6 = 24$; $-4 + -6 = -10$	**$(x - 4)(x - 6)$**	**2**	**M1** — Attempt two factors using numbers with product 24 or sum −10. **A1** — Both factors correct.
(c)(ii)	Set each factor equal to zero.	**$x = 4$ or $x = 6$**	**1**	**B1** — Both roots $x = 4$ and $x = 6$, following a valid factorisation.

Question 6 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
6	$9x + 6y = 48$; $8x - 6y = 54$; $17x = 102$	**$x = 6$, $y = -1$**	**3**	**M1** — Valid elimination or substitution. **A1** — $x = 6$. **A1** — $y = -1$.

Question 7 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
7	Midpoints 2.5, 7.5, 12.5, 17.5, 22.5; $\Sigma fm = 575$; $\Sigma f = 50$	**11.5 kg**	**3**	**M1** — Use class midpoints. **M1** — Find Σfm and divide by total frequency 50. **A1** — 11.5 kg.

Question 8 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
8	$V = \pi r^2 h = \pi \times 4.5^2 \times 10 = 202.5\pi$	**636 cm³ (3 significant figures)**	**3**	**M1** — Use $\pi r^2 h$. **M1** — Correct substitution and evaluation. **A1** — 636 cm³ to 3 significant figures.

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Question 9 · 5 marks

Q / part	Working / method	Answer	Marks	Marking guidance
9	600 × 1.15 = 690; saving = 2/5 × 690 = 276; 276 ÷ 1.18	**£233.90**	**5**	**M1** — Multiply £600 by 1.15 to convert to euros. **A1** — €690. **M1** — Use the saving share 2/5 to find €276. **M1** — Divide the euros saved by 1.18 to convert back to pounds. **A1** — £233.90 to the nearest penny.

Question 10 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
10	85000 × 0.88 × 0.85 = 63580; 66759/63580 = 1.05	**x = 5**	**4**	**M1** — Apply both depreciation multipliers. **M1** — Compare £66759 with the value £63580 before the increase. **A1** — Multiplier 1.05 or proportional increase 0.05. **A1** — x = 5%.

Question 11 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
11	Horizontal difference = 24.3 – 18 = 6.3; tan θ = 6.3/15	**x = 112.8° (1 decimal place)**	**3**	**M1** — Form the right triangle with perpendicular sides 6.3 cm and 15 cm. **M1** — Use a correct trigonometric ratio and relate the acute angle to x. **A1** — 112.8°.

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Question 12 · 8 marks

Q / part	Working / method	Answer	Marks	Marking guidance
(a)	Running totals of the six frequencies	**8, 23, 60, 70, 77, 80**	**1**	**B1** — All six cumulative frequencies correct.
(b)	Plot against upper class boundaries 200,…,700.	**Cumulative-frequency curve**	**2**	**B1** — At least five points plotted correctly at upper boundaries; allow follow-through from (a). **B1** — All points correct and joined by a suitable increasing curve.
(c)	Read across from cumulative frequency 40.	**About £346**	**1**	**B1** — A reasonable graph reading, typically £340–£350; follow through their valid graph.
(d)	Q_1 at CF 20 ≈ £280; Q_3 at CF 60 ≈ £400.	**IQR ≈ £120**	**2**	**M1** — Read both quartiles at CF 20 and 60. **A1** — Subtract to obtain about £120; allow reasonable graph-reading variation and follow-through.
(e)	CF at £430 ≈ 63; 80 – 63	**About 17 workers**	**2**	**M1** — Read cumulative frequency at £430 and subtract it from 80. **A1** — About 17; accept a consistent reading from their valid graph.

Question 13 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
13	$x = 0.381818…$; $1000x - 10x = 378$; $990x = 378$	**21/55**	**3**	**M1** — Two suitable multiples with matching recurring tails, such as 1000x and 10x. **M1** — Subtract to eliminate the recurring decimal and obtain $990x = 378$, or equivalent. **A1** — Complete algebraic proof that $x = 21/55$.

Question 14 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
14	$y = kt^2$, $k = 5$; $t = c/\sqrt{x}$, $c = 6$; $y = 5(6/\sqrt{x})^2$	**$y = 180/x$**	**4**	**M1** — Use $y = kt^2$ and given values to find $k = 5$. **M1** — Use $t = c/\sqrt{x}$ and given values to find $c = 6$. **M1** — Substitute the expression for t into $y = 5t^2$. **A1** — $y = 180/x$ in simplest form.

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Question 15 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
15	ABCD is cyclic; opposite angles ABC and CDA sum to 180°	**∠CDA = 72°**	**3**	**M1** — Identify ABCD as a cyclic quadrilateral. **B1** — State that opposite angles in a cyclic quadrilateral sum to 180°. **A1** — 180° − 108° = 72°, with the formal reason.

Question 16 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
16	$3x^2 - 14x - 5 \le 0$; $(3x + 1)(x - 5) \le 0$	**$-1/3 \le x \le 5$**	**3**	**M1** — Rearrange and factorise, or obtain critical values by a valid method. **M1** — Identify both critical values −1/3 and 5. **A1** — Closed interval between the roots, including both endpoints.

Question 17 · 3 marks

Q / part	Working / method	Answer	Marks	Marking guidance
17	$p^2(3y - k) = 2y + 5$; $y(3p^2 - 2) = p^2k + 5$	**$y = (p^2k + 5)/(3p^2 - 2)$**	**3**	**M1** — Square and clear the denominator. **M1** — Collect the y terms and factor out y. **A1** — Correct formula.

Question 18 · 5 marks

Q / part	Working / method	Answer	Marks	Marking guidance
18	$y = 7 - 2x$; $5x^2 - 36x + 31 = 0$; $(5x - 31)(x - 1) = 0$	**(1,5) and (31/5, −27/5)**	**5**	**M1** — Substitute $y = 7 - 2x$ into the curve equation. **M1** — Expand and simplify to $5x^2 - 36x + 31 = 0$. **M1** — Factorise or use another valid quadratic-solving method. **A1** — Both correct x values, 1 and 31/5. **A1** — Both correct paired coordinates.

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Question 19 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
19	$(2 + \sqrt{3})^2 = 7 + 4\sqrt{3}$; multiply by $(2 + \sqrt{3})/(2 + \sqrt{3})$	**$26 + 15\sqrt{3}$; a = 26, b = 15**	**4**	**M1** — Expand the original numerator to $7 + 4\sqrt{3}$. **M1** — Multiply numerator and denominator by the conjugate $2 + \sqrt{3}$. **M1** — Use denominator 1 and expand the new numerator. **A1** — $26 + 15\sqrt{3}$, identifying a and b, or equivalent conclusion.

Question 20 · 5 marks

Q / part	Working / method	Answer	Marks	Marking guidance
20	$3(2x + 1) – 4(x – 2) = (x – 2)(2x + 1)$; $2x^2 – 5x – 13 = 0$	**x = 4.09 or x = –1.59 (3 significant figures)**	**5**	**M1** — Multiply through by the common denominator. **A1** — $2x^2 – 5x – 13 = 0$. **M1** — Apply the quadratic formula or an equivalent correct method. **A1** — Positive root 4.09 to 3 significant figures. **A1** — Negative root –1.59 to 3 significant figures.

Question 21 · 6 marks

Q / part	Working / method	Answer	Marks	Marking guidance
(a)	$y(x – 3) = 2x + 1$; $x(y – 2) = 3y + 1$	**$f^{-1}(x) = (3x + 1)/(x – 2)$**	**3**	**M1** — Multiply out $y(x – 3) = 2x + 1$. **M1** — Collect and factor the terms involving the original input. **A1** — Correct inverse. Domain $x \neq 2$ may be stated but is not required for this mark.
(b)	$[(2x + 1)/(x – 3)]^2 – 4$	**$(28x – 35)/(x – 3)^2$**	**2**	**M1** — Correct composition, and use a common denominator. **A1** — Correct fully simplified single fraction, or $7(4x – 5)/(x – 3)^2$.
(c)	$x^2 – 4 = 21$; $x^2 = 25$	**x = –5 or x = 5**	**1**	**B1** — Both solutions.

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Question 22 · 6 marks

Q / part	Working / method	Answer	Marks	Marking guidance
(a)	OP = 2a; AQ = ⅔(9b – 6a); OQ = 2a + 6b	**PQ = 6b**	**2**	**M1** — Use the section ratios to find suitable position vectors or an equivalent route from P to Q. **A1** — PQ = 6b.
(b)	PQ = 6b = ⅔ OB	**PQ ∥ OB; |PQ| : |OB| = 2 : 3**	**4**	**M1** — Express PQ as a non-zero scalar multiple of OB. **A1** — Conclude that PQ is parallel to OB, with the scalar-multiple justification. **M1** — Compare vector magnitudes using the coefficients 6 and 9. **A1** — Correct length ratio 2 : 3.

Question 23 · 5 marks

Q / part	Working / method	Answer	Marks	Marking guidance
(a)	10(2a + 19d) = 1155; 2a + 18d = 111	**a = 15, d = 4.5**	**3**	**M1** — Use the sum of the first 20 terms to obtain 2a + 19d = 115.5. **M1** — Use the 5th and 15th terms to obtain 2a + 18d = 111 and solve the equations. **A1** — Show both stated values.
(b)	N/2[30 + 4.5(N – 1)] = 4110; (N – 40)(3N + 137) = 0	**N = 40**	**2**	**M1** — Use the arithmetic-series sum formula and solve a resulting quadratic. **A1** — 40, rejecting the negative root.

Question 24 · 4 marks

Q / part	Working / method	Answer	Marks	Marking guidance
(a)	(–2,5) → (–5,5) → (–5,–5)	**(–5,–5)**	**2**	**B1** — Correct horizontal coordinate –5. **B1** — Correct vertical coordinate –5.
(b)	(–2,5) → (–4,5) → (–4,15)	**(–4,15)**	**2**	**B1** — Correct horizontal coordinate –4. **B1** — Correct vertical coordinate 15.

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Question 25 · 7 marks

Q / part	Working / method	Answer	Marks	Marking guidance
(a)	$x^2 + 4xh = 108$; $h = 27/x - x/4$; $V = x^2h$	**$V = 27x - \frac{1}{4}x^3$**	**3**	**M1** — Use the open-topped surface-area equation $x^2 + 4xh = 108$. **M1** — Rearrange correctly for h and substitute into $V = x^2h$. **A1** — Show $V = 27x - \frac{1}{4}x^3$.
(b)	$dV/dx = 27 - \frac{3}{4}x^2 = 0$; $x = 6$; $d^2V/dx^2 = -\frac{3}{2}x < 0$	**Maximum volume 108 m³**	**4**	**M1** — Differentiate correctly. **M1** — Set the derivative to zero and solve for the positive stationary value. **A1** — $x = 6$ m; $h = 3$ m may also be given. **A1** — $V = 108$ m³, with valid maximum justification such as a negative second derivative.