



mygrade9 mathstutor.com

Boost Your Skills & Grades in Grade 9 Maths

4MA1 Nov 2026 Higher Paper 1 Target 5 Worked Solutions

----- Disclaimer -----

These Worked Solutions has been designed using a careful analysis of historical exam trends to identify topics highly likely to appear in the 1H paper. It is an excellent revision tool specifically structured for students targeting a Grade 5. To support this, the paper focuses heavily on essential crossover topics, while still retaining the more challenging questions at the end to provide a true Higher Tier mock exam experience.

Despite claims frequently seen on social media, it is strictly impossible to perfectly "predict" an exam paper—such statements are typically sales tactics. While the topics covered here are highly relevant, there is no guarantee they will appear in the actual exam. The most effective preparation strategy will always be a comprehensive revision of the entire mathematics specification.

You can find a link to this paper and more completely free resources at www.mygrade9mathstutor.com

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



The Playlist for Solutions can be found



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

www.mygrade9mathstutor.com
Pearson 4MA1 Paper 1H (Grade 5 Best Guess Nov 2026)
Worked Solutions

COMPLETE WORKED SOLUTIONS

Question 1

Show that $3 \frac{1}{5} - 1 \frac{2}{3} = 1 \frac{8}{15}$

- Step 1: Convert mixed numbers to improper fractions: $3 \frac{1}{5} = \frac{16}{5}$ and $1 \frac{2}{3} = \frac{5}{3}$.
- Step 2: Find a common denominator, which is 15. Convert fractions: $\frac{16}{5} = \frac{48}{15}$ and $\frac{5}{3} = \frac{25}{15}$.
- Step 3: Subtract the numerators: $\frac{48}{15} - \frac{25}{15} = \frac{23}{15}$.
- Step 4: Convert back to a mixed number: $\frac{23}{15} = 1 \frac{8}{15}$ (as required).

Final Answer: $1 \frac{8}{15}$

Question 2

Express 5040 as a product of powers of its prime factors.

- Step 1: Divide by 10: $5040 = 504 \times 10 = 504 \times 2 \times 5$.
- Step 2: Prime factorise 504: $504 = 2 \times 252 = 2^2 \times 126 = 2^3 \times 63 = 2^4 \times 3^2 \times 7$.
- Step 3: Combine all prime factors: $2^4 \times 3^2 \times 5 \times 7$.

Final Answer: $2^4 \times 3^2 \times 5 \times 7$

Question 3

Find an expression, in terms of n , for the n th term of the sequence 7, 11, 15, 19, 23

- Step 1: Find the common difference between consecutive terms: $11 - 7 = 4$, so the sequence starts with $4n$.
- Step 2: Test $n = 1$ in $4(1) = 4$. To get 7, we need to add 3.

Final Answer: $4n + 3$

Question 4

Work out $(3.6 \times 10^{22}) / (4.5 \times 10^{-6})$, giving your answer in standard form.

- Step 1: Divide the numbers: $3.6 \div 4.5 = 0.8$.
- Step 2: Divide the powers of 10 by subtracting indices: $10^{22} / 10^{-6} = 10^{22-(-6)} = 10^{28}$.
- Step 3: Combine: 0.8×10^{28} .
- Step 4: Adjust to standard form ($A \times 10^n$ where $1 \leq A < 10$): 8×10^{27} .

Final Answer: 8×10^{27}

Question 5

Algebra: (a) Expand & simplify $(x - 4)(x + 7)$, (b) Factorise fully $18c^5w^2 + 30cw^3$, (c) Solve $(7x - 2)/4 = 3x + 1$

- (a) Expand: $x^2 + 7x - 4x - 28 = x^2 + 3x - 28$.
- (b) Factorise: Highest common factor is $6cw^2$. Expression becomes $6cw^2(3c^4 + 5w)$.
- (c) Solve: Multiply both sides by 4: $7x - 2 = 4(3x + 1) \Rightarrow 7x - 2 = 12x + 4$. Rearrange: $-5x = 6 \Rightarrow x = -1.2$.

Final Answer: (a) $x^2 + 3x - 28$, (b) $6cw^2(3c^4 + 5w)$, (c) $x = -1.2$

Question 6

Solve simultaneous equations: $3x + 2y = 16$ and $4x - 3y = 27$

- Step 1: Multiply equation (1) by 3 and equation (2) by 2 to align y coefficients: $9x + 6y = 48$ and $8x - 6y = 54$.
- Step 2: Add the two new equations to eliminate y: $17x = 102 \Rightarrow x = 6$.
- Step 3: Substitute $x = 6$ into equation (1): $3(6) + 2y = 16 \Rightarrow 18 + 2y = 16 \Rightarrow 2y = -2 \Rightarrow y = -1$.

Final Answer: $x = 6, y = -1$

Question 7

Indices and Quadratics: (a) $a^6 \times a^{10}$, (b) $c^{30} \div c^{12}$, (c) Factorise & solve $x^2 - 10x + 24 = 0$

- (a) Add indices: $a^{6+10} = a^{16}$.
- (b) Subtract indices: $c^{30-12} = c^{18}$.
- (c)(i) Factorise: Two numbers that multiply to 24 and add to -10 are -6 and -4 $\Rightarrow (x - 6)(x - 4)$.
- (c)(ii) Solve: $(x - 6)(x - 4) = 0 \Rightarrow x = 6, x = 4$.

Final Answer: (a) a^{16} , (b) c^{18} , (c)(i) $(x-6)(x-4)$, (c)(ii) $x = 6, 4$

Question 8

Limits of Accuracy: Table length is 1.6 m correct to 1 decimal place. Find upper and lower bounds.

- Step 1: Degree of accuracy is 0.1 m. Half of this is 0.05 m.
- Step 2: Upper bound = $1.6 + 0.05 = 1.65$ m.
- Step 3: Lower bound = $1.6 - 0.05 = 1.55$ m.

Final Answer: Upper = 1.65 m, Lower = 1.55 m

Question 9

Calculate an estimate for the mean mass of 50 luggage bags from grouped frequency table.

- Step 1: Find midpoints for each class: 2.5, 7.5, 12.5, 17.5, 22.5.
- Step 2: Multiply midpoints by frequencies: $(2.5 \times 6) + (7.5 \times 14) + (12.5 \times 18) + (17.5 \times 8) + (22.5 \times 4)$
 $= 15 + 105 + 225 + 140 + 90 = 575$.
- Step 3: Divide by total frequency (50): $575 \div 50 = 11.5$.

Final Answer: 11.5 kg

Question 10

Carlos changes £600 to Euros at 1.15, saves $\frac{2}{5}$, and changes back at 1.18. Find final Pounds.

- Step 1: Convert £600 to Euros: $600 \times 1.15 = €690$.
- Step 2: Find savings portion (2 parts out of 5): $€690 \times (\frac{2}{5}) = €276$.
- Step 3: Convert savings back to Pounds at new rate: $€276 \div 1.18 = £233.898...$
- Step 4: Round to nearest penny.

Final Answer: £233.90

Question 11

Point B is on a bearing of 075° from A. Work out the bearing of A from B.

- Step 1: Since the bearing is less than 180° , add 180° .
- Step 2: $75^\circ + 180^\circ = 255^\circ$.

Final Answer: 255°

Question 12

Solid cylinder radius 4.5 cm, height 10 cm. Calculate volume to 3 sig figs.

- Step 1: Use formula $V = \pi r^2 h$.
- Step 2: $V = \pi \times 4.5^2 \times 10 = 202.5\pi = 636.172... \text{ cm}^3$.
- Step 3: Round to 3 significant figures.

Final Answer: 636 cm^3

Question 13

Find equation of line passing through A(1, 4) and B(3, 10) in form $y = mx + c$.

- Step 1: Calculate gradient $m = (10 - 4) / (3 - 1) = 6 / 2 = 3$.
- Step 2: Substitute m and point (1, 4) into $y = 3x + c \Rightarrow 4 = 3(1) + c \Rightarrow c = 1$.

Final Answer: $y = 3x + 1$

Question 14

Train travels 135 km in 1 hour 30 mins. Work out average speed in m/s.

- Step 1: Convert distance to metres: $135 \text{ km} = 135,000 \text{ m}$.
- Step 2: Convert time to seconds: $1.5 \text{ hours} \times 3600 = 5400 \text{ seconds}$.
- Step 3: Speed = Distance / Time = $135,000 / 5400 = 25 \text{ m/s}$.

Final Answer: 25 m/s

Question 15

Regular n-sided polygon has interior angle $(10x + 18)^\circ$ and exterior angle $(2x - 18)^\circ$. Find n.

- Step 1: Interior + Exterior = $180^\circ \Rightarrow (10x + 18) + (2x - 18) = 180 \Rightarrow 12x = 180 \Rightarrow x = 15$.
- Step 2: Find exterior angle: $2(15) - 18 = 12^\circ$.
- Step 3: Number of sides $n = 360 / \text{Exterior} = 360 / 12 = 30$.

Final Answer: n = 30

Question 16

5 red, 4 blue counters. Two taken with replacement. Find probability both are same colour.

- Step 1: $P(\text{Red, Red}) = (5/9) \times (5/9) = 25/81$.
- Step 2: $P(\text{Blue, Blue}) = (4/9) \times (4/9) = 16/81$.
- Step 3: Add probabilities: $25/81 + 16/81 = 41/81$.

Final Answer: 41/81

Question 17

Trapezium ABCD with vertical height 15cm, top 18cm, bottom 24.3cm. Find angle x .

- Step 1: Drop perpendicular from C to AD to form right-angled triangle. Height = 15 cm, base extension = $24.3 - 18 = 6.3$ cm.
- Step 2: $\tan(\text{angle}) = 6.3 / 15 \Rightarrow \text{angle} = 22.78^\circ$.
- Step 3: Angle $x = 90^\circ + 22.78^\circ = 112.78^\circ$.

Final Answer: 112.8°

Question 18

Machine bought for £85,000. Depreciates 12% then 15%, then increases by $x\%$ to £66,759. Find x .

- Step 1: Apply depreciation multipliers: $85,000 \times 0.88 \times 0.85 = 63,580$.
- Step 2: Set up year 3 multiplier: $63,580 \times (1 + x/100) = 66,759$.
- Step 3: $1 + x/100 = 66,759 / 63,580 = 1.05 \Rightarrow x = 5$.

Final Answer: $x = 5$

Question 19

y directly proportional to t^2 , $y=20$ when $t=2$. t inversely proportional to $\sqrt{x}$, $t=3$ when $x=4$. Find formula for y in terms of x .

- Step 1: $y = kt^2 \Rightarrow 20 = k(2^2) \Rightarrow k = 5$, so $y = 5t^2$.
- Step 2: $t = m / \sqrt{x} \Rightarrow 3 = m / \sqrt{4} \Rightarrow m = 6$, so $t = 6 / \sqrt{x}$.
- Step 3: Substitute t into y : $y = 5(6 / \sqrt{x})^2 = 5(36 / x) = 180 / x$.

Final Answer: $y = 180 / x$

Question 20

Cumulative frequency table and graph analysis for weekly wages of 80 workers.

- Step 1: Cumulative frequencies: 8, 23, 60, 70, 77, 80.
- Step 2: Plot upper boundaries and join with smooth curve.
- Step 3: Median (~£345), IQR (~£95), Workers > £430 (~16 workers).

Final Answer: Median ~£345, IQR ~£95, Workers >£430 = 16

Question 21

Use algebra to show that 0.381 (recurring on 81) = $21/55$.

- Step 1: Let $x = 0.3818181...$
- Step 2: $100x = 38.18181...$ and $1000x = 381.8181...$
- Step 3: $990x = 378 \Rightarrow x = 378 / 990 = 21 / 55$.

Final Answer: Proven (21/55)

Question 22

Make y the subject of $p = \sqrt{(2y + 5) / (3y - k)}$.

- Step 1: Square both sides: $p^2 = (2y + 5) / (3y - k)$.
- Step 2: Multiply out denominator: $p^2(3y - k) = 2y + 5 \Rightarrow 3yp^2 - kp^2 = 2y + 5$.
- Step 3: Group y terms: $3yp^2 - 2y = kp^2 + 5 \Rightarrow y(3p^2 - 2) = kp^2 + 5 \Rightarrow y = (kp^2 + 5) / (3p^2 - 2)$.

Final Answer: $y = (kp^2 + 5) / (3p^2 - 2)$

Question 23

Solve quadratic inequality $3x^2 - 5 \leq 14x$.

- Step 1: Rearrange to $3x^2 - 14x - 5 \leq 0$.
- Step 2: Factorise: $(3x + 1)(x - 5) \leq 0$, giving critical values $x = -1/3$ and $x = 5$.
- Step 3: Region between roots gives inequality.

Final Answer: $-1/3 \leq x \leq 5$

Question 24

Find intersection points of line $2x + y = 7$ and circle $x^2 + y^2 - 4x + 2y = 32$.

- Step 1: Rearrange line to $y = 7 - 2x$ and substitute into circle equation.
- Step 2: Simplify to quadratic: $x^2 - 4x + 3 = 0 \Rightarrow (x - 3)(x - 1) = 0 \Rightarrow x = 3, 1$.
- Step 3: Find corresponding y values: (3, 1) and (1, 5).

Final Answer: (3, 1) and (1, 5)

Question 25

Right pyramid VABCD, base 10cm square, height 15cm. Find VM and angle with base.

- Step 1: Length VM: half base = 5 cm, height = 15 cm. $VM = \sqrt{(15^2 + 5^2)} = \sqrt{250} = 15.8$ cm.
- Step 2: Angle with base: $\tan(\theta) = 15 / 5 = 3 \Rightarrow \theta = 71.6^\circ$.

Final Answer: VM = 15.8 cm, Angle = 71.6°

Question 26

Solve $3 / (x - 2) - 4 / (2x + 1) = 1$ to 3 sig figs.

- Step 1: Combine over common denominator: $[3(2x + 1) - 4(x - 2)] / [(x - 2)(2x + 1)] = 1$.
- Step 2: Simplify to quadratic: $2x^2 - 5x - 13 = 0$.
- Step 3: Use quadratic formula to get 4.09 and -1.59.

Final Answer: $x = 4.09$ or $x = -1.59$

Question 27

Show $(2 + \sqrt{3})^2 / (2 - \sqrt{3})$ can be written as $a + b\sqrt{3}$.

- Step 1: Expand numerator: $7 + 4\sqrt{3}$.
- Step 2: Multiply numerator and denominator by conjugate $(2 + \sqrt{3})$.
- Step 3: Denominator becomes 1, numerator expands to $26 + 15\sqrt{3}$.

Final Answer: $26 + 15\sqrt{3}$

Question 28

Circle geometry: tangent XY at C , angle $ACX = 42^\circ$, angle $ABC = 108^\circ$. Find angle CDA .

- Step 1: Angle $CAD = \text{Angle } ACX = 42^\circ$ (alternate segment theorem).
- Step 2: Opposite angles in cyclic quadrilateral sum to 180° : Angle $CDA + 108^\circ = 180^\circ \Rightarrow \text{Angle } CDA = 72^\circ$.

Final Answer: 72°