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1MA1 Nov 2026 Paper 2 Best Guess Paper

Higher · Target 9 · Model Answers

———————————- 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 2H. 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.

The best way to prepare for the exams is to revise all topics. For fully worked solutions, video walkthroughs, and more free resources, visit www.mygrade9mathstutor.com.

If you find this paper help please support me, by buying me a coffee

Walkthrough playlist

The best way to work with this paper is work though it all, watch the Clip. If you get the question incorrect watch the clip again and then try the similar questions from the worksheets

Higher Target 9 Paper 2H · Worked Solutions

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

Question 1 · Estimated Mean

Use each class midpoint to represent the masses in that class: 2.5, 7.5, 12.5, 17.5 and 22.5 kg.

Multiply each midpoint by its frequency:
$6\times2.5 + 14\times7.5 + 18\times12.5 + 8\times17.5 + 4\times22.5 = 575$.

Divide by the total frequency: $575 \div 50 = 11.5$. This is an estimate because individual bag masses are unknown.

Answer: 11.5 kg

Question 2 · Compound Interest

An increase of 3.1% corresponds to the multiplier 1.031.

Four years of compound interest: $5200 \times 1.031^4 = 5875.407655\ldots$

Round money only at the end, to two decimal places.

Answer: $5875.41

Question 3 · Reverse Percentages

After a 12% decrease, 88% remains; after a further 15% decrease, 85% of that amount remains.

The final value is therefore $0.88 \times 0.85 = 0.748$ of the original value.

Original price = $11220 \div 0.748 = 15000$. Check: $15000 \times 0.88 \times 0.85 = 11220$.

Answer: £15000

Question 4 · Density of a Sphere

$V = (4/3)\pi r^3 = (4/3)\pi \times 2.4^3 = 57.905835\ldots$ cm³.

Density = mass ÷ volume = $385 \div 57.905835\ldots = 6.648725\ldots$ g/cm³.

Keep the full volume in the calculator until rounding the final density to three significant figures.

Answer: 6.65 g/cm³

Question 5 · Pythagoras and Trigonometry

The shared horizontal side is $\sqrt{(15^2 - 9^2)} = \sqrt{144} = 12$ cm.

In the lower triangle, 12 cm is opposite the marked 40° angle and x is the hypotenuse.

$\sin 40° = 12/x$, so $x = 12/\sin 40° = 18.668685\ldots$ cm.

Answer: 18.7 cm

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Question 6 · Compound Area and Cost

The semicircle radii are 5 m and 3 m.

Patio area = ½π × 5^2 – ½π × 3^2 = 8π = 25.132741… m².

Cost = 24 × 8π = £603.185789… = £603.19.

£603.19 is less than £1200, so Jo has enough money.

Answer: Yes; the paving costs £603.19

Question 7 · Histogram Probability

Frequency is proportional to bar area. Choose a common small-grid height unit: the four heights are 2, 4, 9 and 7.

Whole histogram area = 10×2 + 20×4 + 15×9 + 15×7 = 340 relative units.

Area from 25 to 50 = 5×4 + 15×9 + 5×7 = 190 relative units.

Probability = selected area ÷ total area = 190/340 = 19/34 ≈ 0.558824. The chosen height-unit scale cancels.

Answer: 19/34 ≈ 0.559

Question 8 · Quadratic Sequences

First differences are 5, 7, 9 and 11. Second differences are all 2, so the coefficient of n^2 is 2 ÷ 2 = 1.

Subtract 1, 4, 9, 16 and 25 from the five terms. The remainder is 1, 3, 5, 7 and 9, whose nth term is 2n – 1.

Add the two expressions: $n^2 + 2n - 1$. Check n = 1 gives 2 and n = 5 gives 34.

Answer: $n^2 + 2n - 1$

Question 8 video solution

Question 9 · Graphical Inequalities

(a) Substitute x = –2, 0, 2 and 3 to get the points (–2,8), (0,4), (2,0) and (3,–2). Join them with a straight line across the specified range.

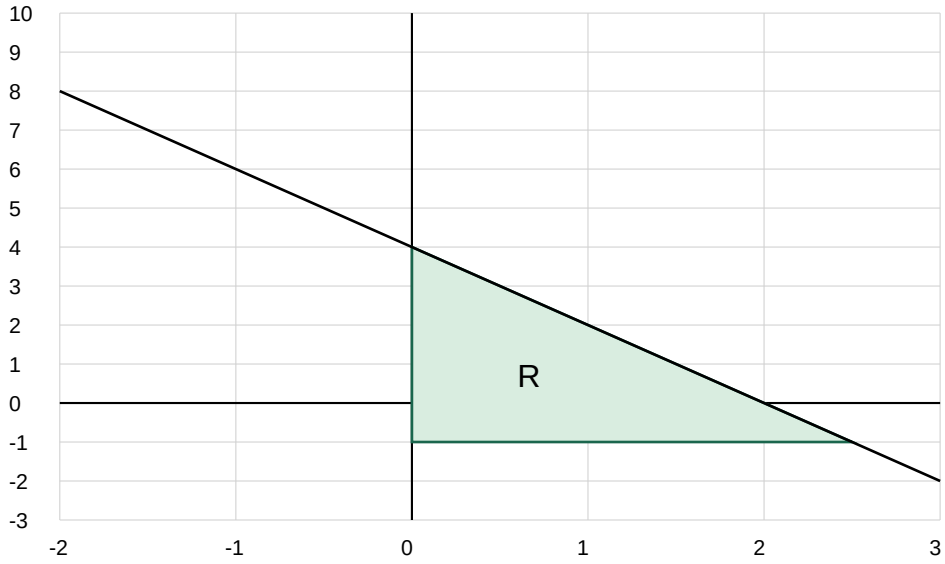
(b) x ≥ 0 means right of the y-axis; y ≥ –1 means above the horizontal line y = –1; y ≤ –2x + 4 means below the sloping line.

The common region is the triangle bounded by (0,–1), (0,4) and (2.5,–1). Include the boundaries because all inequalities allow equality. Shade it and label it R.

Answer: See the annotated graph

Higher Target 9 Paper 2H · Worked Solutions

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Question 10 · Inverse and Composite Functions

(a) Start with $y = (3x - 5)/2$. Then $2y = 3x - 5$ and $x = (2y + 5)/3$. Replace the input name y by x.

(b) gf(3) means g(f(3)), so apply f first: $f(3) = (9 - 5)/2 = 2$.

Then $g(2) = 2 \times 2^2 + 1 = 9$.

Answer: $f^{-1}(x) = (2x + 5)/3$; gf(3) = 9

Question 11 · Cubic Graph

(a) At $x = -2$: $y = -8 + 6 + 1 = -1$. At $x = 0$: $y = 1$. At $x = 0.5$: $y = 0.125 - 1.5 + 1 = -0.375 \approx -0.4$. At $x = 2$: $y = 8 - 6 + 1 = 3$.

(b) Plot the table points and draw a smooth cubic. The exact values at $x = -0.5$ and 1.5 are 2.375 and –0.125; the table rounds them to 2.4 and –0.1.

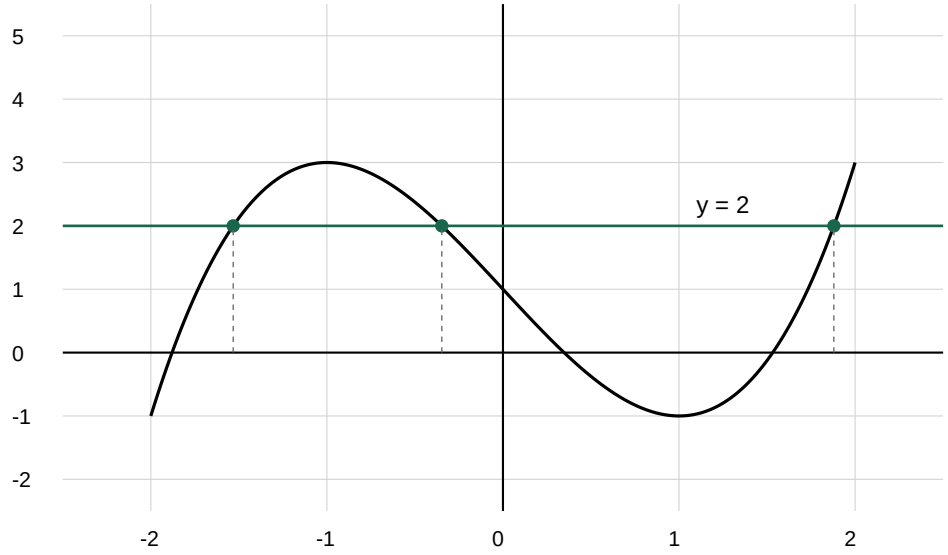
(c) The equation $x^3 - 3x - 1 = 0$ is equivalent to $x^3 - 3x + 1 = 2$, so draw the horizontal line $y = 2$.

Read all three intersections: $x \approx -1.532\ldots$, –0.347… and 1.879…. Round each to one decimal place.

Answer: Missing values: –1, 1, –0.4, 3; roots: –1.5, –0.3, 1.9

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Question 12 · Upper Bounds

For quantities rounded to one decimal place: $149.95 \le s < 150.05$, $11.95 \le u < 12.05$ and $3.95 \le t < 4.05$.

The expression is $a = 2(s - ut)/t^2$. Increase s and decrease u to increase a. Over this interval, decreasing t also increases a: both the numerator increases and the positive denominator decreases.

Use $s = 150.05$, $u = 11.95$ and $t = 3.95$:
$a_U = 2(150.05 - 11.95\times3.95)/3.95^2 = 13.183464\ldots$ m/s².

The upper-bound value is approximately 13.2 m/s² to three significant figures.

Answer: 13.2 m/s² (3 s.f.)

Question 13 · Non-Right-Angled Trigonometry

(a) QR is opposite the included 52° angle. Use the cosine rule:
$QR^2 = 18^2 + 24^2 - 2\times18\times24 \cos 52°$.

QR = 19.185111… cm, so QR = 19.2 cm to three significant figures.

(b) Area = ½ab sin C = ½×18×24×sin 52° = 170.210322… cm².

Answer: QR = 19.2 cm; area = 170 cm² (3 s.f.)

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Question 14 · Distance from a Velocity-Time Graph

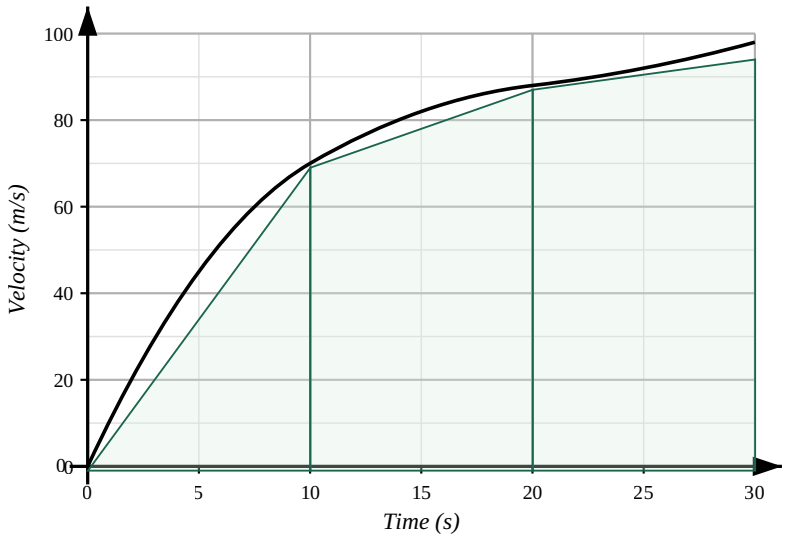
Distance travelled is the area under the velocity-time graph.

Three equal strips over 30 seconds have width 10 seconds. Example graph readings at t = 0, 10, 20 and 30 are approximately 0, 70, 88 and 95 m/s.

Trapezium estimate = 10[½(0 + 95) + 70 + 88] = 10×205.5 = 2055 m.

Slightly different graph readings produce slightly different estimates; reasonable estimates supported by working are accepted.

Answer: Approximately 2055 m



Question 14 video solution

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Question 15 · Iterative Population Decay

From the start of 2018 to the start of 2020 there are two annual transitions.

$P_{2020} = k^2 P_{2018}$, so $4050 = 5000k^2$.

$k^2 = 4050/5000 = 0.81$. The population multiplier is positive, so $k = \sqrt{0.81} = 0.9$.

Check: $5000 \times 0.9 = 4500$ after one year, then $4500 \times 0.9 = 4050$ after two.

Answer: k = 0.9

Question 15 video solution

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Question 16 · Circle-Theorem Reasoning

Opposite angles in cyclic quadrilateral ABCD sum to 180°, so ∠ADC = 180° – 108° = 72°.

A, D and T lie on a straight line. Therefore ∠TDC = 180° – 72° = 108°, using angles on a straight line.

In triangle TDC, ∠DCT = 42° is given. Angles in a triangle sum to 180°, so ∠DTC = 180° – 108° – 42° = 30°.

The rays TA and TD are the same ray, so ∠ATC = ∠DTC = 30°.

Answer: 30°

Question 17 · Coordinate Geometry: Perpendicular Gradients

P = (0,0), Q = (16,–2), R = (k,k+2). Gradient PR = (k+2)/k; gradient QR = (k+4)/(k–16).

Angle PRQ is 90°, so the gradient product is –1:
$[(k+2)/k][(k+4)/(k–16)] = –1$.

Clear denominators: $(k+2)(k+4) = –k(k–16)$. Expand: $k^2 + 6k + 8 = –k^2 + 16k$.

Collect terms: $2k^2 – 10k + 8 = 0$. Divide by 2 and factorise: $(k–1)(k–4) = 0$.

Therefore k = 1 or 4. For k = 1, the gradients are 3 and –1/3; for k = 4, they are 3/2 and –2/3. Both products are –1.

The vertical-line cases k = 0 and k = 16 do not give right angles here. Both calculated roots are valid.

Answer: k = 1 or 4

Question 17 video solution

Question 18 · Probability Without Replacement

(a) P(two red) = (8/n)(7/(n – 1)). P(two blue) = ((n – 8)/n)((n – 9)/(n – 1)). These disjoint events add.

$[56 + (n – 8)(n – 9)]/[n(n – 1)] = 7/15$.

Expand the numerator: $n^2 – 17n + 128$. Multiply through:
$15n^2 – 255n + 1920 = 7n^2 – 7n$.

Rearrange and divide by 8: $n^2 – 31n + 240 = 0$.

(b) $(n – 15)(n – 16) = 0$, so n = 15 or n = 16. Both are valid because there are 8 red counters and a positive number of blue counters.

Check n = 15: $(56 + 7×6)/(15×14) = 7/15$.
Check n = 16: $(56 + 8×7)/(16×15) = 7/15$.

Answer: n = 15 or n = 16

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Question 19 · Trigonometric Graphs and Equations

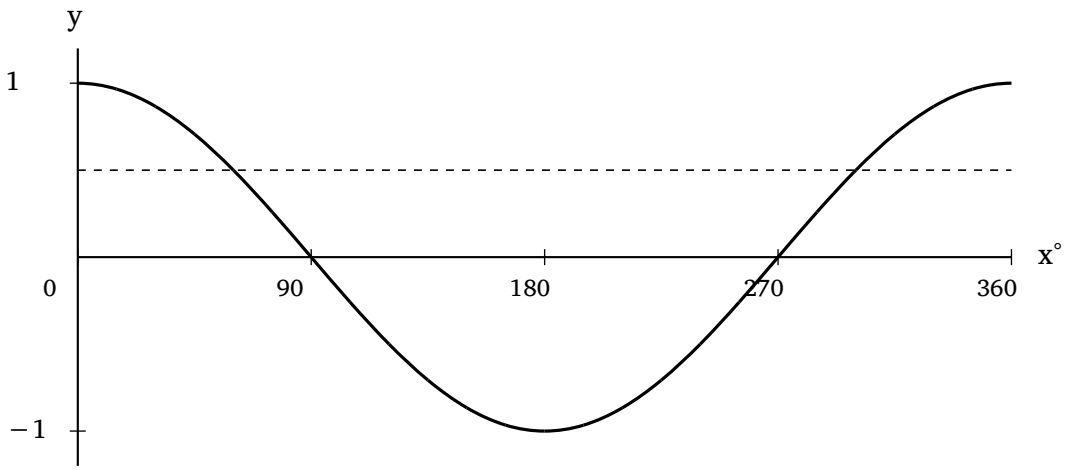
(a) Plot (0,1), (90,0), (180,–1), (270,0), (360,1). Join with a smooth cosine curve.

(b) Divide 2 cos x° = 1 by 2: cos x° = 0.5.

The reference angle is $\cos^{-1}(0.5) = 60°$. Cosine is positive in quadrants I and IV.

The second solution is 360° – 60° = 300°. Both lie in $0 \le x \le 360$.

Answer: x = 60° or 300°



Question 19 video solution

Question 20 · Vector Geometry Proof

(a) OP:PA = 1:2, so OP = ⅓OA = 2a.

AB = OB – OA = 9b – 6a. Since AQ:QB = 2:1, AQ = ⅔AB = 6b – 4a.

OQ = OA + AQ = 2a + 6b. Then PQ = OQ – OP = 6b.

(b) OB = 9b and PQ = 6b, so PQ = ⅔OB. One vector is a positive scalar multiple of the other; therefore the lines are parallel.

The length ratio is |PQ|:|OB| = 6:9 = 2:3.

Answer: PQ = 6b; PQ parallel to OB; PQ:OB = 2:3